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January 7, 2011

The Honorable Mary Margaret Haugen  
Washington State Senator  
Chair, Senate Transportation Committee

The Honorable Judy Clibborn  
Washington State Representative  
Chair, House Transportation Committee

Dear Senator Haugen and Representative Clibborn;

The members and staff of the Washington State County Road Administration Board (CRAB) are pleased to submit to you and to the legislature this annual report of activity performed by the county road departments of the thirty-nine counties of the State of Washington for the year 2010. As we are all aware, the current economic downturn has placed severe performance challenges upon all levels of government, and we expect this situation to continue for some time to come. CRAB believes this annual report will indicate to you and to the people of Washington State that county road departments have responded to these economic challenges with innovative techniques and with a deep concern that transportation dollars be used in the most cost-effective manner possible.

We direct your particular attention to the “county bridge” section of this report. Bridges are the single most expensive component of the county road system, and are critical points of mobility and public safety concerns. Careful review of the examples of bridge replacement in this report will demonstrate to the reader the complexity of the many contingent aspects of bridge construction and maintenance. It will also show the innovative, effective, and professional manner in which counties respond to this highly important link in our surface transportation system. We are pleased to be able to include this information in this annual report, and extend our thanks to those counties which have assisted us in preparing this information for you.

Respectfully submitted:

A handwritten signature in black ink, appearing to read "Dean Burton".

Commissioner Dean Burton, CRAB Board Chairman

A handwritten signature in black ink, appearing to read "Jay P. Weber".

Jay P. Weber, Executive Director

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## County Road Administration Board

<u>CRABoard Members</u>	<u>Term Expires</u>
Chairman Dean Burton, Garfield County Commissioner	2013
Vice-Chairman Brian Stacy, P.E., Pierce County Engineer	2012
Second Vice-Chair Marc Boldt, Clark County Commissioner	2011
Ray Thayer, Klickitat County Commissioner	2011
Andrew Woods, P.E., Columbia County Engineer	2011
John Koster, Snohomish County Council Member	2012
Dale Snyder, Douglas County Commissioner	2013
Derek Pohle, P.E., Grant County Engineer	2013

## County Road Administration Board Staff

Executive Director	Jay Weber
Executive Assistant Administration	Karen Pendleton Toni Cox, Engineering Technician Rhonda Mayner, Secretary
Deputy Director Engineering	Walter Olsen, P.E. Jeff Monsen, P.E., Intergovernmental Policy Manager Randy Hart, P.E., Grant Programs Manager Don Zimmer, Road Systems Inventory Manager Larry Pearson, P.E., Maintenance Programs Manager Bob Moorhead, P.E., Compliance & Data Analysis Manager
Assistant Director Technology	Steven Hillesland Bob Davis, IT Systems Manager Jim Ayres, P.E., Design Systems Engineer Jim Oyler, Support Specialist Kathy O'Shea, Database Development Specialist Eric Hagenlock, Applications Specialist

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## **From the Executive Director**

The following pages will present that 2010 was a busy year at the County Road Administration Board, as well as a time of some change for us along with all other state agencies due to the pressures of a continuing economic downturn. When times are tough and money is tight, all programs, ours and everyone else's, properly come under closer scrutiny, and the questions of "what can be cut and what needs to be protected" are put to every line item of the budget. This is not new to CRAB. We do it every time we submit a budget request.

This year, at the legislature's request, Berk and Associates conducted a multi-agency study of the County Road Administration Board, the Transportation Improvement Board, the Freight Mobility Strategic Investment Board, and the Highways and Local Programs division of WSDOT, which the legislature will receive as it convenes in January 2011. While I do not wish to go into the study methods and results here, I would like to focus on a recommendation contained in the draft report, which concerns how CRAB reports upon its activities and the results and outcomes of its grant programs.

CRAB has traditionally submitted annual reports to the legislature which are a statutory requirement. The Berk and Associates Study recommends additional elements to be added to these reports. This, CRAB will be very pleased to do. For some time we have been contemplating the use of electronic reporting to the legislature and the means by which this will enable us to include those added elements mentioned by the study. It will also give CRAB the ability to report program updates more closely reflecting "real time" accomplishment, instead of the usual yearly program summaries and totals.

A good portion of our IT division budget in 2010 was devoted to the development of RAP Online and to the Mobility 3.0 release. The great success of these initiatives will enable our counties to better manage their projects and for CRAB to accommodate the study recommendations in 2011. I look forward to the opportunity to discuss implementation of this new and better reporting function with the staff of the House and Senate Transportation Committees.

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## Engineering Services

The Engineering Services Division, under the direction of Deputy Director Walt Olsen, includes Intergovernmental Policy Manager Jeff Mosen, Compliance and Data Analysis Manager Bob Moorhead, Maintenance Programs Manager Larry Pearson, Grant Programs Manager Randy Hart, and Road System Inventory Manager Don Zimmer. This small staff, most of whom hold Professional Engineer licenses, is directly responsible for the following functions:

- Functions related to the administration of the Rural Arterial Program, the County Arterial Preservation Program, and the County Ferry Capital Improvement Program;
- Functions related to the maintenance of the County Road Log and the computations and updates to the distribution of the counties' share of the motor vehicle fuel tax;
- Management of the reports and other information necessary for recommendations related to the Annual Certificate of Good Practice for each county;
- Guidance and research on statutory and regulatory issues affecting county road and public works departments;
- Assistance in representation of county engineer interests on a variety of state-level committees and task forces;
- Design and traffic engineering assistance to counties, as requested, including consultant selection assistance;
- Liaison services on behalf of county engineers with various state agencies, especially the H&LP Division of WSDOT.

CRAB acts as a clearinghouse for information requests, questions, and the exchange of ideas. With an emphasis on good communication, Engineering Services staff has worked with state transportation officials, resource agencies personnel, and public works departments as they strive to meet the transportation needs of their counties.

A final responsibility of the Engineering Services Division is the maintenance and updating of summary reports, guidance materials, and model documents, and the provision of training to County Engineers and their staffs.

Areas the Engineering Staff worked on extensively in 2010:

- Increased legislative attention on the balance of the Rural Arterial Trust Account dictated a review of the current Rural Arterial Program (RAP) process. Currently funded projects needed to advance to construction in less time to spend down the RAP balance and demonstrate that the requests are appropriate and legitimate. CRAB Staff efforts began in February 2010 by initiating the review in light of pending legislation addressing RAP funding and possible effort to consolidate CRAB with other transportation funding agencies. After eight internal staff review and brainstorming sessions over the next three months, the issue was advanced to introduction and review by the counties and the RAP regions:

May 4, 2010:	WSACE Western District Meeting at Olympia
May 5, 2010:	WSACE Eastern District Meeting at Ritzville
May 24, 2010:	Northwest Region RAP meeting at Mount Vernon
May 27, 2010:	Southeast Region RAP meeting at Pasco

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June 2, 2010: Southwest Region RAP meeting at Olympia  
June 7, 2010: Puget Sound Region RAP meeting at Olympia  
June 9, 2010: Northeast Region RAP meeting at Ephrata

CRAB Staff updated the CRABoard at the July 29, 2010, board meeting in Olympia and an ad-hoc committee of WSACE members was established. Members of the WSACE Ad-Hoc Committee were:

Malcolm Bowie, Benton County; Gary Ekstedt, Yakima County; Todd O'Brien, Adams County; Susan Oxholm, King County; Gary Predoehl, Pierce County; Monte Reinders, Jefferson County; Pete Ringen, Wahkiakum County; Joe Rutan, Whatcom County; Jim Whitbread, Stevens County; Bill Wright, Clark County; and Gary Rowe, WSACE

The ad-hoc committee met three times over the summer:

August 4, 2010: First WSACE Ad-Hoc Committee Review Meeting, Ellensburg  
August 25, 2010: Second WSACE Ad-Hoc Committee Review Meeting, Ellensburg  
September 15, 2010: Third WSACE Ad-Hoc Committee Review Meeting, Olympia

Final draft WAC revisions were presented to the CRABoard at the October 28, 2010, meeting and staff initiated the formal WAC amendment process with opening of public comment period and set a hearing date for a WAC Amendment at the CRABoard meeting on January 27, 2011.

- CRAB continued the County Engineer/Public Works Director training sessions this year and conducted training sessions May 4-6 and November 30 & December 1-2, 2010, at the CRAB office totaling over 400 person hours. This training was revised in 2009 to reflect the ever-changing climate of engineering, social, political, and environmental concerns. These intense sessions review the duties and responsibilities of the counties and the County Engineer. Another aspect of this training has been developed to allow modules of this training package be provided directly to a county or gathering of multiple counties at their site, and customized for their specific needs. Two of these customized sessions were conducted during 2010, one in Jefferson County and one in Grant County, totaling over 125 person hours.
- For many years, CRAB has provided County Engineers and other county Public Works staff a variety of information resources. One of these information resources is the County Engineers' and Public Works Directors' Manual which contains guidance on a variety of technical and administrative issues affecting county engineering functions. Following more than a year in development, a major revision to this document was released in November.

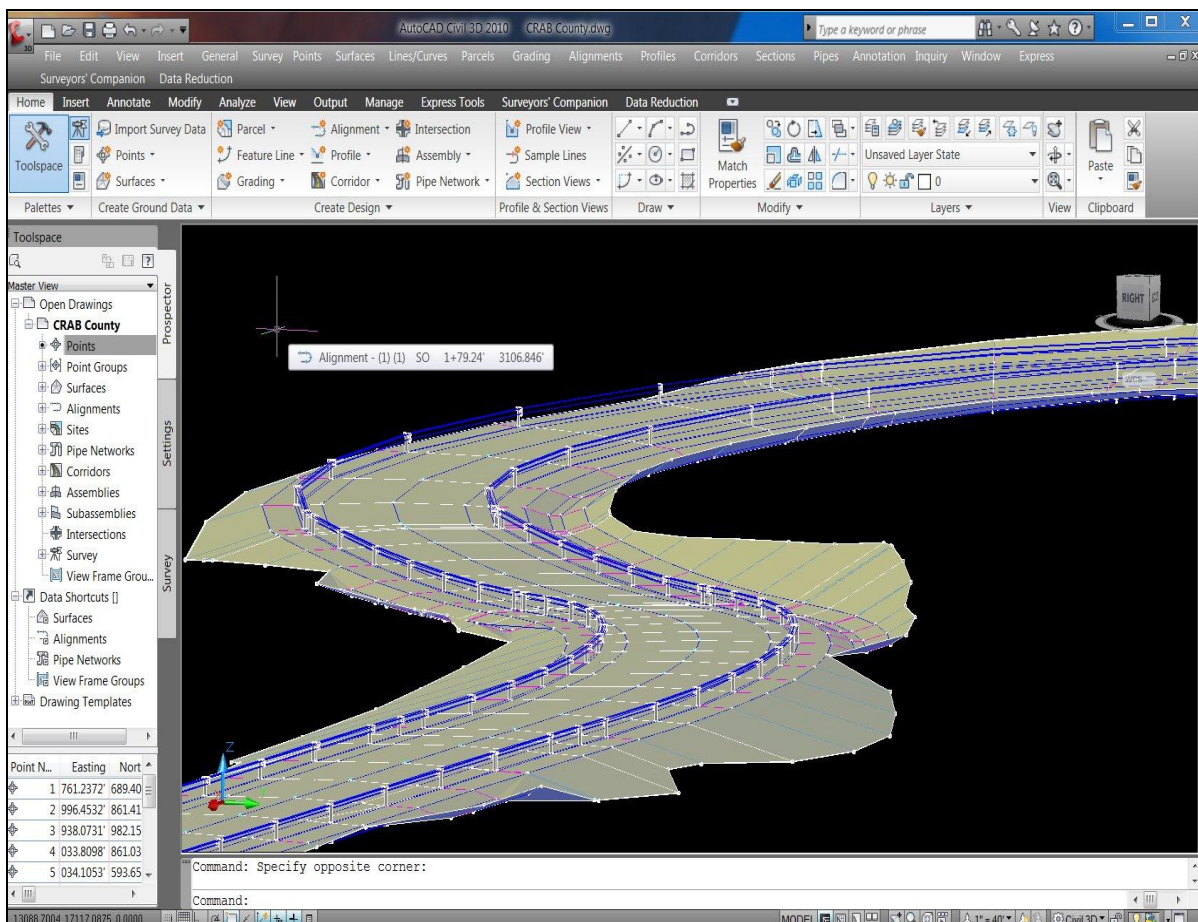
In addition to continued use as a hardcopy reference notebook, the design of the new Manual takes advantage of current internet technology through inclusion of over 1,500 internet "hotlinks" embedded within the document's text. While the revised Manual may contain less written detail on most topics, and is only half the number of pages from the previous version, the total number of topics covered has been expanded. When the document is open as an electronic file on a computer connected to the internet, the embedded "hotlinks" significantly expand the amount of information immediately available to the user.

Due to the magnitude of the changes presented in this new Manual, an update is planned mid-2011 in order address comments and suggestions from the initial users of the document.

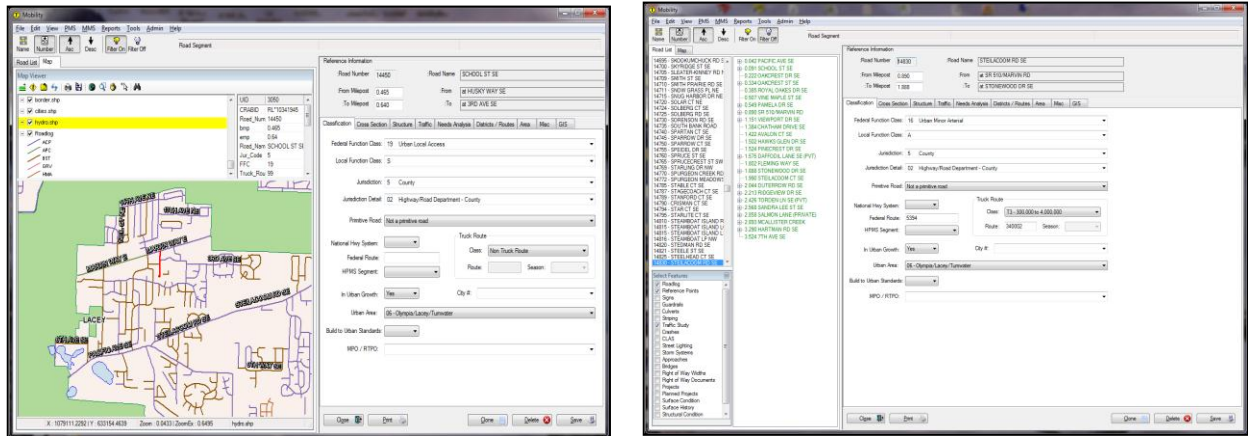
## Information Services

The Information Services Division at CRAB is a team of IT professionals dedicated to programs and initiatives, both at CRAB and in our counties, which protect and improve the public's investment in our transportation infrastructure. Two primary goals of the IT team are the continued smooth and efficient operation of this agency and ensuring that Washington's counties continue to effectively apply current and emerging technology. The first goal was accomplished by providing a progressive, stable and secure computing environment for agency staff. Developing and providing systems, training and consulting services specific to the needs of county road departments in Washington accomplished the second goal. In 2010 the Information Services team again made significant, unique and creative contributions to the initiatives of CRAB staff and to the design and management efforts of Washington counties.

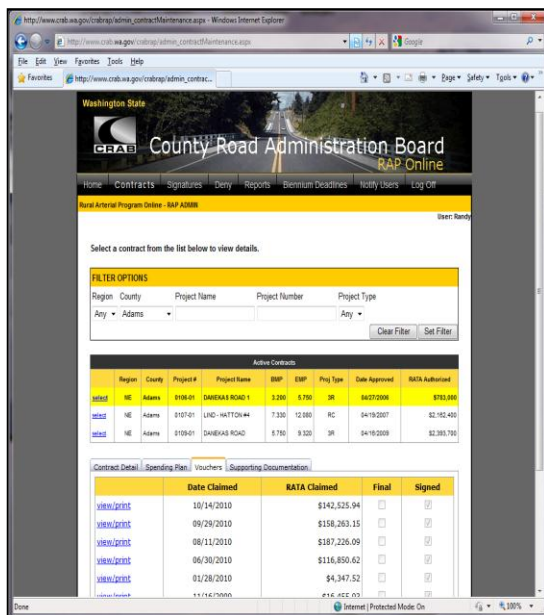
The CRAB Design Systems Program has consistently provided Washington county personnel with state-of-the-art engineering road design software including support and training since 1985. This program has enabled county design staff to effectively collect, develop and manipulate the geometric information necessary for site design and construction planning which has contained costs and improved productivity throughout the life of road projects. Currently CRAB provides road design software named *Eagle Point*®, free of charge, to Washington counties. CRAB also provides world-class consultation, support and training for both *Eagle Point*® and another industry leader, *AutoDesk Civil 3D*®. In addition to improved design and project savings, the savings to counties for user licensing, support, and training in design software by CRAB is hundreds of thousands of dollars each year.



CRAB Information Services developed and provides Washington counties with a comprehensive road inventory and management system named *Mobility@*, which enhances a county's ability to make quality decisions through consistent, equitable, and defensible management plans and operations. The systematic application of sound business logic embedded in *Mobility* ensures accountability in county road departments and assists county personnel in their compliance with reporting requirements to CRAB, the State Legislature, and federal entities. *Mobility* is a prime example of the economy-of-scale for which CRAB is well known, in that it saves the counties from spending millions on management systems that are neither as responsive to, nor as specific to, their needs as *Mobility*. Each year CRAB IT staff is able to enhance the functionality and usability of *Mobility* for the benefit of Washington county staff. *Mobility* release 3.0 in 2010 included a mapping tool which allows users to more easily navigate through, analyze and report on the wealth of road information in the system.



Another highlight of 2010 was the in-house development of a replacement for the agency software used to manage the Rural Arterial Program (RAP) funding of county road projects. The new software, called RAP Online, enables both CRAB staff and county project engineers to better manage the funding of their road projects. The online aspect of the software is particularly helpful in keeping the spending schedule of each project accurate. The counties can better commit to a timeline which allows CRAB to better manage the RAP fund balance.



The CRAB website effectively responds to citizens and government, informing and educating users in the initiatives of CRAB and the Counties. County personnel can find critical assistance for the effective operation and management of their road systems and assistance in compliance with law and regulation, along with schedules and forms necessary to that compliance. Citizens can find great detail on their county's road system, its road department, that department's funding, operations, construction and maintenance. Legislators can observe the breadth and detail of the accountability ensured by CRAB, as well as the good road work being done in their district. Please take time to visit this site at <http://www.crab.wa.gov> where you can learn much more about CRAB and the counties. After touring the general site you may want to spend some time perusing the massive amount of information under the Reference tab in the Library section.



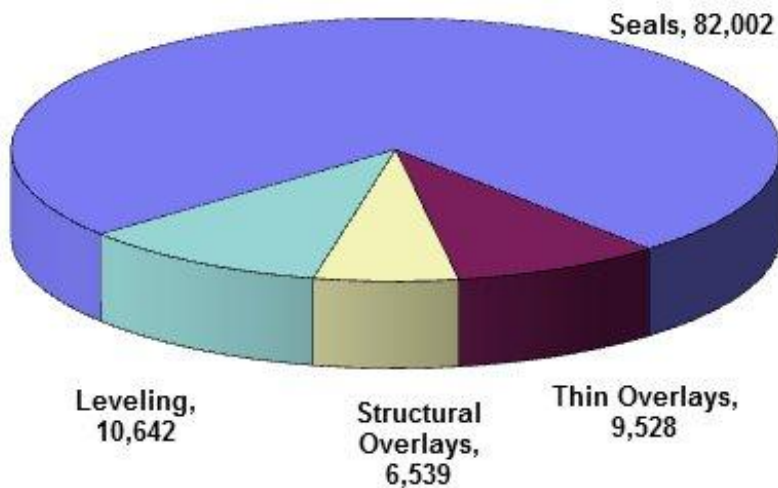
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## Grant Programs

### County Arterial Preservation Program (CAPP)

The County Arterial Preservation Account assists each county in preserving the condition of pavements on their entire arterial system, thereby avoiding costly rebuilding that would occur if the pavements were left untreated. The majority of the CAPA funds are used to resurface the roads through the application of seal coats, and account for about 8% of all funds used for pavement preservation. This is down from about 13% of all funds used in 1990 when the CAPA was created. The CAPA portion of the statewide fuel tax is 0.45 cents and provides \$16,000,000 annually to the counties.

**LANE MILES ACCOMPLISHED TO DATE,  
ALL FUNDS 1990 - 2009**



## Rural Arterial Trust Account (RATA)

RATA funds (created by legislature in 1983) address all major road condition deficiencies through rating criteria which are listed in statute (RCW 36.79), and fund the rehabilitation and reconstruction of the neediest county roads in each of the five RAP regions. Rural Farm to Market roads, for example, are usually the highest ranking regional projects since they endure the highest relative truck volumes and are usually unsafe due to undersized alignment and width. The RATA portion of the statewide fuel tax is 0.58 cents and provides \$19,000,000 annually.

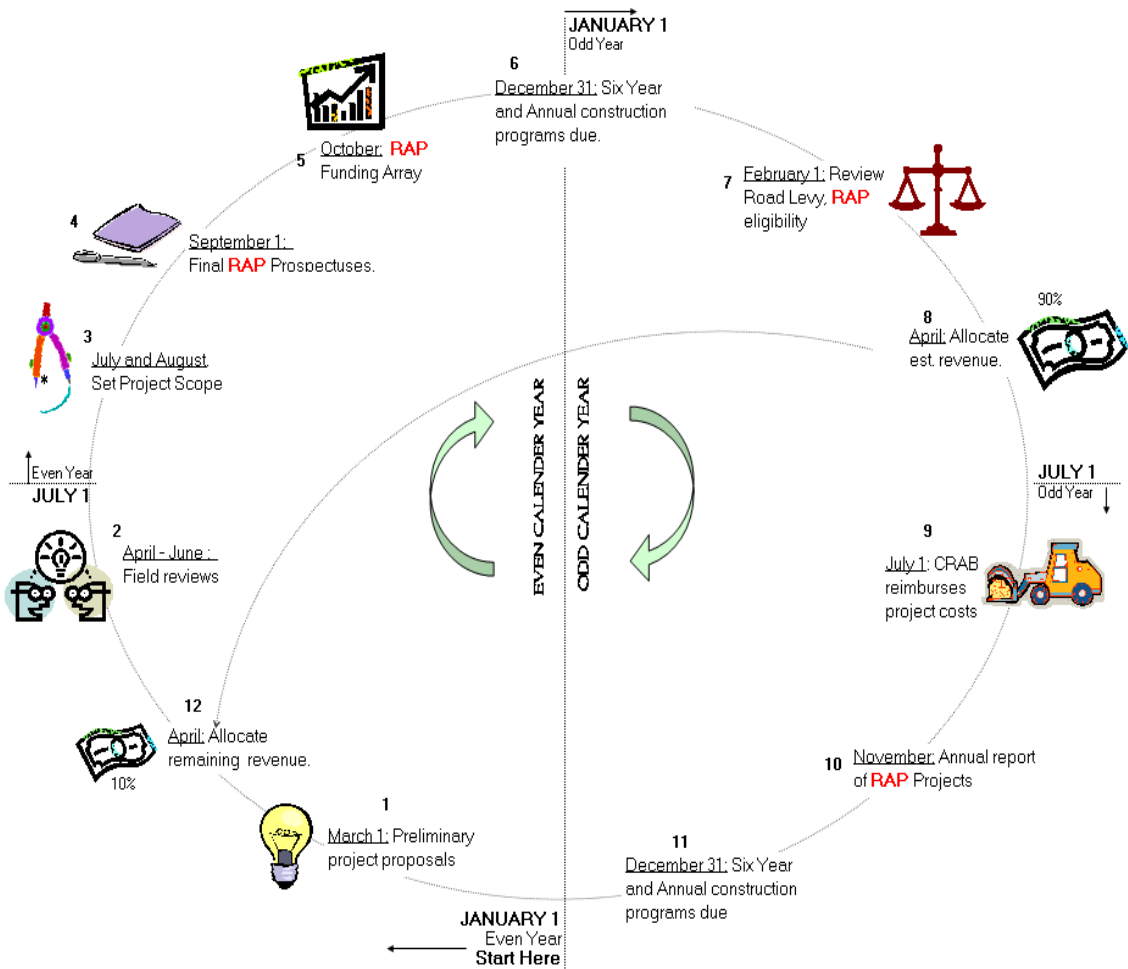
### RURAL ARTERIAL PROGRAM EXPENDITURES BY COUNTY AND LEGISLATIVE DISTRICT IN 2009

<u>COUNTY</u>	<u>LEG DIST</u>	<u>RATA \$'s RECEIVED</u>	<u>COUNTY</u>	<u>LEG DIST</u>	<u>RATA \$'s RECEIVED</u>
Adams	9	1,308,680	Kittitas	13	206,892
Asotin	9	12,287.13	Klickitat	15	2,938,334
Asotin	16	604,154	Lewis	18	19,174
Benton	8	48,448	Lewis	20	729,370
Benton	15	466,274	Lincoln	7	1,416,171
Benton	16	97,246	Mason	35	52,219
Chelan	12	1,698,376	Okanogan	12	2,024,931
Clallam	24	60,708	Pacific	19	50,581
Clark	17	950,000	Pend Oreille	7	1,251,054
Clark	18	185,014	Pierce	2	658,198
Columbia	16	100,055	Pierce	26	1,540,039
Cowlitz	18	928,516	Pierce	31	52,613
Cowlitz	19	55,637	San Juan	40	750,000
Douglas	12	1,405,252	Snohomish	39	157,336
Ferry	7	731,283	Spokane	4	182,273
Franklin	5	165,134	Spokane	7	8,275
Franklin	9	252,957	Stevens	7	1,096,035
Franklin	16	267,172	Thurston	2	5,419
Garfield	9	156,174	Thurston	20	1,626,457
Grant	13	1,006,000	Thurston	22	34,968
Grays Harbor	19	462,681	Thurston	35	3,083
Grays Harbor	24	143,771	Wahkiakum	19	44,454
Grays Harbor	35	10,580	Walla Walla	16	848,772
Island	10	313,744	Whitman	9	1,021,584
Jefferson	24	102,780	Yakima	13	199,624
Kitsap	35	1,021,364	Yakima	15	360,983
				TOTAL	29,833,126

## Submittal and Funding Process

The counties submit RAP projects based on safety, geometry, capacity *and* structural deficiencies. RATA (Rural Arterial Trust Account) funds are then awarded to the highest ranked (worst condition) project submittals in each region. RAP normally funds about 1/4 of the worst roads as demonstrated by the request list.

### RURAL ARTERIAL PROGRAM BIENNIUM CYCLE



## History of RATA Fund Usage per County

<u>REGION</u>	<u>COUNTY</u>	<u>TOTAL RATA</u> <u>APPROVED</u>	<u>TOTAL RATA</u> <u>SPENT</u>	<u>%</u> <u>SPENT</u>
	NE ADAMS	18,947,884	13,687,548	72%
	NE CHELAN	20,087,900	14,899,184	74%
	NE DOUGLAS	21,696,535	18,462,744	85%
	NE FERRY	17,886,230	11,376,802	64%
	NE GRANT	24,559,268	20,559,496	84%
	NE LINCOLN	21,653,720	15,991,253	74%
	NE OKANOGAN	17,632,382	12,461,235	71%
	NE PEND OREILLE	18,083,578	12,242,508	68%
	NE SPOKANE	29,166,191	20,936,638	72%
	NE STEVENS	24,413,785	16,636,445	68%
	NE WHITMAN	<u>22,449,612</u>	<u>17,245,797</u>	77%
NE REGION TOTALS		236,577,085	174,499,649	
	NW CLALLAM	8,025,076	6,396,528	80%
	NW ISLAND	14,555,700	7,864,489	54%
	NW JEFFERSON	6,943,240	3,126,092	45%
	NW KITSAP	10,678,550	6,790,914	64%
	NW SANJUAN	5,932,508	3,513,126	59%
	NW SKAGIT	7,438,733	4,908,371	66%
	NW WHATCOM	<u>10,932,182</u>	<u>7,545,033</u>	69%
NW REGION TOTALS		64,505,989	40,144,553	
	PS KING	13,180,107	9,765,326	74%
	PS PIERCE	12,782,486	9,323,255	73%
	PS SNOHOMISH	<u>10,931,971</u>	<u>8,919,809</u>	82%
PS REGION TOTALS		36,894,564	28,008,390	
	SE ASOTIN	12,053,811	9,077,842	75%
	SE BENTON	16,462,553	9,570,875	58%
	SE COLUMBIA	11,993,271	7,447,375	62%
	SE FRANKLIN	12,511,886	8,733,641	70%
	SE GARFIELD	11,397,743	9,369,568	82%
	SE KITTITAS	15,737,770	10,512,235	67%
	SE KLICKITAT	18,214,953	13,937,665	77%
	SE WALLA WALLA	14,867,590	12,413,568	83%
	SE YAKIMA	<u>20,127,291</u>	<u>13,492,097</u>	67%
SE REGION TOTALS		133,366,868	94,554,867	
	SW CLARK	9,413,718	8,001,765	85%
	SW COWLITZ	11,178,406	9,548,285	85%
	SW GRAYS HARBOR	13,279,248	11,118,209	84%
	SW LEWIS	8,982,446	5,159,237	57%
	SW MASON	13,538,031	7,267,928	54%
	SW PACIFIC	9,622,465	7,148,035	74%
	SW SKAMANIA	2,175,968	1,687,107	78%
	SW THURSTON	12,829,268	9,036,713	70%
	SW WAHKIAKUM	<u>5,696,986</u>	<u>3,030,873</u>	53%
SW REGION TOTALS		86,716,536	61,998,153	
	STATEWIDE TOTAL	558,061,042	383,841,079	69%

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## 2009/2010 Grant Program Projects

### RAP Funded Improvements Enhance Safety on Benton County's Webber Canyon Road

Webber Canyon is one of three highways (one state highway and two county roads) that come off of the Horse Heaven Hills, and heavily traveled with over a 20% truck count. The Benton County Sheriff would not stop anyone on the road because they felt it was too unsafe to have anyone stopped along the road due to substandard sight distance. Today the road is built to a 70 mph standard, except where it approaches Kiona and is designed for 50 mph.



*Curves dangerously hid traffic on the old alignment.*

Benton County completed the Webber Canyon Project from Dennis Road to Kiona in 2009. The total project costs were a combination of three contracts, a crushing contract where the surfacing was crushed ahead of time, a major large canal realignment that had to be done when the irrigation water was turned off, and the final contract was for the road work. The total project costs were \$6,628,966. The revenues for the project were RATA funds of \$1,300,000, Federal funds of \$3,040,116, and County funds of \$2,288,850.



*Straightened curves improve view of travel ahead.*

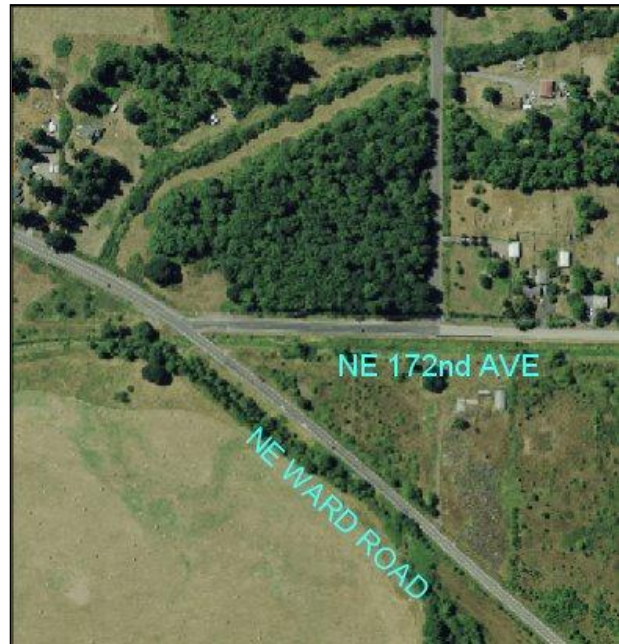
## Clark County's Ward Road/NE 172<sup>nd</sup> Avenue Intersection Realignment Project

### Existing Conditions and Issues:

Ward Road / 172<sup>nd</sup> Avenue had a tee intersection that was stop controlled only on the north (172<sup>nd</sup> Avenue) leg. The intersection had single travel lanes on each approach, with the north leg at a significant angle to Ward Road. The intersection had a high accident history due to increasing traffic and the lack of turning lanes. More than 12,000 vehicles travel this section of NE Ward Road daily. Based on 2007 traffic data, this intersection has the 7<sup>th</sup> highest accident rate in Clark County. The roadway has two travel lanes and minimal shoulders. China Ditch Creek runs north and south along 172<sup>nd</sup> Avenue and crosses under Ward Road, which drains into Fifth Plain Creek.

### Project Description:

Nutter Corporation was awarded the bid and started construction in May 2009. The road was open again to the public in October 2009. The \$9 million project consists of intersection improvements at NE Ward Road and NE 172<sup>nd</sup> Avenue and included the installation of a new traffic signal. The improvements to NE Ward Road included widening the roadway to include two travel lanes and a center left turn lane. NE 172<sup>nd</sup> Avenue was realigned from NE 99<sup>th</sup> Street to intersect with NE Ward Road at a 90-degree angle. The improvements to NE 172<sup>nd</sup> Avenue included: two travel lanes, a center left turn lane, bicycle lanes, and sidewalks on each side of the roadway. The major efforts were devoted to construction of two bridges over China Ditch, drainage improvements including water quality and water quantity treatment and guardrail.



The project design incorporates new storm water treatment facilities, and wetland and habitat area improvements to offset the environmental impacts of the roadway realignment.

### FUNDING:

County	\$6,889,423
RATA Funds	\$ 950,000
STP Rural	\$ 89,501
TIF	\$ 39,000
PWTF Loan	<u>\$1,200,000</u>
Total	\$9,012,750

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## Douglas County gives Moses Coulee Road a Lasting Pavement Upgrade



*The old surface: rutted, worn, and dangerous.*

Moses Coulee Road is located in the south-central portion of Douglas County between Road 24 NW and State Route 2. It is designated as a major collector and provides a regionally important connection between farm areas on the Columbia Plateau and agricultural transportation and storage facilities along the Columbia River. The road has a rolling profile and a relatively narrow and meandering alignment. Prior to reconstruction, the roadway had an inadequate road section of approximately one inch of asphalt pavement over several inches of base material.

### Public Input and Support

In 2005, use of Moses Coulee Road by heavy agricultural equipment and grain trucks caused the roadway to disintegrate. The spalling asphalt was graded to the shoulder, degraded subgrade was covered with crushed rock, and the road closed to truck traffic. Use of the roadway by local residents, agricultural users, and grain haulers was restricted until the roadway could be reconstructed to Douglas County standards. Repair of Moses Coulee Road became the top engineering and construction priority at the County.



*The value of revived surfacing structure is obvious.*

Reconstruction of this section of roadway would provide structural and long-term benefits to the users of the regional transportation system by improving traveler convenience and safety, reducing roadway maintenance costs, and improving farm-to-market travel conditions.

### Engineering and Construction

Moses Coulee road was widened to 28 feet and reconstructed with a roadway section consisting of 2.5 inches of HMA over 12 inches of crushed surfacing. Guardrail was added where required and several clear zone obstructions removed. Side slopes and drainage systems were improved along the length of the corridor to protect the integrity of the roadway. The improvements eliminated closure requirements, provided safer driving conditions, and improved the reliability of the route for farm-to-market activities.

#### FUNDING:

RATA Funds	\$1,480,666
County	\$164,518
Total	\$1,645,184

#### CONTRACTOR:

Mitchell Trucking and Paving, Inc.

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## Grant County's 4-NE Road Gets a Full Make-Over with RATA Funding

4-NE Road is a Rural Minor Collector with an ADT of 1,500 and is located just outside the City of Moses Lake between Road K-NE and Road L-NE. The existing road was narrow (pavement width 23 feet) and on the western end of the project a vertical curve and steep side slopes did not meet current standards. This project widened the road to a 40 foot width Hot Mix Asphalt surface with bike lanes on each side. The vertical alignment was improved to current standards and the steep side slopes were flattened and/or guardrail installed. The project started in August 2010 and was completed in October 2010.



*Before improvement, narrow and breaking down.*



*A wider, stronger and safer 4-NE Road.*

### FUNDING:

RATA Funds	\$422,000
Contract Bid Price:	\$515,316

### CONTRACTOR:

Central Washington Asphalt, Inc.



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## RAP Emergency Funding Helps Replace Grays Harbor's Porter Creek Bridge

Record flood waters in the Chehalis River during the December 2007 flood disaster scoured out several pilings supporting the Porter Creek Overflow Bridge. This hazardous condition prompted the county to immediately close the road to traffic. Although temporary repairs were made right after the flood waters receded, Federal Emergency Relief funding was granted in 2008 to do a replacement project. With the federal funds approved, matching funds were provided by the Rural Arterial Program from CRAB in 2009. A new bridge 226-feet long and 38-feet wide has replaced the old bridge which was 222-feet long and 24-feet wide. The new bridge was opened to traffic 25 months after the flood event. A thin low profile bridge was built with a curb and railing system that allows water to flow through it during extreme floods without damaging the new structure.



*The old structure sustained serious pile damage.*

**DESIGN:**

Exeltech of Lacey, Washington

**CONTRACTOR:**

Rognlin's Inc. of Aberdeen, Washington

**PROJECT COST:** \$1,700,000

**RAP EMERGENCY FUNDING:** \$225,000



*The old bridge was deficient in other ways.*



*The new bridge, built with a thin, water-shedding profile.*

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## Dosewallips Road Makes use of RATA Emergency Funding



Dosewallips Road is a rural minor collector that provides sole access to residents, businesses, and Olympic National Forest and National Park. Due to heavy rainfall on November 16 – 20, 2009 and the resulting saturation, Dosewallips Road suffered significant sliding that prompted Jefferson County to close the road, declare an emergency and activate emergency response on November 20, 2010.

Since the road is an “off – system” minor collector, it was not eligible for FHWA ER (Emergency Relief) funding, managed by the WSDOT. Additionally, neither the Federal Emergency Management Agency (FEMA) nor the State of Washington declared the November 19 event an emergency given its localized nature. Although the Dosewallips Road is a Forest Highway, emergency funds were not available through this program either. Nevertheless the project met the emergency conditions of RATA funding and the County was awarded \$161,152 in RATA funding at the April 2010 meeting of the CRABoard.

Repair work placed approximately 4,000 tons of rip rap for the fill that slid away. Since the toe of the slide was located about 60 feet below the road surface at a 40 degree slope, repairing the slope was a challenge for the contractor, who used multiple excavators to relay material. Since the Dosewallips Road is the sole access for residents, repairs had to be completed quickly to restore access and prevent further damage. The majority of the slide repair was completed within 7 working days. Final project cost was \$192,000.



### **County note:**

A substantial amount of regular road funding has been lost from the curtailment in 2011 of the Secure Rural Schools federal timber program. Therefore Jefferson County faces severe challenges when it comes to maintaining a road system built using timber revenues. The RATA emergency program represented the only source of funding for this repair and is very important to counties like Jefferson County. The County is very grateful for the support of the County Road Administration Board for its authorization of these RATA funds.

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## Mason County Solves Johns Prairie Road Traffic and Safety Demands with RAP Funded Improvements

Johns Prairie Road is the main corridor from the North Shelton area to State Route Highway 3. This is also a heavily used truck route to and from commercial businesses such as the Port of Shelton's pole yard facility or various lumber facilities as well as the PUD No. 3's new operations facility.



*The old road was narrow with undefined shoulders.*

The road was built in the 1920's and was a dirt road with BST surfacing. The completed road reconstruction consists of a roadway base with an asphalt pavement surface. The horizontal alignment of the road was redesigned to relax some of the substandard curves which were documented with a history of accidents.

The roadway was improved from an existing 20 foot width BST road with 2 foot shoulders to 24 feet paved lane width with 8 foot shoulders on each side. The new roadway was designed around the existing utilities to minimize impacts and costs.

The project was constructed by Active Construction and the total cost was \$552,351 with RATA providing \$363,000 of that amount.



*Work commences to widen, add base material and drainage.*



*The new and safer Johns Prairie Road.*

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## Walla Walla County Fixes Deficient McDonald Road and Bridge with RATA Funds

McDonald Road is a major collector route that serves the transportation needs of local residents and farmers doing business in Walla Walla, parts of Oregon and areas to the west. It links agricultural harvest from the south end of the county to State Highway 12 and the rest of the state.



Project work started at the Frog Hollow Road intersection and ends a short distance south of the Walla Walla River Bridge. McDonald Road was reconstructed and now has a paved width of 32 ft. The existing structurally deficient bridge (posted) at Burlingame ditch was replaced with an aluminum box culvert. All culverts crossing the road were replaced to meet the wider roadway conditions. Temporary culvert bypasses were installed during culvert placement to ensure irrigation was not disrupted. Detour Road was also reconstructed to approximately 200 ft. each side of the intersection with McDonald Road.

CONTRACTOR: Humbert Ashpalt, Inc. of Milton-Freewater, Oregon

COUNTY FUNDS:	\$183,600
RATA FUNDS:	\$1,652,400
TOTAL PROJECT COST:	\$1,836,000

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## Kitsap County Builds Crucial Improvements to NE Cliffside Road

RAP funded improvements to NE Cliffside Road consisted of widening and resurfacing 0.57 miles of a rural minor collector roadway. This project corrected one substandard horizontal curve and one substandard vertical curve. The widening resulted in eleven foot lanes with four foot paved shoulders. In the eastern portion of the project the alignment was revised to make Cliffside Road the thru route to Hansville Road and the Little Boston Road intersection became stop sign controlled at Cliffside Road.



Storm-water improvements consisted of improved collection and conveyance systems, a storm-water detention tank with treatment vault, compost amended vegetated filter strips and a storm-water detention pond for improved water quantity and quality control. This segment of roadway has an ADT of 2,024 and a heavy truck ADT of 133.

TOTAL PROJECT COST: \$ 1,340,455  
RATA FUNDING: \$750,000  
DESIGN: Kitsap County  
CONSTRUCTION: Seton Construction, Inc.

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**Table A**

# COUNTY BRIDGE DATA - NOVEMBER 2010

## Washington State Bridge Inventory System

Bridges 20 Feet or Greater in Length on Federal Aid (FAR) and Non Federal Aid (NFAR) Routes  
 Posting Consideration Based on HS-20 Design Load, less than 28 Tons at Operating Rating

COUNTY	County Owned Bridges	Bridges Posted or May Consider Posting				Bridges With Posting Not Required				Deficient Bridges**
		FAR	Square Feet	NFAR	Square Feet	FAR	Square Feet	NFAR	Square Feet	
ADAMS	115	0	0	6	8,336	32	67,488	77	94,285	21
ASOTIN	16	0	0	0	0	12	136,406	4	4,321	2
BENTON	50	1	1,260	2	2,076	16	62,307	31	31,320	9
CHELAN	50	1	10,060	3	4,451	18	86,950	28	68,268	14
CLALLAM	28	1	10,967	3	6,010	10	53,242	14	40,219	7
CLARK	59	2	2,452	2	2,950	27	103,773	28	53,982	21
COLUMBIA	62	1	1,209	4	5,780	18	29,057	39	64,465	8
COWLITZ	62	2	7,546	5	23,224	21	86,144	34	77,624	15
DOUGLAS	21	2	11,224	2	3,237	10	17,319	7	6,661	2
FERRY	21	0	0	3	4,835	5	8,494	13	19,734	7
FRANKLIN	85	0	0	3	2,223	18	36,289	64	89,698	5
GARFIELD	32	1	1,695	0	0	13	12,801	18	17,573	5
GRANT	190	2	1,306	8	10,243	51	140,091	129	217,386	10
GRAYS HARBOR	158	3	2,480	5	10,641	65	314,150	85	211,579	24
ISLAND	0	0	0	0	0	0	0	0	0	0
JEFFERSON	27	1	1,078	0	0	7	15,092	19	61,472	5
KING	127	2	49,852	11	22,379	67	357,052	47	123,780	47
KITSAP	29	0	0	4	4,592	16	69,079	9	16,732	7
KITTITAS	109	5	5,130	11	9,501	22	76,227	71	122,723	2
KLICKITAT	57	3	6,760	7	11,067	10	29,763	37	74,414	15
LEWIS	191	6	9,252	5	11,598	38	146,058	142	266,131	26
LINCOLN	121	0	0	9	6,903	29	47,817	83	113,736	12
MASON	52	0	0	2	3,767	13	77,926	37	67,084	14
OKANOGAN	51	0	0	2	2,155	13	63,016	36	52,654	6
PACIFIC	61	2	4,296	3	2,990	7	24,648	49	128,391	11
PEND OREILLE	23	2	22,672	2	1,131	8	77,417	11	12,931	8
PIERCE	101	5	53,857	1	1,350	60	234,902	35	51,075	40
SAN JUAN	3	0	0	1	1,284	0	0	2	1,037	2
SKAGIT	102	1	2,475	12	18,010	41	192,510	48	101,697	25
SKAMANIA	26	0	0	2	3,570	5	30,218	19	53,272	6
SNOHOMISH	165	11	20,505	11	13,345	76	406,670	67	227,388	47
SPOKANE	101	6	9,404	8	9,161	29	193,614	58	125,139	22
STEVENS	48	0	0	0	0	7	24,634	41	72,916	6
THURSTON	93	0	0	0	0	26	121,704	67	184,854	26
WAHKIAKUM	20	0	0	2	4,597	8	24,306	10	16,826	3
WALLA WALLA	105	2	4,980	1	886	45	118,123	57	120,050	13
WHATCOM	135	4	12,748	10	19,943	32	102,614	89	146,922	20
WHITMAN	249	4	14,123	17	13,579	49	92,196	179	279,944	59
YAKIMA	299	7	30,364	10	12,350	74	217,066	208	376,036	46
<b>TOTAL</b>	<b>3,244</b>	<b>77</b>	<b>297,695</b>	<b>177</b>	<b>258,164</b>	<b>998</b>	<b>3,897,163</b>	<b>1,992</b>	<b>3,794,319</b>	<b>618</b>
Total Replacement Cost* (\$ Million):			<b>\$171</b>		<b>\$148</b>		<b>\$2,241</b>		<b>\$2,182</b>	

\*At \$575 per Square Foot

\*\* Deficient Bridges are listed as Structurally Deficient (SD) or Functionally Obsolete (FO).

**Table B**

**ACTUAL COUNTY ROAD RELATED EXPENDITURES**

Including RAP and CAPP

**2009**

(thousands of dollars)

COUNTY	CONST	MAINT	ADMIN & OPER	FACIL	FERRY	REIMB	BOND WARRANT RETT	TRAFFIC POLICING **	OTHER ***	TOTAL INCLUDES RAP & CAPP	RAP	CAPP
ADAMS	844	3,660	1,242	0	0	30	0	0	69	5,845	1,309	631
ASOTIN	3,949	1,679	776	0	0	0	0	0	0	6,404	616	119
BENTON	7,427	5,609	1,857	0	0	545	211	0 *	10	15,659	612	349
CHELAN	4,571	6,226	2,238	0	0	0	0	0	102	13,137	1,698	273
CLALLAM	7,859	6,747	2,445	0	0	730	0	290	402	18,473	61	150
CLARK	23,892	14,956	1,826	0	0	0	4	0 *	17,971	58,649	1,135	0
COLUMBIA	598	2,316	362	0	0	0	0	0	27	3,303	100	163
COWLITZ	6,351	8,687	2,601	533	0	0	85	0 *	2,289	20,546	984	259
DOUGLAS	5,232	4,507	2,196	0	0	64	732	0	1,130	13,861	1,405	342
FERRY	1,124	2,312	377	0	0	0	154	0	854	4,821	731	391
FRANKLIN	3,392	3,675	1,068	0	0	269	153	0	500	9,057	685	401
GARFIELD	272	1,516	600	0	0	82	0	0	0	2,470	156	146
GRANT	5,926	11,399	1,609	2,155	0	97	2	502	403	22,093	1,006	968
GRAYS HARBOR	1,186	5,491	2,242	0	0	338	0	0	3,410	12,667	617	283
ISLAND	3,019	6,776	2,643	0	0	223	181	0	1,752	14,594	314	251
JEFFERSON	1,514	3,700	1,418	0	0	70	39	0 *	644	7,385	103	197
KING	28,188	66,414	18,158	1,976	0	14,557	3,915	5,703	30,273	169,184	0	666
KITSAP	11,609	11,135	9,280	0	0	924	84	0 *	835	33,867	1,021	367
KITKITAS	1,841	3,363	1,173	0	0	283	126	78	1,294	8,158	207	500
Klickitat	7,397	4,730	561	0	0	98	1	0	201	12,988	2,938	391
LEWIS	6,122	12,266	3,812	0	0	0	2	787	1,124	24,113	749	331
LINCOLN	3,291	4,264	1,089	0	0	121	0	0 *	87	8,852	1,416	438
MASON	4,883	5,679	2,315	0	0	0	2,384	0 *	654	15,915	52	0
OKANOGAN	366	3,584	2,018	1,535	0	0	382	0	1,427	9,312	2,025	20
PACIFIC	713	3,824	639	0	0	139	0	323	35	5,673	51	2
PEND OREILLE	4,778	3,466	339	0	0	0	3,234	0	565	12,382	1,251	274
PIERCE	25,861	25,725	26,661	0	3,991	48	475	2,500	13,840	99,101	2,251	812
SAN JUAN	4,144	4,096	1,736	0	0	0	395	75	528	10,974	750	100
SKAGIT	4,056	7,543	5,677	297	1,567	90	0	0	3,614	22,844	0	410
SKAMANIA	290	4,059	673	0	0	0	0	0	378	5,400	0	0
SNOHOMISH	54,830	27,906	22,233	637	0	12,890	528	0	9,596	128,620	157	575
SPOKANE	8,520	17,448	6,387	0	0	3,634	823	0 *	1,468	38,280	191	857
STEVENS	4,053	5,933	875	0	0	89	0	0	0	10,950	1,096	364
THURSTON	11,877	14,267	7,833	541	0	0	0	2,041	6,370	42,929	1,670	405
WAHIAKUM	2,134	706	219	0	756	30	0	0	473	4,318	44	91
WALLA WALLA	4,992	5,120	1,895	0	0	143	0	0	0	12,150	849	449
WHATCOM	9,009	9,544	4,238	0	2,543	519	0	0 *	1,866	27,719	0	419
WHITMAN	3,699	4,712	1,148	0	0	0	0	83	0	9,642	1,022	484
YAKIMA	6,438	9,741	3,368	0	0	150	1,003	0	295	20,995	561	852
<b>TOTAL</b>	<b>286,247</b>	<b>344,781</b>	<b>147,827</b>	<b>7,674</b>	<b>8,857</b>	<b>36,163</b>	<b>14,913</b>	<b>12,382</b>	<b>104,486</b>	<b>963,330</b>	<b>29,833</b>	<b>13,730</b>

% OF TOTAL      29.7%      35.8%      15.3%      0.8%      0.9%      3.8%      1.5%      1.3%      10.8%

Construction expenditure amounts do not include State ad & award Federal Aid participation.

Source: County Reports to D.O.T. Secretary of Transportation

\* Traffic Policing funds paid from diverted road levy

\*\* Road Fund portion only

\*\*\* "Other" includes facilities, operations and transfers



Table C

# ANTICIPATED COUNTY ROAD FUND REVENUE 2010 BUDGETS

(thousands of dollars)

COUNTY	BEGIN FUND BAL	MOTOR VEHICLE FUEL TAX					TAXES			MSC				TOTAL
		COUNTY		OTHER			PROP- ERTY	FOREST HARVEST	OTHER TAXES	FED GRANTS	FED LANDS	REIMB	OTHER	
		REGULAR	TIB	RAP	CAPP	MVFT								
ADAMS	1,500	3,981	0	847	683	0	1,350	0	8	746	1	13	68	9,197
ASOTIN	400	1,531	0	2,130	129	0	969	2	2	4,117	54	0	75	9,409
BENTON	2,683	3,085	12	2,872	379	0	5,310	0	135	3,978	0	715	1,150	20,319
CHELAN	2,069	2,269	0	750	298	0	6,713	10	40	2,298	891	6	473	15,817
CLALLAM	9,807	1,900	0	832	148	400	6,296	303	6	1,530	5,410	64	3,618	30,314
CLARK	5,598	6,916	0	0	633	9,045	32,677	370	293	8,581	8	0	57,388	121,509
COLUMBIA	833	1,318	0	0	164	0	748	0	0	1,092	0	0	43	4,198
COWLITZ	616	2,277	0	2,880	280	0	8,606	700	60	5,971	151	230	912	22,683
DOUGLAS	1,651	3,250	16	0	298	11,407	4,090	0	107	370	0	49	641	21,879
FERRY	1,000	1,739	0	0	222	0	586	5	0	1,528	302	5	88	5,475
FRANKLIN	250	2,700	0	2,797	430	0	2,435	0	10	2,034	71	50	77	10,854
GARFIELD	1,154	1,220	0	0	160	0	253	7	2	226	100	200	66	3,388
GRANT	4,286	6,200	0	423	1,054	0	7,951	0	1,400	2,135	132	250	185	24,016
GRAYS HARBOR	1,817	2,305	0	1,770	0	307	5,048	300	20	4,160	227	57	1,094	17,105
ISLAND	0	2,272	0	3,482	0	4,621	7,460	0	2	2,612	0	0	221	20,670
JEFFERSON	4,831	1,395	0	559	163	0	3,673	95	5	3,475	1,150	51	296	15,693
KING	2,389	15,087	0	0	0	0	82,907	254	30	110,909	897	41,783	80,132	334,388
KITSAP	11,611	5,283	0	1,997	398	0	24,799	0	50	998	0	25	518	45,679
KITTITAS	8,578	1,827	0	555	865	0	3,630	0	15	897	250	106	1,877	18,600
KLICKITAT	603	2,400	0	800	375	0	3,118	100	8	1,135	64	5	3,028	11,636
LEWIS	7,923	3,300	50	63	360	556	8,365	750	6	12,871	1,691	70	1,545	37,550
LINCOLN	700	4,101	0	2,200	477	24	1,618	0	6	1,500	0	0	208	10,834
MASON	2,252	2,000	0	1,225	334	0	8,210	350	30	3,656	285	430	631	19,403
OKANOGAN	200	3,326	0	700	511	0	3,845	0	0	224	790	0	139	9,735
PACIFIC	2,023	1,118	0	774	151	0	2,774	0	7	0	12	65	373	7,297
PEND OREILLE	780	1,500	0	0	180	283	1,160	75	0	3,193	450	40	274	7,935
PIERCE	15,352	10,000	3,356	1,382	850	125	47,396	200	20	5,061	865	2,135	25,081	111,823
SAN JUAN	1,500	918	0	540	109	2,500	2,954	0	4	200	0	45	86	8,856
SKAGIT	7,809	3,042	0	0	446	100	11,569	150	45	7,620	416	0	3,078	34,275
SKAMANIA	621	854	0	352	108	900	1,450	135	8	837	803	32	88	6,188
SNOHOMISH	21,367	10,054	2,301	0	627	928	51,406	300	250	3,003	0	7,316	36,513	134,065
SPOKANE	3,720	9,032	0	303	932	628	15,280	23	41	6,283	9	486	7,584	44,321
STEVENS	2,000	3,312	0	154	520	0	4,325	150	0	3,000	200	40	71	13,772
THURSTON	8,881	5,013	2,000	244	436	0	16,176	240	25	4,950	203	5,065	8,274	51,507
WAHIAKUM	400	825	0	62	99	450	400	120	4	8,042	0	0	642	11,044
WALLA WALLA	3,700	2,604	0	376	412	0	4,475	0	40	4,014	1	0	211	15,833
WHATCOM	12,858	3,914	0	0	457	0	16,680	100	25	6,065	400	1,125	827	42,451
WHITMAN	5,500	3,600	0	545	500	0	1,954	0	20	2,186	0	55	17	14,377
YAKIMA	3,333	5,766	0	2,321	1,270	0	12,184	0	0	5,642	1,238	0	1,341	33,095
<b>TOTAL</b>	<b>162,595</b>	<b>143,234</b>	<b>7,735</b>	<b>33,935</b>	<b>15,458</b>	<b>32,274</b>	<b>420,840</b>	<b>4,739</b>	<b>2,724</b>	<b>237,139</b>	<b>17,071</b>	<b>60,513</b>	<b>238,933</b>	<b>1,377,190</b>

% OF TOTAL      11.8%    10.4%    0.6%    2.5%    1.1%    2.3%    30.6%    0.3%    0.2%    17.2%    1.2%    4.4%    17.3%

Table D

ANTICIPATED COUNTY ROAD FUND EXPENDITURES  
2010 BUDGETS  
(thousands of dollars)

COUNTY	CONST	MAINT	ADMIN & OPER	FACIL	FERRY	REIMB	BOND WARR RETT	TRAFFIC POLICING	OTHER	TOTAL	END FUND BAL	GRAND TOTAL
ADAMS	1,903	4,653	1,117	0	0	63	0	0	71	7,807	1,390	9,197
ASOTIN	6,350	1,952	607	0	0	0	0	0	100	9,009	400	9,409
BENTON	10,179	6,383	1,959	0	0	1,107	212	477	2	20,319	0	20,319
CHELAN	3,892	7,055	2,012	0	0	0	0	0	0	12,959	2,858	15,817
CLALLAM	10,775	5,560	2,642	20	0	518	0	234	78	19,827	10,487	30,314
CLARK	43,457	18,831	8,395	1,310	0	0	0	4	43,914	115,911	5,598	121,509
COLUMBIA	1,094	1,864	317	10	0	0	130	0	13	3,428	770	4,198
COWLITZ	1,951	8,742	2,335	838	0	416	0	837	3,777	18,896	3,787	22,683
DOUGLAS	12,422	5,627	2,580	0	0	49	555	0	50	21,283	596	21,879
FERRY	1,562	2,165	550	450	0	100	4	0	152	4,983	492	5,475
FRANKLIN	5,493	3,371	1,080	0	0	115	470	0	75	10,604	250	10,854
GARFIELD	300	1,330	515	0	0	15	0	0	63	2,223	1,165	3,388
GRANT	3,100	11,305	1,643	125	0	50	2	625	618	17,468	6,548	24,016
GRAYS HARBOR	7,580	7,115	1,829	0	0	400	0	0	0	16,924	181	17,105
ISLAND	9,218	5,992	2,539	171	0	170	178	0	2,402	20,670	0	20,670
JEFFERSON	2,157	3,921	1,369	100	0	51	41	720	3,797	12,156	3,537	15,693
KING	180,212	52,011	17,241	1,601	0	13,643	4,276	4,000	59,971	332,955	1,433	334,388
KITSAP	6,933	13,350	11,202	6	0	350	374	1,739	579	34,533	11,146	45,679
KITTITAS	5,604	3,880	1,367	20	0	580	0	0	739	12,190	6,410	18,600
KLICKITAT	5,664	4,986	725	14	0	55	1	0	5	11,450	186	11,636
LEWIS	17,620	11,118	2,869	40	0	1	0	0	1,075	32,723	4,827	37,550
LINCOLN	4,500	4,119	828	100	0	64	0	922	1	10,534	300	10,834
MASON	9,251	5,017	2,600	300	0	0	0	0	2,116	19,284	119	19,403
OKANOGAN	880	4,584	921	239	0	13	377	0	2,001	9,015	720	9,735
PACIFIC	1,650	3,250	597	0	0	86	0	307	0	5,890	1,407	7,297
PEND OREILLE	3,618	2,334	914	30	0	249	451	56	50	7,702	233	7,935
PIERCE	34,558	27,283	31,816	0	530	2,135	2,879	0	4,259	103,460	8,363	111,823
SAN JUAN	1,634	4,246	1,754	125	0	45	394	0	43	8,241	615	8,856
SKAGIT	11,368	9,758	6,487	738	1,808	107	0	1,350	834	32,450	1,825	34,275
SKAMANIA	2,005	3,290	0	0	0	0	0	0	0	5,295	893	6,188
SNOHOMISH	56,527	28,747	24,709	2,128	0	13,037	577	0	8,340	134,065	0	134,065
SPOKANE	13,065	15,737	7,582	154	0	2,338	825	0	1,179	40,880	3,441	44,321
STEVENS	3,170	7,093	999	475	0	35	0	0	0	11,772	2,000	13,772
THURSTON	15,754	14,159	9,570	375	0	0	0	0	5,139	44,997	6,510	51,507
WAHKIAKUM	7,918	747	232	28	710	25	806	0	578	11,044	0	11,044
WALLA WALLA	5,382	4,967	2,041	0	0	75	0	0	20	12,485	3,348	15,833
WHATCOM	12,652	12,570	5,409	10	1	300	0	707	1,284	32,933	9,518	42,451
WHITMAN	5,676	6,026	1,296	0	0	0	0	87	0	13,085	1,292	14,377
YAKIMA	14,782	10,367	3,726	0	0	0	1,011	0	0	29,886	3,209	33,095
TOTAL	541,856	345,505	166,374	9,407	3,049	36,192	13,563	12,065	143,325	1,271,336	105,854	1,377,190

% OF TOTAL      39.3%    25.1%    12.1%    0.7%    0.2%    2.6%    1.0%    0.9%    10.4%    92.3%    7.7%

**Table E**

**COUNTY ROAD LEVY SUMMARY**

As shown in 2010 Budgets

(thousands of dollars)

COUNTY	Unincorp Valuation	County Road Property Tax Levy	County Road Property Tax Revenue Produced	Operating Transfer	Payment for Services	(RCW 36.33.220)		Revenue Remaining in Road Fund	Levy Shift from Road to Current Exp. (RCW 84.52.043)
						Diversion from Road To Current Expense	County Road Property Tax Exp. for Other Purposes		
						Traffic Policing expense paid by:			
ADAMS	979,109	2,203	1,353					1,353	0
ASOTIN	926,888	2,085	988					988	500
BENTON	2,893,856	6,511	5,404			458		4,946	0
CHELAN	5,545,079	12,476	6,422					6,422	399
CLALLAM	5,453,797	12,271	6,327		230			6,097	0
CLARK	19,663,622	44,243	34,981			4,270		30,711	0
COLUMBIA	417,571	940	870				Divert - Current Expense 115	755	0
COWLITZ	4,919,759	11,069	8,346	837				7,509	1,461
DOUGLAS	2,603,603	5,858	4,253					4,253	0
FERRY	506,480	1,140	1,140			576		564	0
FRANKLIN	1,626,530	3,660	2,509					2,509	265
GARFIELD	148,981	335	253					253	0
GRANT	3,821,878	8,599	7,840		625			7,215	0
GRAYS HARBOR	2,664,190	5,994	5,041		663			4,378	0
ISLAND	12,238,033	27,536	7,877		616			7,261	0
JEFFERSON	3,944,999	8,876	3,651			720		2,931	216
KING	43,859,044	98,683	84,675	4,000				80,675	0
KITSAP	18,576,430	41,797	24,683			1,738		22,945	0
KITTITAS	4,553,573	10,246	3,873			85		3,788	1,000
KLICKITAT	2,358,339	5,306	3,118					3,118	0
LEWIS	5,449,620	12,262	9,504			1,156		8,348	1,017
LINCOLN	852,459	1,918	1,628			922		706	0
MASON	6,944,728	15,626	9,160			960		8,200	0
OKANOGAN	2,708,523	6,094	3,937					3,937	0
PACIFIC	1,978,654	4,452	2,771		307			2,464	0
PEND OREILLE	1,108,542	2,494	1,199	56				1,143	500
PIERCE	38,433,683	86,476	58,934	2,600			Divert - Traffic and Courts 11,503 *	44,831	0
SAN JUAN	7,602,373	17,105	3,534			546		2,988	412
SKAGIT	8,017,186	18,039	11,650			1,350		10,300	1,000
SKAMANIA	1,065,850	2,398	1,450					1,450	0
SNOHOMISH	41,148,646	92,584	51,796	4,554				47,242	0
SPOKANE	13,264,870	29,846	16,867			1,326		15,541	0
STEVENS	2,675,775	6,020	4,325					4,325	420
THURSTON	14,873,204	33,465	19,143			3,000		16,143	0
WAHIAKUM	392,715	884	315					315	200
WALLA WALLA	2,174,336	4,892	4,721					4,721	0
WHATCOM	12,756,561	28,702	17,044			707		16,338	0
WHITMAN	1,056,549	2,377	1,965		87			1,878	0
YAKIMA	5,994,343	13,487	12,534					12,534	0
<b>TOTALS</b>	<b>306,200,379</b>	<b>688,951</b>	<b>446,080</b>	<b>12,047</b>	<b>2,528</b>	<b>17,813</b>	<b>11,618</b>	<b>402,074</b>	<b>7,390</b>

\* Increased by voter approval (RCW 84.55.050)

**Table F**

**COUNTY ROAD MILEAGE - 1/1/10**

COUNTY	URBAN ROADS			RURAL ROADS			SYSTEM CENTERLINE TOTAL	PAVED ARTERIAL C/L MILES	PAVED ARTERIAL LANE-MILES	UNPAVED C/L MILES
	ACCESS	ARTERIAL	TOTAL	ACCESS	ARTERIAL	TOTAL				
ADAMS			0.00	1,107.36	668.24	1,775.60	1,775.60	545.05	1,087.21	1,127.01
ASOTIN	61.28	21.04	82.31	165.81	151.90	317.71	400.03	100.35	203.34	233.50
BENTON	81.99	35.88	117.87	430.67	313.31	743.98	861.85	301.57	603.14	260.00
CHELAN	35.64	15.48	51.12	371.73	219.61	591.34	642.46	234.46	469.98	115.24
CLALLAM	17.66	6.78	24.44	336.80	122.69	459.49	483.93	129.47	258.80	2.96
CLARK	396.41	182.37	578.78	280.50	256.21	536.71	1,115.49	438.58	948.37	11.56
COLUMBIA			0.00	273.47	229.87	503.34	503.34	141.26	282.53	356.65
COWLITZ	52.94	28.91	81.85	257.49	193.85	451.34	533.19	222.76	445.57	8.68
DOUGLAS	55.51	35.92	91.43	1,137.17	401.20	1,538.37	1,629.80	293.33	591.40	1,194.22
FERRY			0.00	507.68	231.26	738.94	738.94	176.75	353.88	537.53
FRANKLIN	23.51	12.45	35.96	612.06	340.17	952.23	988.19	344.01	687.81	398.28
GARFIELD			0.00	234.08	213.03	447.10	447.10	127.51	255.01	314.35
GRANT	26.51	17.89	44.40	1,581.08	897.30	2,478.38	2,522.78	831.77	1,673.19	1,096.15
GRAYS HARBOR	9.99	7.57	17.56	290.99	253.92	544.91	562.47	256.20	512.36	39.67
ISLAND	50.57	22.55	73.12	316.49	193.01	509.50	582.61	215.56	434.00	7.31
JEFFERSON	8.88	1.54	10.42	250.63	136.34	386.97	397.38	129.74	260.10	73.35
KING	835.55	239.75	1,075.30	400.52	267.07	667.59	1,742.89	506.82	1,069.03	51.03
KITSAP	352.70	148.94	501.64	260.69	162.58	423.27	924.90	311.52	630.15	10.49
KITTITAS	1.45	3.87	5.32	252.40	306.08	558.48	563.80	305.89	612.51	67.93
KLICKITAT			0.00	708.97	375.70	1,084.67	1,084.67	343.18	686.46	555.63
LEWIS	33.83	17.96	51.79	720.16	274.59	994.75	1,046.53	287.49	575.06	47.20
LINCOLN			0.00	1,342.27	658.49	2,000.76	2,000.76	378.69	757.39	1,549.79
MASON	3.79	1.77	5.56	342.44	271.04	613.47	619.03	263.20	526.56	47.04
OKANOGAN			0.00	865.88	512.62	1,378.50	1,378.50	406.57	813.26	700.16
PACIFIC			0.00	219.69	130.12	349.81	349.81	119.85	240.12	48.06
PEND OREILLE			0.00	378.94	180.86	559.79	559.79	167.49	334.98	259.59
PIERCE	625.80	421.92	1,047.73	253.13	251.33	504.46	1,552.19	669.40	1,388.85	26.05
SAN JUAN			0.00	183.79	86.71	270.50	270.50	86.71	173.42	55.75
SKAGIT	56.55	43.21	99.76	388.71	312.96	701.67	801.43	356.17	713.33	40.83
SKAMANIA			0.00	152.85	85.55	238.40	238.40	85.55	171.55	29.25
SNOHOMISH	614.52	209.40	823.92	451.62	284.38	736.00	1,559.92	490.72	1,014.02	14.34
SPOKANE	306.36	148.03	454.39	1,435.35	650.48	2,085.83	2,540.22	725.10	1,495.97	1,161.40
STEVENS			0.00	929.06	561.69	1,490.75	1,490.75	465.18	930.39	828.56
THURSTON	239.20	71.86	311.06	452.02	268.46	720.48	1,031.54	340.32	694.89	25.53
WAHKIAKUM			0.00	58.39	85.18	143.57	143.57	78.90	157.80	16.92
WALLA WALLA	50.25	29.54	79.79	445.77	436.20	881.98	961.76	395.18	791.32	374.27
WHATCOM	73.80	40.44	114.24	510.79	318.29	829.08	943.32	358.73	719.56	32.25
WHITMAN			0.00	1,287.96	617.60	1,905.56	1,905.56	419.50	839.00	1,467.75
YAKIMA	83.78	83.15	166.93	818.47	669.84	1,488.31	1,655.24	730.90	1,477.05	555.79
STATEWIDE	4,098.47	1,848.20	5,946.67	21,013.86	12,589.72	33,603.58	39,550.24	12,781.40	25,879.36	13,742.04
EASTERN	726.28	403.24	1,129.52	14,886.18	8,635.45	23,521.63	24,651.15	7,433.74	14,945.82	13,153.78
WESTERN	3,372.19	1,444.96	4,817.15	6,127.68	3,954.27	10,081.95	14,899.09	5,347.66	10,933.54	588.26

Data from County Road Logs certified 1/1/10 by the County Road Administration Board

**Table G**

**COUNTY ARTERIAL PRESERVATION PROGRAM  
2009 ACCOMPLISHMENT SUMMARY**

COUNTY	1/1/08 Eligible Arterial System C/Line (miles)	Total CAPP Rec'd (\$1,000)	Total CAPP Expended (\$1,000)	Total Eligible Expenses (\$1,000)	CAPP Contri- bution (%)	2009 Arterial Sealcoat (miles)	2009 Arterial Overlay (miles)	2009 Total Resurf. (miles)	2009 Percent System Resurf'd
ADAMS	545.36	630.6	630.6	994.9	63.4	41.2	0.0	41.2	7.6
ASOTIN	100.35	119.1	119.1	412.1	28.9	14.0	0.0	14.0	14.0
BENTON	301.57	349.0	349.0	1,105.4	31.6	54.8	0.0	54.8	18.2
CHELAN	235.63	273.3	273.3	273.3	100.0	0.0	0.0	0.0	0.0
CLALLAM	129.58	149.6	149.6	813.8	18.4	4.8	2.3	7.1	5.5
CLARK	449.95	562.2	0.0	1,028.1	0.0	20.2	0.0	20.2	4.5
COLUMBIA	141.17	163.1	163.1	448.1	36.4	10.4	0.0	10.4	7.4
COWLITZ	224.01	258.8	258.8	1,360.6	19.0	67.7	0.0	67.7	30.2
DOUGLAS	293.84	342.0	342.0	448.3	76.3	9.2	0.0	9.2	3.1
FERRY	176.75	206.0	391.2	426.0	91.8	8.9	0.0	8.9	5.0
FRANKLIN	345.55	401.4	401.4	486.0	82.6	17.8	0.0	17.8	5.1
GARFIELD	126.27	145.9	145.9	486.3	30.0	30.7	0.0	30.7	24.3
GRANT	631.94	967.8	967.8	2,835.3	34.1	77.3	3.1	80.4	12.7
GRAYS HARBOR	244.80	282.8	282.8	746.9	37.9	0.0	0.0	0.0	0.0
ISLAND	215.82	251.0	251.0	1,155.3	21.7	8.4	3.4	11.8	5.5
JEFFERSON	129.71	150.2	197.1	837.4	23.5	2.2	2.1	4.4	3.4
KING	541.54	665.7	665.7	4,192.8	15.9	3.9	18.5	22.4	4.1
KITSAP	313.47	366.8	366.8	1,860.7	19.7	0.0	11.1	11.1	3.5
KITTITAS	306.19	354.3	500.0	1,164.9	42.9	15.5	0.0	15.5	5.1
KLICKITAT	338.25	390.9	390.9	847.4	46.1	31.4	0.0	31.4	9.3
LEWIS	287.13	330.9	330.9	2,103.9	15.7	7.9	3.9	11.7	4.1
LINCOLN	379.18	438.1	438.1	489.8	89.4	18.8	0.0	18.8	5.0
MASON	264.44	305.6	0.0	297.8	0.0	0.0	1.6	1.6	0.6
OKANOGAN	407.05	470.5	19.8	308.7	6.4	0.0	0.0	0.0	0.0
PACIFIC	119.85	138.6	2.0	608.9	0.3	0.0	1.6	1.6	1.4
PEND OREILLE	167.43	193.4	273.8	415.9	65.8	2.1	0.0	2.1	1.2
PIERCE	675.40	811.6	811.6	5,811.1	14.0	70.8	6.6	77.4	11.5
SAN JUAN	86.71	100.2	100.2	331.2	30.2	7.1	0.0	7.1	8.1
SKAGIT	354.80	410.5	410.5	2,476.6	16.6	34.6	5.7	40.3	11.4
SKAMANIA	85.76	99.6	0.0	987.9	0.0	23.7	0.9	24.6	28.7
SNOHOMISH	471.43	574.6	574.6	2,737.2	21.0	42.1	2.8	44.9	9.5
SPOKANE	720.37	856.9	856.9	2,364.8	36.2	39.7	0.0	39.7	5.5
STEVENS	465.12	537.4	364.3	1,342.8	27.1	40.4	0.5	40.9	8.8
THURSTON	346.16	408.5	405.4	1,015.2	39.9	24.3	1.0	25.3	7.3
WAHIAKUM	78.90	91.2	91.2	748.4	12.2	3.2	3.9	7.1	8.9
WALLA WALLA	388.60	449.3	449.3	828.8	54.2	31.1	0.0	31.1	8.0
WHATCOM	361.13	418.8	418.8	802.0	52.2	11.4	0.0	11.4	3.2
WHITMAN	419.33	484.4	484.4	709.7	68.3	29.9	0.0	29.9	7.1
YAKIMA	729.81	851.6	851.6	1,687.2	50.5	39.2	1.0	40.2	5.5
<b>TOTAL</b>	<b>12,600.4</b>	<b>15,001.9</b>	<b>13,729.2</b>	<b>47,991.6</b>	<b>28.6%</b>	<b>844.6</b>	<b>70.0</b>	<b>914.6</b>	
							<b>AVERAGE</b>		<b>7.8</b>

Table H

COUNTY FREIGHT AND GOODS SYSTEM - 1/1/2010

COUNTY	Freight and Goods System - Truck Route Class					Total FGTS	Total Adequate	% Adequate
	T-1	T-2	T-3	T-4	T-5			
ADAMS		0.53	43.99	339.99	213.09	597.60	195.47	32.7%
ASOTIN		0.15	23.00	19.98		43.13	37.66	87.3%
BENTON			116.75	126.87	84.16	327.78	84.38	25.7%
CHELAN			41.19	84.88	37.62	163.69	50.50	30.9%
CLALLAM			34.40	98.74	9.99	143.13		0.0%
CLARK	2.91	14.95	220.10	95.44		333.40	283.84	85.1%
COLUMBIA			10.30	49.06	147.07	206.44	11.20	5.4%
COWLITZ			79.62	57.47	3.00	140.09	112.09	80.0%
DOUGLAS			6.89	83.48	171.26	261.63	3.22	1.2%
FERRY			108.86	115.60		224.46	27.31	12.2%
FRANKLIN			111.34	154.05	251.45	516.84	246.46	47.7%
GARFIELD				10.13	125.75	135.88	116.96	86.1%
GRANT		10.46	271.51	263.97	306.48	852.42	60.39	7.1%
GRAYS HARBOR		1.03	211.56	7.13		219.72	192.26	87.5%
ISLAND			14.88	26.85	0.37	42.09	41.70	99.1%
JEFFERSON			39.55	33.19	65.75	138.49	107.00	77.3%
KING	19.73	26.99	270.42	111.55		428.69	394.67	92.1%
KITSAP	2.68	4.40	106.84	46.83		160.75	95.84	59.6%
KITTITAS		4.31	201.09	93.48	9.89	308.77	204.89	66.4%
KLICKITAT			174.68	111.37		286.05	7.63	2.7%
LEWIS			139.47	213.97	46.17	399.61	223.84	56.0%
LINCOLN			131.90	281.78	363.90	777.58	447.51	57.6%
MASON			38.98	80.43	1.46	120.87	2.09	1.7%
OKANOGAN			100.63	119.02	179.99	399.64	5.64	1.4%
PACIFIC				135.41		135.41	24.73	18.3%
PEND OREILLE			38.39	125.40	62.21	226.00	0.49	0.2%
PIERCE	11.45	52.51	308.18	24.35	7.70	404.19	136.91	33.9%
SAN JUAN			23.92	64.60		88.52	57.69	65.2%
SKAGIT		7.43	155.05	77.35		239.83	110.72	46.2%
SKAMANIA			22.83	58.73		81.56	81.13	99.5%
SNOHOMISH	4.64	7.45	328.74	107.31	60.82	508.96	323.48	63.6%
SPOKANE	5.69	31.95	455.80	106.90	109.28	709.62	599.86	84.5%
STEVENS			124.28	113.92	97.18	335.38	12.80	3.8%
THURSTON		3.22	162.30	32.01	4.13	201.66	21.24	10.5%
WAHKIAKUM			12.00	2.67	10.83	25.50	12.80	50.2%
WALLA WALLA			71.81	287.10		358.91	5.07	1.4%
WHATCOM			108.47	92.93		201.40	72.28	35.9%
WHITMAN			3.29	37.97	249.59	290.85	37.44	12.9%
YAKIMA		8.91	389.74	137.78	67.41	603.84	594.88	98.5%
TOTAL	47.10	174.29	4,702.74	4,029.69	2,686.56	11,640.38	5,044.07	43.3%

County Road Log Certified 1/1/2010 by the County Road Administration Board

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## County Bridges

### Introduction

Washington State's 39 counties are responsible for the operation, maintenance and repair of more than 3,250 bridges on the county road systems. These bridges vary from twenty to several hundred feet in length, and from under twelve to more than 80 feet wide. They carry roads over streams, canals, rivers, lakes, roads, railroads, and utilities. Eight of the bridge structures serve as docks in the four counties that operate ferries. Some have been built in the last few years, and some date from early in the last century. Each and every one is inspected at least once every two years and maintained to insure the safety of the travelling public. When necessary, deteriorating bridges are closed until funding is secured and the bridges are repaired or replaced. A recent example is King County's South Park Bridge over the Duwamish River south of Seattle, closed on June 30, 2010. A funding package for design and construction of a replacement bridge with federal, state, and local funds is being assembled.

Bridge materials and designs have evolved over the years. The first bridges in Washington State were likely locally cut logs laid across a stream. Wooden trestles came into use in the late 1880's. Iron and steel truss bridges were probably next, as the components could be fabricated at distant locations, transported by train or horse wagon, and then assembled with rivets and bolts on the site. In the early 1900's, concrete became a viable bridge material that could be mixed on site and poured into arches and columns. Steel deck girders became popular as the strength of steel increased in the mid-20<sup>th</sup> century, and the designs needed for the Interstate Highway System brought advances in pre-cast concrete girders, deck panels and larger box culverts. Further advances in corrugated steel and aluminum have evolved from small round culverts to long open-bottom spans. Few county bridges need the sophisticated features of a suspension or cable-stayed bridge design, but the 21<sup>st</sup> century will probably see innovations in plastic, composite, and synthetic materials.

<b>County Owned and Maintained Bridges by Material Type</b>				
<b>Material</b>	<b>Concrete</b>	<b>Steel</b>	<b>Timber</b>	<b>Total</b>
<b>Number</b>	2586	286	387	<b>3259</b>
<b>Percent</b>	79%	9%	12%	<b>100%</b>

About 20% of the bridges on the county road systems are considered deficient, and in need of major rehabilitation or replacement. Deficient bridges fall into two categories: "Structurally Deficient" (SD) or "Functionally Obsolete" (FO). Those classified as Structurally Deficient are unable to accommodate legal highway loads (typically 40 tons/80,000 lbs.), and are each posted with a lower load limit. Functionally Obsolete bridges typically have travel lanes less than 12 feet wide; overhead clearances of less than 15 feet, or difficult alignments for modern highway vehicles and agricultural equipment. Priority for the limited replacement funding is focused on the Structurally Deficient bridges for obvious safety reasons. Other bridges, especially in urban areas, may be identified for replacement or widening to carry more vehicles as traffic flows and congestion increase.

<b>County Owned and Maintained Bridges by ADT Range</b>						
<b>ADT</b>	<b>1-399</b>	<b>400 - 1499</b>	<b>1,500 - 2,000</b>	<b>2,001 - 4,999</b>	<b>5,000 &amp; Over</b>	<b>Total</b>
<b>Number</b>	1994	734	121	241	169	<b>3259</b>
<b>Percent</b>	61%	23%	4%	7%	5%	<b>100%</b>



## How long is a bridge?

For the purposes of federal funding eligibility and inventory requirements, a “bridge” is defined as having a clear span length of twenty feet or more. As technology has advanced, most modern spans that are less than 20 feet long have been constructed as concrete “box culverts” or corrugated metal pipe arches. The use of large circular pipes (approximately four to twelve feet in diameter) has become less common as environmental issues of fish passage and stream flow characteristics have favored designs with more natural stream beds. As standards for fish passage and stream restoration continue to develop and become more complex, the lengths of new and replacement structures over water have increased significantly. It is not uncommon for the replacement of an existing 48” round culvert pipe to require an open-bottom structure with a span of twelve to thirty feet.

On the other end of the spectrum, some county bridges span hundreds of feet. The featured Sauk River Bridge in Snohomish County near Darrington is 479 feet long, and the Elwha River Bridge in Clallam County is not only almost 600 feet long, but is also high – with the road deck some 80 feet above the river.

<b>County Owned and Maintained Bridges by Length</b>						
<b>Length</b>	<b>20' - 50'</b>	<b>51' - 100'</b>	<b>101' - 250'</b>	<b>251' -500'</b>	<b>Over 500'</b>	<b>Total</b>
<b>Number</b>	1522	940	628	131	38	<b>3259</b>
<b>Percent</b>	47%	29%	19%	4%	1%	<b>100%</b>

## How long can a bridge last?

It is common for bridge designs to be based on an estimated useful life of 50 to 75 years. Some major structures, such as the Brooklyn Bridge in New York City, have been in service for more than 125 years with regular maintenance and rehabilitation. In Washington State, some bridges are nearing their centennials. Among the county inventories, many bridges date from the 1920s and 1930s and are still in use beyond the expected design lives. Among these older bridges, a significant number were constructed on state highways routes which were transferred to counties following the opening of the Interstate Highways thirty to fifty years ago. Major segments of SR 99 from Vancouver to Tumwater and Marysville to Blaine were transferred to Clark, Cowlitz, Lewis, Thurston, Snohomish, Skagit, and Whatcom counties with the opening of I-5. Portions of US 12 between Yakima and the Tri-Cities were transferred to Yakima and Benton counties with the opening of I-82. The portions of US 10 that were not incorporated into the new I-90 alignment became county roads through Kittitas, Grant, Adams, Lincoln, and Spokane counties. A review of the county bridge inventory data indicates there are at least eight, and perhaps more than 30 county bridges in service today that are over 100 years old. Most of these are steel truss, concrete arch, or timber structures.

<b>County Owned and Maintained Bridges by Age (Years)</b>					
<b>Age</b>	<b>Over 85</b>	<b>84-60</b>	<b>59 - 35</b>	<b>Under 35</b>	<b>Total</b>
<b>Number</b>	199	383	1448	1229	<b>3259</b>
<b>Percent</b>	6%	12%	44%	38%	<b>100%</b>

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## What’s involved in a bridge inspection?

Bridges are to be inspected at least every two years for structural soundness and routine condition. The components of the inspection are determined by the bridge type and the materials used in the construction of the bridge. Inspections are completed by trained and certified bridge inspectors who may be county employees, consultants, or employees of another government agency. Depending upon the structural design of the bridge, its location and environment, specialized equipment may also be needed to perform the inspection.

For instance, an under bridge inspection truck (“UBIT”) has an articulated crane that places a small working platform or bucket above or below the bridge deck. This device allows for close-up inspection of critical structural members that are either high above the roadway or below the deck and high above the road, railroad, or river the bridge crosses over.

There are a limited number of these vehicles available in Washington State, and the counties and other bridge owners have developed a high level of cooperation and coordination to make the best use of this costly equipment. The UBIT is especially useful for the inspection of “fracture critical” bridge components, the failure of which could lead to a catastrophic bridge collapse.

Another specialized inspection technique addresses the potential for scour damage to the foundations of bridges that cross waterways. The flow of a river or stream, especially during seasonal high water flows or floods, can undermine the submerged bridge structure, leading to settlement or washout of a bridge pier or abutment. Underwater inspections, using remote cameras and skilled underwater divers, are needed to accomplish these inspections and evaluations.

The bi-annual costs for bridge inspections can range from several hundred dollars for a simple span over a small waterway to tens of thousands of dollars if a UBIT is utilized or an underwater inspection is required. Some financial assistance has been available to local agencies through the federal Highway Bridge Replacement and Rehabilitation Program (HBRRP) administered by the Washington State Department of Transportation’s Highways and Local Programs Division for high cost bridge inspections. The future availability of these inspection funds may now be in doubt as the demand for bridge replacement and rehabilitation funding continues to increase and exceed available resources.

Upon completion of a bridge inspection, the data is compiled and shared with WSDOT. If the rating indicates some level of structural deficiency or functional obsolescence, the county is responsible to install signs indicating the load limits for various types of vehicles. In extreme cases, the bridge may be closed to traffic until repairs are made or the bridge is replaced. Either limitation often creates significant impacts on local residents and businesses, as the detour route may be many miles long.

<b>County Owned and Maintained Bridges by Sufficiency Rating Range</b>						
	<b>Very Poor</b>	<b>Poor</b>	<b>Fair</b>	<b>Good</b>	<b>Excellent</b>	
<b>Rating</b>	<b>0 - 19</b>	<b>20 - 39</b>	<b>40 - 59</b>	<b>60 - 79</b>	<b>80 - 100</b>	<b>Total</b>
<b>Number</b>	28	69	308	958	1,896	<b>3,259</b>
<b>Percent</b>	1%	2%	10%	29%	58%	<b>100%</b>

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## **Bridge Maintenance**

The type of bridge maintenance required varies by the original design and the results of the most recent inspection report. Modern pre-cast concrete girder bridges may need only minor deck cleaning and guardrail maintenance for several years after construction. On the other hand, older steel truss bridges may need rust removal and painting on a more frequent basis. Even with a design life of 50 to 75 years, the bi-annual inspections identify major maintenance needs as bridges age. While the “average” Washington county is responsible for about 85 bridges (20 feet and longer), the number varies from more than 300 in Yakima County to none in Island County. (Island County may construct its first bridge in 2011, a replacement for a failed 24” culvert under a deep fill section carrying Glendale Road over Glendale Creek.) With a state-wide estimated replacement cost in excess of \$2 billion, the costs to maintain current county bridges are very necessary and worthwhile investments. County bridge maintenance is budgeted and paid for from county road fund revenues.

## **Bridge Rehabilitation and Replacement**

There comes a time when a bridge has simply worn out, and must undergo major rehabilitation or be replaced. Securing funding for these major expenses can be challenging. The federal Highway Bridge Replacement and Rehabilitation Program (HBRRP) plays a major role in providing funding for replacement and rehabilitation. However, these funds are limited, and grants are awarded on a competitive basis. In Washington State, the Bridge Replacement Advisory Committee (BRAC), comprised of WSDOT and local agency representatives, reviews candidate bridges for the limited federal funds. Even if a project is awarded a grant, it is usually for only 80% of the eligible project cost. This leaves the local agency responsible for 20% of the bridge replacement cost, as well as a portion of the roadway approach costs on most projects. Bridge projects in urban areas may compete for matching funds from the Transportation Improvement Board, and matching funds for some rural bridge projects may be available from the County Road Administration Board.

Besides challenges in securing funding, bridge replacement projects are also subject to a myriad of state and federal permitting requirements. An Environmental Impact Statement is usually required as part of the process. Among the agencies with project review and approval responsibilities are the U.S Army Corps of Engineers, National Marine Fisheries Service, U.S. Fish and Wildlife Service, Washington Department of Ecology, Washington Department of Fish and Wildlife, Washington Department of Natural Resources, and the local Shorelines Management Act. These agencies may impose project requirements pertaining to “fish windows” (limitations when equipment may work within the waterway), fish habitat restoration, storm water runoff control and treatment and other issues. If an existing bridge has been designated as an historic structure, the Washington Department of Archaeology and Historic Preservation may play a role in approving plans to rehabilitate or replace the structure.

## **New Bridges**

Securing funding and approvals for a new bridge on a new route or a new bridge to expand capacity on an existing route involves all the issues noted above. Additional funding alternatives may include traffic impact fees, formation of a road improvement district or local improvement district, developer contributions, and general obligation or revenue bonds.

**2010 - Bridges - Top 25 Sufficiency Rating**

Rating #	County Name	Road Number	Road Name	Milepost	Struct ID	Structure Name	Sufficiency Rating	Structure Length	ADT	FFC	Year Built	Road Carried	Main Span Material
1	Adams	63604	DYCK RD	5.070	8192700	BATUM EAST	100.00	33	7	9	2002	DYCK ROAD	Prestressed concrete
2	Klickitat	20110	7TH ST	0.110	8625200	LYLE OVERPASS	100.00	240	51	9	1994	SEVENTH STREET	Prestressed concrete
3	Lewis	75101	FALLS RD	3.120	8721900	FALLS MP 3.12	100.00	102	129	NULL	2004	Falls Road	Prestressed concrete
4	Lincoln	30190	ESTATE ROAD #30190	3.470	8253200	PICNIC BRIDGE	100.00	120	54	9	1983	ESTATE ROAD 30190	Prestressed concrete
5	Lincoln	54090	SEVEN MILE ROAD #54090	1.580	8637300	SEVEN MILE BRIDGE	100.00	70	8	9	1997	SEVEN MILE RD 5409	Concrete continuous
6	Skagit	63000	COOK ROAD	5.380	8655400	BRICKYARD CREEK	100.00	54	11416	7	2000	COOK ROAD	Prestressed concrete
7	Walla Walla	37030	TALBOTT RD	0.220	8630200	TALBOTT	100.00	144	17	9	1997	TALBOTT RD	Prestressed concrete
8	Yakima	54170	BROWN RD. N.	1.000	8096200	BROWN RD., N. #277	100.00	26	10	9	1990	BROWN RD., N.	Prestressed concrete
9	Yakima	50000	FORT RD.	10.820	8657100	FORT RD. #1349	100.00	55	2160	7	2001	FORT RD.	Prestressed concrete
10	Adams	75564	BAUER RD	3.700	8654800	JONATHAN BORGENS	99.99	40	15	9	2000	Bauer Road	Prestressed concrete
11	Adams	64484	HEINEMANN RD	3.350	8338400	LEO DYCK	99.99	25	21	9	1900	HEINEMAN ROAD	Prestressed concrete
12	Klickitat	17170	OLD CREAMERY RD	0.130	8640600	CHEESE FACTORY	99.99	109	60	9	1997	OLD CREAMERY RD	Concrete
13	Klickitat	25230	OLSON RD	1.970	8283600	OLSON	99.99	82	14	9	1988	OLSON ROAD	Prestressed concrete
14	Lewis	35800	ANNONEN RD	0.140	8703300	ANNONEN MP 0.14	99.99	140	60	9	2002	ANNONEN RD	Prestressed concrete
15	Lincoln	13660	GIBSON DRAW ROAD #13660	1.470	8802000	East Pfeifer Bridge	99.99	72	23	9	2006	County Road 1366	Prestressed concrete
16	Lincoln	40400	RABER ROAD #40400	0.040	8738300	ALMIRA NORTH BRIDGE	99.99	49	60	9	2005	40400 RABER ROAD	Prestressed concrete
17	Spokane	815	Darknell Rd	1.570	8631600	DARKNELL OVER RATTLEERS R	99.99	75	11	9	1997	DARKNELL ROAD	Prestressed concrete
18	Spokane	2976	Marsh Rd	0.150	8576000	MARSH ROAD	99.99	149	18	9	1988	MARSH ROAD	Prestressed concrete
19	Walla Walla	65450	VAN AUUSDLE LN	0.590	8652800	VAN AUUSDLE	99.99	125	28	9	1999	VAN AUUSDLE LANE	Prestressed concrete
20	Whitman	52700	MCINTOSH RD	0.070	8720700	TWITMEYER	99.99	25	20	9	2004	MADER RD/5170	Prestressed concrete
21	Whitman	22000	RAGON RD	0.030	8720600	CASHUP NO. 1	99.99	25	50	9	2004	RAGON/2200	Prestressed concrete
22	Yakima	54950	BARKES RD.	1.040	8637900	BARKES RD. #281	99.99	127	30	9	1998	BARKES RD	Prestressed concrete
23	Yakima	53050	HARRAH RD.	8.710	8819700	Harrah Road # 0252	99.99	20	11	9	1939	Harrah Road	Timber
24	Yakima	50650	POM POM RD.	0.700	8650900	POM POM RD. #1063	99.99	87	30	9	1998	POM POM RD.	Prestressed concrete
25	Adams	75421	PAHA-PACKARD RD	2.960	8809900	PAHA-PACKARD	99.98	20	50	9	2000	PAHA-PACKARD	Concrete

2010 - Bridges - Bottom 25 Sufficiency Rating													
Rating #	County Name	Road Number	Road Name	Milepost	Struct ID	Structure Name	Sufficiency Rating	Structure Length	ADT	FFC	Year Built	Road Carried	Main Span Material
1	Grays Harbor	58310	BLACK CREEK RD	3.940	8757100	BLACK CREEK BRIDGE (7)	2.00	34	174	9	1971	BLACK CREEK ROAD	Prestressed concrete
2	Mason	41640	SKOKOMISH VALLEY RD	1.760	8206100	HUNTER CREEK	2.00	78	880	8	1956	SKOKOMISH VALLEY RD	Concrete
3	Chelan	37790	CHIWAWA RIVER RD	9.340	8750800	CHIKAMIN CREEK	4.00	31	150	9	1945	CHIWAWA RIVER ROAD	Timber
4	King	12510	78 AVE S	0.000	8329400	ALVORD ""T""	4.00	275	2950	19	1914	S 3RD AVE KENT	Steel
5	Mason	41640	SKOKOMISH VALLEY RD	0.690	8186000	WEAVER CREEK 1	4.00	78	880	8	1964	SKOKOMISH VALLEY RD	Timber
6	Spokane	2570	LITTLE SPOKANE DR	0.010	8030200	L SPO DR OVER L SPO RIV	4.00	92	4145	7	1953	LITTLE SPOKANE DR.	Concrete
7	Chelan	94200	OLD MONITOR RD	0.170	8119700	WEST MONITOR	4.53	312	360	8	1907	OLD MONITOR ROAD	Steel
8	Snohomish	85300	64TH ST NE	0.300	8360400	PILCHUCK RIVER #581	5.75	179	138	9	1960	64TH ST N.E.	Steel
9	Snohomish	54600	INDEX-GALENA RD	9.040	8413100	HOWARD CREEK	6.00	61	137	7	1976	INDEX-GALENA RD	Timber
10	Yakima	70410	MEYERS RD. N.	3.200	8478500	MEYERS RD.,N. #485	6.00	571	6145	7	1947	MEYERS RD.,N.	Concrete continuous
11	Skagit	18410	GUJEMES ISLAND ROAD	0.200	8152100	GUJEMES ISLAND FERRY D	7.45	165	600	7	1981	GUJEMES ISLAND ROAD	Steel
12	Grays Harbor	52070	WISHKAH RD (UPPER)	9.270	8226700	CEDAR CREEK BRIDGE	9.69	88	75	9	1981	WISHKAH ROAD	Prestressed concrete
13	King	89670	NE INDEX CR RD	0.110	7979400	BARING BRIDGE	10.69	340	75	9	1930	NE INDEX CK RD	Timber
14	Snohomish	94757	WOODS CREEK RD	9.040	8441300	RICHARDSON CREEK	11.06	21	6406	16	1961	WOODS CREEK RD	Concrete
15	Snohomish	88400	REESE'S HIDEOUT RD (PV	0.150	8198100	S.F. SAUK RIVER #540	11.45	203	14	9	1986	REECES HIDEOUT RD	Steel
16	Whatcom	89800	POTTER RD	0.960	8074300	SOUTH FORK	11.99	243	700	9	1927	POTTER RD.	Steel
17	Spokane	4444	SEVEN MILE RD	0.070	8329100	7-MILE OVER COULEE CREEK	12.13	45	1778	7	1956	SEVEN MILE ROAD	Concrete
18	Clallam	19400	FRONTIER ST.	0.190	8280500	CLALLAM SLOUGH BRIDGE	13.00	62	419	8	1959	FRONTIER STREET	Timber
19	Snohomish	6510	CARTER RD	0.230	8471400	SWAMP CREEK #546	13.01	41	3160	19	1966	CARTER RD	Concrete
20	Whitman	70050	BIG ALKALI RD	5.760	8224600	AUNE	13.07	40	128	8	1921	BIG ALKALI/7005	Timber
21	Chelan	48130	MOE RIDGE RD	0.050	8641400	MOE RIDGE BRIDGE	13.66	43	40	9	1930	MOE RIDGE ROAD	Timber
22	Snohomish	90135	LOCUST WAY	0.860	8474200	SWAMP CREEK #504	13.92	41	9722	16	1958	LOCUST WAY	Concrete
23	King	81860	240 AVE SE	0.240	8184100	15 MILE CREEK	17.07	30	100	9	1969	240TH AVE SE	Steel
24	Walla Walla	93150	TOUCHET GARDENA RD	0.740	7998600	GARDENA	17.37	150	990	7	1948	TOUCHET GARDENA RD	Concrete
25	Spokane	586	CHRISTENSEN RD	3.260	8065300	CHRISTENSEN RD OVER D	18.03	62	537	9	1958	CHRISTENSEN ROAD	Timber

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## Clallam County – Elwha River Bridge

The one lane bridge across the Elwha River in Clallam County was completed in 1914 and consisted of two 210' spans of Warren Deck trusses with a wood trestle approach on the west. The deck was wood and originally built to be 18' wide. This structure provided the main access to the area west of Port Angeles and construction was funded primarily through a bond issue.

The Elwha Bridge replacement project coincided with record high construction prices as the economy soared and the bridge was experiencing advanced deterioration requiring major load reductions. Significant grant funding support was promised and in July of 2007, Clallam County awarded the \$16.4 million contract to replace the Elwha Bridge to Parsons RCI. The total project cost including the early studies was \$20.0 million, making this the largest project Clallam County had ever undertaken.

Significant support was received from the Lower Elwha S'Klallam Tribe and was instrumental in the county receiving a \$1.5 million grant from the Bureau of Indian Affairs through the Indian Reservation Road Bridge Replacement Program.



The new cast-in-place post-tensioned concrete box girder bridge was designed to be constructed by the balanced cantilever method. This method utilizes form travelers mounted atop the columns suspending the formwork from above without the use of traditional false work below. The box girder was constructed in segments with two travelers mounted atop each pier. This allows the box girder to be cantilevered out side to side until it reached midspan. This process is repeated from the opposite pier until the span is completed. Construction must be carefully sequenced in order to keep the cantilever balanced at all times. In order to meet the construction schedule it was necessary to post-tension the concrete and advance the form traveler onto concrete that was two to three days old and begin forming up for the next segment. The concrete strength was always in excess of 3000 psi and typically exceeded 7000 psi at 28 days. As a part of the design of the replacement structure, several options were considered for pedestrians. During a brainstorm session, the idea of hanging the pedestrian facility below the road bridge was discussed. This allowed a narrower road bridge, which was also one of the goals that came out of the public process.

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## Snohomish County – Sauk River Bridge

The Sauk River Bridge in Snohomish County spans a federally designated Wild and Scenic River in north Snohomish County, and at 479 feet is the county's longest two-span, steel truss bridge. It replaces a bridge built in 1930 which had become both functionally obsolete and structurally deficient. The old bridge was too narrow at only 18 feet curb to curb, the deck was deteriorating, and there were scour problems at the piers.



The bridge, as designed by Berger/ABAM, was to be assembled on shore in two pieces and placed in position with a special heavy lift crane. Connection of the two pieces into a single continuous truss would be the only assembling activities to occur over water. However, the contractor for the project, Mowat Construction, took advantage of the continuous truss design and worked with the County to implement an alternative method. They decided to assemble the structure on shore, in one piece, and then “launch” the assembled structure out over the river. An innovative cantilever/roller system was used to accomplish this complex task. The project's contractor indicated that the decision to launch the Sauk River Bridge resulted in an estimated construction savings of \$1 million.

The Sauk River Bridge is the first steel bridge in the Pacific Northwest to be both hot-dip galvanized and powder-coated, a technique that provides much better paint adhesion over the life of the bridge. The project team drilled deep foundations to support the bridge to protect against scour, and because some of the riverbank's sub-layers had a potential for liquefaction. These were eight feet in diameter, and 110 to 125 feet deep. They were inserted by the use of a special oscillator, which was too heavy to go across the existing bridge for placement, so the oscillators were taken apart and reassembled on the other side of the river.

In the end, the construction of the project was completed a full five months ahead of the initial completion date. Construction administration staff managing the contractor's activities with sound defensible plans and specs, a creative and organized contractor and good construction management was able to complete this project ahead of schedule and nearly \$500,000 under the original bid price. The final construction cost was \$13,592,219 and the project was awarded the 2010 American Public Works Association (APWA) National Project of the Year Award.

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## Stevens County – Hedlund Bridge

The Hedlund Bridge project lies between Stevens and Ferry County a few miles north of the city of Kettle Falls. The Hedlund Bridge crosses the Kettle River near its confluence with the Columbia River. The original bridge, named for a well-known businessman in the lumber industry, was a component of major transportation system restructuring following the creation of Lake Roosevelt in the early 1940's. The bridge was a classic example of a single-span riveted Warren through truss with verticals. Over time, the bridge was classified as functionally obsolete but with a combination of the deck scaling, rusted vertical members, and damaged horizontal portals, the bridge had a sufficiency rating of 44.89. The project consisted of replacing the existing single lane, steel truss bridge with a two lane, pre-stressed, post tensioned concrete bridge spanning over 300 feet. The intersection at the state highway SR 395 was also reconstructed, including a drop lane. Significant challenging aspects of this project included: Vertical sag curve in the deck to help achieve 10 percent grade to state highway, fluctuating reservoir limiting barge use, recycling the existing pier, the railroad bridge only 20 feet away, and an entrance to a National Park Service campground.

Only one bid was initially received in February of 2006, but was rejected as it exceeded the engineers estimate by 200%. Minor revisions to the project scope were accomplished, and the project rebid in November of 2006. Three bids were received for the project and the contract was awarded to the low bidder, Harcon, Inc. of Spokane. The project was initially bid with 250 working days. However, on August 14, 2007, a catastrophic crane failure occurred. Remarkably, no injuries occurred. However, this accident caused a 24 working day delay in project delivery and Stevens County allowed a 24 working day extension.



Another unique accomplishment, designed by Nicholls Engineering, Inc., was incorporating vertical sag into the bridge. It is believed to be the first time in the United States that girders have been spliced together at an angle point, done to help achieve the vertical sag curve for a ten percent grade up to the State Highway. This allowed the deck to be poured at a consistent thickness.



Extensive testing was accomplished on the existing pier including both intrusive, destructive testing and non-destructive testing. Based on the results of that testing, it was determined that the existing pier was suitable for reuse. Nicholls then proceeded to design the structural modification that included reducing the height to accommodate a deeper girder section and widening to cantilever support the wider deck. Stevens County estimates rehabilitation and reuse of the intermediate pier resulted in over \$1.0 million in savings to overall project cost.



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## Cowlitz County – Lexington Bridge

The Lexington Bridge project in Cowlitz County grew out of the development of the Interstate 5/Rocky Point Interchange near Kelso, Washington in the 1970's that facilitated the location of a future crossing of the Cowlitz River. This new crossing provides an access to I-5, reducing congestion on the existing transportation network and provides the Lexington community an all weather access during flood events when other routes are impeded by floodwaters or other hazards. In 2000, Cowlitz County officials along with the Cowlitz-Wahkiakum Council of Governments (CWCOG) began collaborating with State and Federal representatives to obtain funding for the \$14.5 million project budget.

The County would eventually select Berger/ABAM Engineers to complete the design and environmental phases of the project. In early 2006, Cascade Bridge LLC commenced construction on the project and nearly forty years of planning became a reality when on September 7, 2007 the Lexington Bridge was opened to the public.



The Lexington Bridge is a 643-foot long pre-stressed concrete girder bridge. The four-span bridge structure is founded upon a series of ten-foot diameter drilled shafts. The project included a 900-foot long extension of Lexington Bridge Drive from its intersection with SR-411, reconstruction of a portion of SR-411 to accommodate intersection channelization, and new traffic signals at the Lexington Bridge Drive/SR-411 intersection and at the Interstate 5 northbound interchange off ramp. A Mechanically Stabilized Earth (MSE) retaining wall supports the western bridge approach. A noise attenuation wall was erected along the north side of this approach to reduce traffic noise impacts on the adjacent residential community.

An innovative design integrated the west approach leading to the structure into the Cowlitz River levee system, which is maintained by the Lexington Flood Control Zone District. This eliminated at least one bridge span and greatly decreased the approach embankment height, resulting in a cost savings of over \$1 million. A major environmental concern was the placement of steel piling in the river to support the project's temporary work platform. Biologists were concerned that underwater noise from pile driving operations could be traumatic to aquatic species. To address this concern, the design team formulated a strategy involving the use of a "bubble curtain" during pile driving. The bubble curtain is created by pumping compressed air through a circular manifold to surround the pile being driven. This diffuses underwater sound waves and minimizes noise impacts. Biologists monitoring the pile driving operations reported no impacts to aquatic organisms.

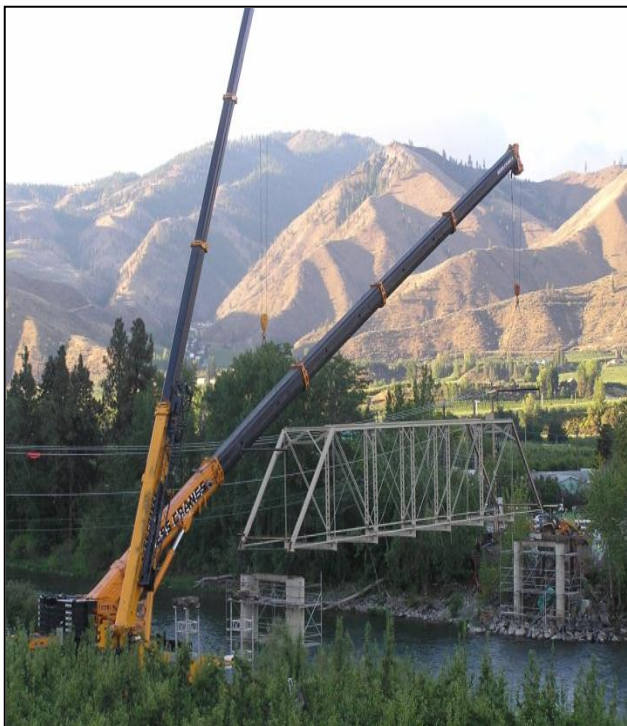
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## Chelan County – West Monitor Bridge

The West Monitor Bridge is a one-lane structure that crosses the Wenatchee River between Cashmere and Monitor in Chelan County and is largely used by residents and orchardists living in the area. This iconic steel through truss bridge was built in 1907 and was in need of replacement or rehabilitation. The bridge is 312 feet long but only eight feet wide, curb to curb. After a 2007 fracture critical inspection



revealed that the structure was in need of significant repairs, the bridge was closed until an evaluation of the options for repairs could be undertaken by Sargent Engineering in 2008. Those repairs would involve installing stabilizing metal clamps on the forge-welded, eye-bar support system. The bridge was then posted with signs that limit vehicle weights to four tons or less and fitted with overhead bars that restrict the height of vehicles crossing the bridge. Chelan County then proceeded to seek funding for the project and explored options for replacement of the structure or to rehabilitate the existing bridge. After consultation with Federal Highways and Washington State Department of Transportation Highways and Local Programs officials, the rehabilitation option of the existing structure was pursued as the preferred alternative by design consultants, CH2M Hill Engineering.



Primary features of this project include replacing the existing wooden bridge deck with a new wooden deck system, replacing all pins and eye bars with higher strength steel, adding additional steel along existing members to increase strength, replacing floor beams and railings, upgrading the roller bearing systems, and rebuilding and repairing both piers. Sight distance issues and bridge geometry warrant a traffic signal system be installed on the rehabilitated one lane bridge. The project will restore unrestricted local access between Monitor and Cashmere and increase the bridge's carrying capacity to an H-15 truck load. This historic bridge is referred to as the "green bridge" and will be re-painted green for historical reasons. Construction contractor Mowat Construction, Inc. began work in the summer of 2010 and is scheduled to complete work by spring of 2011, at a total project cost of \$3,084,844.

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## Asotin County – Fisher Gulch Bridge

The Fisher Gulch Bridge Replacement Project in Asotin County included the replacement of the existing bridge over Fisher Gulch located at MP 19.62 on Snake River Road.

In June 2008, the bridge was found by County Road Department employees to have severe structural deficiencies. The bridge was closed by an Emergency Order from the Asotin County Commissioners through Resolution 08-16, dated June 25, 2008. The project received state funding through the County Road Administration Board. Time was of the essence to provide a design/bid package to replace the structurally deficient bridge since the temporary detour installed had an undersized culvert to handle spring runoff flows and the bridge is the only access to residences and other businesses upstream.

Asotin County selected Riedesel Engineering to develop the plan and profile; design the project; prepare the necessary environmental documentation, contract documents, and plans; and provide assistance with construction observation and administration required to construct the Fisher Gulch Bridge Replacement Project. This fast track emergency bridge replacement project took seven weeks to complete from notice to proceed to advertisement including environmental documentation. The project environmental clearances included cultural resources approval from DAHP (Governor’s Executive Order 05-05), State Environmental Policy Act, and Joint Aquatic Resources Permit Application requiring Hydraulic Project Approval from the Washington Department of Fish & Wildlife and Section 404 Permit Approval from U.S. Army Corps of Engineers.

The project was on a tight time schedule with the goal to complete construction of the project during the winter of 2008 - 2009 with completion of work below the ordinary high water mark by December 31, 2008, as stipulated in the Hydraulic Project Approval.

Plan and specifications were ready on schedule and within budget for bidding in October 2008. Seven competitive bids were received with notice of award and notice to proceed following within the next two weeks. M.A. DeAtley Construction, Inc. was low bidder at \$225,738 and was awarded the contract. The Engineer’s estimate was \$292,630. The Contractor began mobilizing to the site on November 17, 2008 and the project was considered substantially complete January 26, 2009 with work completed below the ordinary high water mark on December 18, 2008. The overall project was completed on schedule, and under budget.



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## Mason County – Tahuya River Bridge

The Tahuya River Bridge in northern Mason County was an 88-foot long multi-span wood and concrete structure that was originally constructed in 1950. The structure provided access to timberlands and residences until the winter rainstorm and subsequent flooding of December 2007 did approximately \$11 million in infrastructure damage in Mason County. The storm's runoff caused the Tahuya River to swell and wash large wood debris against the bridge. Combined with subsequent high stream flows, the bridge was destroyed and the county was able to install a temporary 80-foot bridge to allow one-way traffic over the river until the replacement bridge was constructed. County Road Administration Board Capitalization Advance funds were provided to help Mason County restore this critical roadway. The project designer was Sargent Engineers, Olympia.

Contractor Quigg Brothers Construction, Aberdeen began construction on the new pre-stressed, 116-foot long concrete girder bridge in August of 2009 and reached substantial completion in January of 2010. The final construction cost was \$1,554,827.



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## Lewis County – Chandler Road Bridge

Chandler Road Bridge near the town of Dryad is approximately 17.5 miles west of the City of Chehalis via State Route 6. The December 3, 2007 flood event destroyed the original 201-foot, three-span, precast concrete bridge, built in 1970, which crossed the main stem of the Chehalis River. Lewis County elected to proceed with construction and sought financial assistance from County Road Administration Board through emergency relief assistance funds. This contribution from CRAB helped Lewis County advance the project, even though the local responsibility for design, permitting, and construction was nearly \$2.4 million.



After months of negotiation, the Federal Emergency Management Administration (FEMA) authorized replacement of the structure, but federal participation was limited to pre-disaster replacement costs. Recently, a final FEMA decision was made regarding Lewis County's appeal to use current codes and standards for the bridge replacement and a new contract was authorized by FEMA increasing federal participation to the anticipated total project cost. With this approval, federal participation covered roughly three-quarters of the estimated \$3.75 million replacement structure.

The Chandler Road Bridge includes a 235-ft long by 28-ft wide single-span precast, post-tensioned concrete girder (HS 25-44 loading) bridge over the Chehalis River, with the bottom chord of the girders three feet above the new FEMA 100-year flood elevation. The bridge has been re-aligned and raised the grade of 1100 feet of bridge / intersecting road approaches to accommodate the increased girder depth and debris clearance height and improve the intersection with SR 6 and Chandler Road. The bridge opened in December 2010. Lewis County's match for this project is now \$468,000 or 12.5% with the balance funded by FEMA and 12.5% from the Washington State Department of Emergency Management.

