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CONDITION OF RURAL ROADS AND BRIDGES AND STATUS OF INTERMODAL OPERATIONS IN WASHINGTON STATE

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CONDITION OF RURAL ROADS AND BRIDGES AND STATUS OF INTERMODAL OPERATIONS IN WASHINGTON STATE

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16. Abstract

A critical element is to determine how the condition and use of rural roads and bridges is affecting intermodal transportation in the state of Washington. The economic impact of infrastructure inaccessibility will be determined by a detailed survey of counties and other agencies. The condition of rural roads and budgets and the attendant funding needs will be evaluated relative to usage in an intermodal movement. Funding prioritization, by county, as to intermodal efficiencies will be developed. Overall cost-benefits of improvements will be performed as an underlying analytical tool for research effort.

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Executive Summary

A recent survey of county engineers in Washington State found a large increase in the average number of miles of roads per county that were permanently posted or restricted over a five-year period, from an average of nine miles per county in 1994 to an average of 130 miles per county in 1999. Six counties had estimated closures on over 100 miles of posted or restricted roads in 1999: Franklin County, with estimated closures on 968 miles; Grant County, 820 miles; Ferry County, 700 miles; Grays Harbor County, 570 miles; Benton County, 250 miles; and Columbia County, 220 miles. The average number of posted bridges increased from an average of five per county in 1994 to 11 per county in 1999.

The average number of bridges less than 20 feet long declined by more than 50 percent over a five-year period, from an average of 91 in 1994 to an average of 42 in 1999. Also, the average number of bridges off the federal aid system increased by more than one-fourth for the total survey population, and increased by two-thirds for the smaller subset of counties that participated in both the 1994 and 1999 surveys. (Twenty counties, or 51 percent of the total counties in Washington State, participated in both the 1994 and 1999 surveys of county engineers.)

Traffic levels on rural roads show considerable change over the five-year period. Traffic trends on county roads can be studied by examining average daily traffic (ADT) counts. In the larger survey group, an increase of 22 percent was observed in the miles of county roads with up to 50 average daily trips, while an increase of 57 percent occurred for those with over 1,000 but less than 2,501 average daily trips. The same trends were observed in the smaller sample consisting of the same counties in both surveys, but the increases were even larger, with an

increase of 31 percent in miles of rural roads with up to 50 ADT, and an increase of 75 percent in miles with more than 1000 but less than 2,500 ADTs. Declines in ADT ranging from 18 to 43 percent were observed for the other categories of ADT for both survey groups. These changes in traffic levels will impact road conditions and maintenance requirements and thus merit closer study in order to avoid pockets of destruction.

In the larger survey group, including all participating counties, a increase in the use of less permanent surfacing choices was observed, with a nine percent increase in the percentage of county roads surfaced with gravel over a five-year period, and declines of seven percent for surfaces with high bituminous (oil and chip), one percent for low bituminous. However, in the smaller sample that compares changes in conditions for the same counties over the five-year period, this trend is not apparent, thus the change in composition of counties is the source of this difference over time. In the smaller sample, an 11 percent increase in paved roads was observed, while declines of 4% for low bituminous and 5% for high bituminous were observed. e largest change in surface type was a 6 percent decline in the use of high bituminous.

The change in condition of county roads and bridges was less favorable in 1999 than in the 1994 survey, based on the qualitative opinions of the county engineers. Engineers in 1999 felt that 21 percent of the county roads had declined in condition, compared to 17 percent in the 1994 survey. Eighteen percent of the county bridges in the 1999 survey were estimated to have declined in condition, compared to 13 percent in 1994. The smaller sample representing the 20 counties that participated in both surveys had similar results for this set of questions.

Overall, the condition of county roads and bridges was rated better in 1994 than in 1999. In particular, fewer bridges were rated as intolerable or closed. Nearly one-quarter of all bridges

were considered intolerable or were out of service in 1994 for both samples, compared to three percent in 1999 for the smaller matching sample and six percent for the larger sample.

In the larger sample, a significantly higher percentage of roads were listed in new or perfect condition in 1999, with an average of 18 percent of the rural roads in each county falling in this category, compared to just six percent in 1994. There was a corresponding decrease in the number of roads listed as adequate or better, with 45 percent in this category in 1999, compared to 62 percent in 1994. These same trends were echoed in the smaller sample of matching counties. However, there was an increase of seven to eight percent in the percentage of roads classified as barely adequate over the five-year period for the two survey groups.

Intermodal transportation issues were the focus of the second portion of the survey. Barriers to increased use of intermodal transportation included poor surface conditions for the trucking industry, car scheduling problems for rail, and a lack of services or poor access to facilities for air and transfer stations. At-grade railroad crossings were specifically mentioned as problematic. Concerns over the impact on rural roads and bridges in the event of river drawdowns or dam removal were common. Congestion was a problem for a few areas in the state, notably the Wenatchee area in Douglas County and areas in Pierce and King counties. The need for an all-weather road system was expressed by a number of engineers, citing specific problems such as flooding on Interstate 5 and temporary road closures due to weather. The lack of freight capability on the Washington State Ferry System impedes freight movement in several areas of the state. Finally, overloaded trucks bypassing scales and using underdesigned county roads presents a noteworthy challenge for law enforcement.

Responses by county for both the 1994 and 1999 surveys are contained in the Appendix. An overall mean response for all participating counties is presented in Appendix Table 1. In Appendix Table 1a presents averages for those counties that participated in both surveys. Only the set of survey questions that were common to both surveys are included in the appendix tables. Complete survey responses by county for both surveys are available upon request.

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Introduction

Washington State is the most trade-dependent state in the country. Twenty percent of the state's jobs relate to international trade, and fully half of the exports leaving the state's ports are Washington State goods, in terms of value (Washington State Department of Transportation and Puget Sound Regional Council). One reason for this high trade volume is that the availability of "backhauls" to Asia reduce the cost of exporting, saving Washington exporters an estimated $150 to $500 per container. Washington farmers and manufacturers can thus compete in markets that would otherwise not be available to them. Many of the exported goods are bulk agricultural products such as grain and apples. These exports are produced in Central and Eastern Washington, and must make their way across the state from farm to ship.

While considerable attention has been rightly focused on the extremely important transportation issues centered in the Puget Sound region, rural roads, bridges, and other modes of rural transport are a vital link in this system. A number of major changes impacting rural transportation have occurred over the past decade (or are currently being proposed). Perhaps foremost in the concerns of rural county engineers is the issue of river drawdowns or dam removal. This would impact barge traffic, which has been increasing in recent years due to its cost savings of approximately 23 percent compared to rail or truck (Cottrill, 1998). Traffic patterns on rural roads and bridges would be impacted as well. The second most commonly stated concern among rural county engineers is the abandonment or removal of rail lines and reduction in availability of railcars. Other transportation issues significantly impacting rural areas include deregulation of trucking, resulting in heavier loads; increased traffic in some rural areas, due to tourism, commuting to off-farm jobs, and increases in rural population; and decreased

traffic in other rural areas, due to farm consolidation, rural out-migration, and production shifts from agricultural production into the conservation reserve program. These changes need documentation from a state-wide perspective in order to prioritize funding for the transportation needs of the rural areas of the state.

In this study, we will create an inventory of the current conditions of the rural roads and bridges in Washington State. Then, we will examine the relationships of the transportation system in an intermodal context. The main research instrument is a survey of the county engineers of Washington State. Portions of a national survey of county engineers conducted in 1994 were used as a model for parts of this study (Deller and Walzer, 1997). The individual results of the 1994 surveys, which had not been examined at the state level, serve as benchmarks for the road and bridge inventory portion of this survey.

Background

The rural road system is a vital link in the state's economy. Abandonment of rail lines has caused increased reliance on the road system. Deregulation of the trucking industry has increased truck traffic and legal load limits, putting additional strain on roads and bridges designed for lighter trucks. Potential dam drawdowns would change current marketing routes for a large volume of agricultural products. Recreational usage has increased traffic in rural areas. The increasing trend of off-farm work has created more rural commuters. A trend of moving to rural areas to "get away from it all" has increased commuting by an audience used to urban or suburban roads. Finally, the condition of rural roads and bridges is vital to the state's export-oriented economy.

Deficient rural bridges can have a major impact on the economy (Walzer, Sutton, and Deller, 1998). Rural residents may have to travel longer distances to get to work, for shopping, and for accessing public services. School buses and emergency vehicles will spend additional time in transit. Development of tourism will be restricted if access is limited to potential sites. The cost of transporting goods to market and farm inputs to farmers will be increased. Today's farm implements and trucks are much larger and heavier than those used several decades ago, placing increased stress on rural bridges. Lower load limits on local roads may make rural areas unattractive for industrial development.

The number of deficient bridges in rural areas can cause major expenses for rural governments. A significant proportion of rural bridges were constructed prior to 1950. These bridges may not have been designed for the higher weight of today's trucks and higher traffic volume. Thus, county engineers face problems associated with increased weights and higher traffic volumes as well as age-related deterioration. In addition, financing rural roads and bridges is increasingly difficult in rural areas with declining population and depressed farm prices.

Although Washington State ranks very well nationally in terms of the condition of its rural bridges, significant problems exist in the state. As of January 1, 1986, 26 percent of its bridges were ranked as deficient (Baumol, Schornhorst, and Smith, 1989). A deficient bridge is defined as not being able to carry a legal load. Among the bridges that are classified as either structurally deficient or functionally obselete in Washington State, nine percent fall into the category of a sufficiency rating less than 50, which is the worst category. Nationally, this is the lowest percentage of bridges in this classification in the country (Walzer, Sutton, and Deller, 1998). Bridges in this rating category qualify for federal replacement or rehabilitation funds. Bridges

with a sufficiency rating (SR) between 50 and 80 qualify for rehabilitation funds only. Those with a SR higher than 80 do not qualify for federal bridge funds. In Washington State, 10% of bridges qualified for rehabilitation, and 80.9% are not eligible for federal funding. Although the condition of the state's bridges may be superior to that of other states, especially those in the east where the average age of structures is generally going to be higher, the inability to qualify for federal funding for extremely costly bridge repair and replacement projects is problematic.

Funding issues associated with rural bridges are numerous. A shift from federal to state support for funding may bias funding toward urban areas due to higher traffic volume, political concerns or methods used to determine funding priorities. In rural areas, traffic counts and population density are lower even though road mileage may be higher. Tax bases in rural areas are much smaller than in urban areas and have declined significantly in recent years due to a decline in farm prices and, subsequently, farmland values. All have combined to increase fiscal pressure on rural governments for road and bridge maintenance.

Other funding issues associated with bridges include the fact that transportation services may be taken for granted once the bridge is in place, with insufficient attention paid to preventive maintenance. Bridge rehabilitation and replacement projects require large outlays that may be hard to fund--more difficult than getting funding for a new structure, for example, as benefits are harder to see.

In 1994, a national survey of counties and townships regarding methods of administration and financing of off-system roads and bridges was undertaken by the Illinois Institute for Rural Affairs at Western Illinois University with sponsorship by the National Association of Counties (NACo), National Association of County Engineers (NACE), National Association of Towns and

Townships (NATAT), and USDA, Agricultural Marketing Services. This study was preceded by a national study conducted in 1986 by staff at the Illinois Institute for Rural Affairs at Western Illinois University with support from the USDA, Office of Transportation.. This national study examined road maintenance and finance at the county or township level. Results from these two national studies allowed some longitudinal comparisons.

The two earlier studies explored the following topics regarding off-system roads and bridges. Type of road surfaces and the conditions in which surfaces were maintained were documented. Methods of financing roads and bridges were explored, with comparisons made regarding dependence on property taxes, intergovernmental aid, and other revenue sources. In particular, the association between quality of roads and bridges and methods of finance was examined. A series of short research publications was published in 1996 and 1997 (Walzer and Deller, 1996a; Walzer and Deller, 1996b; and Walzer and Deller, 1997). A report describing project findings was produced and distributed nationally in 1997 (Deller and Walzer, 1997).

Results of these studies showed that the average age of bridges is negatively correlated with their average condition (Walzer, Sutton, and Deller, 1998). This may seem obvious, but it explains why bridges are in poorer condition in areas of the country that were settled first. In addition, the total number of bridges in a county can affect the condition in which they are maintained, as resources will be spread more thinly. In this national study, per capita income in a county was not a significant determinant of bridge condition. However, county size was significantly related to bridge condition, as larger counties have a bigger tax base and qualify for more programs due to higher traffic (Walzer, Sutton, and Deller, 1998).

The 1994 national survey of county engineers by Walzer et al. served as a starting point for the survey of engineers conducted in this study. Since 22 of the 39 counties in Washington State had participated in Walzer's study, considerable state-wide data were available for examining trends. Sections of the 1994 survey relevant to this research were repeated in order to make valid comparisons over time. The Illinois Institute for Rural Affairs at Western Illinois University was very helpful in providing a copy of the survey instrument and survey data from the 1994 survey.

Methods

A mail survey for the state's county engineers entitled the 1999 Survey of Needs for Washington's Rural Roads and Bridges was developed with two purposes in mind. The first half of the survey documents changes in the conditions of roads and bridges over the five-year period since the earlier survey. These questions were very similar to those in the national survey of county engineers conducted in 1994. (The full text of both questionnaires is available in Appendix A.) The second half of the survey focused on intermodal transportation issues. Intermodal was defined as the use of more than one mode of transportation for the same product, for example, truck to rail, ship to truck, or truck to air.

A pre-test of the survey revealed concerns over length and repetition. A shortened, more concise version of the survey was sent to each county engineer in the state in late February. The cover letter emphasized the importance of their input as local experts on their roads and bridges (see Appendix A). In addition, the importance of prioritizing funding for intermodal issues was stressed. Follow-up phone calls were made shortly after the March 15 response. Approximately

six weeks after the first mailing, another set of questionnaires was sent to the those who had not responded. Another set of phone calls followed this mailing. The final response rate was an impressive 79% (see Table 1). The non-responding county engineers tended to be from small counties, possibly with inadequate staffing for extra responsibilities. Nonetheless, the data from these surveys included 79% of Washington's counties, 92% of the 1995 population, and 75% of the area of the state.

The first two sections of the survey documented characteristics of the county's roads and bridges. Information was sought on the number of miles of county-maintained roads and the number of county-maintained bridges in 1998, and how the conditions on these roads and bridges had changed over the previous five years. Statistics on average daily trips and miles by surface type were gathered. Respondents were asked how common a series of typical rural road and bridge problems were in their area, and then were asked to rank the economic importance of these problems.

Intermodal transportation issues were the focus of the last section of the survey. Engineers were asked to indicate the importance of various forms of intermodal transportation (e.g. truck to rail, ship to truck, truck to air) in their county. They were asked to describe specific barriers to increased usage of intermodal transportation in their region by transportation mode. These questions were open-ended. They were then asked to indicate how common various transportation problems were by mode, such as congestion and surface condition problems for trucking, rail closures and scheduling problems for rail, and lack of intermodal transfer facilities.

Table 1: Participation by County in Surveys of County Engineers, 1994 and 1999

County	1994 survey	1999 survey	Both
Adams		●	
Asotin			
Benton	●	●	●
Chelan	●	●	●
Clallam	●	●	●
Clark	●	●	●
Columbia		●	
Cowlitz			
Douglas		●	
Ferry		●	
Franklin	●	●	●
Garfield		●	
Grant		●	
Grays Harbor	●	●	●
Island	●		
Jefferson	●	●	●
King		●	
Kitsap	●	●	●
Kittitas	●	●	●
Klickitat	●	●	●
Lewis	●	●	●
Lincoln		●	
Mason	●	●	●
Okanogan	●		
Pacific		●	
Pend Oreille	●	●	●
Pierce	●	●	●
San Juan		●	
Skagit		●	
Skamania	●		
Snohomish	●	●	●
Stevens			
Spokane	●	●	●
Thurston	●	●	●
Wahkiakum		●	
Walla Walla	●		
Whatcom	●		
Whitman	●	●	●
Yakima	●	●	●
TOTAL PARTICIPATING:	24	31*	20

The national survey of county engineers conducted in 1994 covered a number of topics that were not the focus of this study and thus were omitted from the 1999 survey. These included management practices, expenditures and revenue issues, capital improvement plans, priorities for the overall work plan for roads and bridges, federal funding issues, internal operations and training, and relations with government agencies. The overall results of the 1994 survey were reported in a series of bulletins (Deller and Walzer, 1997; Walzer and Deller, 1996a; Walzer and Deller, 1996b; Walzer and Deller, 1997). In Washington State, 22 of the 39 counties participated in the 1994 survey of rural county engineers (see Table 1). The individual results by county for Washington State in 1994 are reported in Appendix B.

Results

In this section, the results of the 1999 survey of county engineers are summarized. Approximately four-fifth of Washington's counties responded to the survey. Responding counties make up 75% of the area of the state and 92% of its 1995 population. The non-participating counties included Adams, Asotin, Cowlitz, Island, Okanogan, Skamania, Stevens, Walla Walla, and Whatcom. Complete results for the survey are reported in Appendix B.

County Characteristics of Rural Roads and Bridges

The characteristics of each county's rural roads and bridges are unique. While we report averages from the survey of county engineers, these figures alone cannot provide a meaningful portrait of the condition of the state's rural road and bridge infrastructure. Comparing a county to the overall average for the state, or to a particular county may be useful. For those counties that participated in both studies, county level trends are informative. A few of the state-level

trends are also useful. Statistical analysis of the averages did not reveal any statistically significant relationships among the county characteristics under study, due to the high variance of the responses.

Mean values for all survey responses are reported in Appendix Table 1. Appendix Table 1a presents averages for the 20 counties that participated in both the 1994 and 1999 surveys. Responses by county are presented in following appendix tables. In the larger sample, county maintained roads averaged 1,093 miles for the 31 counties in the survey, compared to 1,055 miles for all responding counties in 1994, an increase of about four percent. County-maintained bridges averaged 146 per county, compared to an average of 132 bridges per county in the 1994 survey. Approximately one-third of the county bridges were on the federal aid system in both surveys. In 1999, an average of 10 bridges per county had been either closed or posted for some type of limitation over the past five years, compared to an average of five bridges in the 1994 survey.

In the smaller matching sample, county maintained roads averaged 1,084 miles for these 20 counties, compared to 1,111 miles for these same counties in 1994, a decrease of about two percent. County-maintained bridges averaged 175 per county, compared to an average of 136 bridges per county in the 1994 survey, an increase of nearly 30 percent. In 1999, an average of 11 bridges per county had been either closed or posted for some type of limitation over the past five years, compared to an average of five bridges in the 1994 survey.

In the 1999 survey, an average of 134 miles of roads per county had been permanently posted or restricted over the past five years for all participating counties, although the standard

deviation was quite large, 271 miles. The subset of counties that participated in both surveys averaged 111 miles of county roads that were permanently posted or restricted over the previous five years. This 1999 figure is a large increase over the average of nine miles of county roads posted for some type of limitation over the previous five years reported in the 1994 survey for both the total group of participating counties and the smaller subset. The figures in the earlier survey represented miles of roads or numbers of bridges that had been closed, while those in the 1999 survey represented miles of roads or numbers of bridges that had been permanently posted or restricted in some manner, so the change in phrasing may be partially responsible for the increase in numbers.

In the 1999 survey, six counties estimated closures on over 100 miles of posted or restricted roads. These counties included Columbia County, with estimated closures on 220 miles; Benton County, estimating closures on 250 miles; Grays Harbor County, with an estimate of 570 miles; Ferry County, estimating 700 miles of closures; Grant County, 820 miles; and Franklin County, estimating closures on 968 miles. In most of these cases, closures were temporary and reflected freeze/thaw conditions. When asked to estimate the number of miles of county roads that may have to be restricted some way in the next five years, county by county estimates varied slightly, although the overall average remained the same as the current estimate at 134 miles.

The change in condition of county roads and bridges was less favorable in 1999 than in the 1994 survey, based on the qualitative opinions of the county engineers (see Appendix Table 1). Engineers in 1999 felt that 21 percent of the county roads had declined in condition, compared to 17 percent in the 1994 survey. In the 1994 survey, 13 percent of the county bridges were

estimated to have declined in condition, compared to 18 percent in 1999. These same trends were observed in the smaller subset of counties that participated in both surveys (Appendix Table 1a).

Individual county roads and bridges are classified by condition for both 1994 and 1999 in Table 2. In the larger sample of all participating counties, 63 percent of the county roads were classified as adequate or better in the 1999 survey, compared to 68 percent in 1994 (the first two categories in Table 2). The percentage of roads classified as barely adequate with substantially higher than normal maintenance required was higher in the 1999 survey at 11 percent, compared to just 3 percent in the 1994 survey. Approximately one-quarter of the county roads in both surveys were classified as less than adequate with normal maintenance. The percentage of roads classified as new or perfect increased threefold, from six percent in 1994 to 18 percent in 1999. The percentage of bridges in the three worst condition categories (substantially higher than normal maintenance required, severe failures, or closed) decreased from 15 percent in 1994 to just one percent in 1999. The fact that the average number of bridges under 20 feet long fell by more than half may be partially responsible for this change.

In the smaller sample consisting of counties that participated in both surveys, the condition of roads and bridges improved considerably, based on the changes in their classification. In the 1999 survey, 69 percent of the county roads were classified as adequate or better, compared to 59 percent in 1994. The percentage of roads classified as barely adequate with substantially higher than normal maintenance required was lower in the 1999 survey at nine percent, compared to 16 percent in the 1994 survey. The trend of fewer bridges in the worst condition categories and the large decline in the number of county bridges less than 20 feet long seen in the complete survey was echoed in the smaller sample of matched counties.

Table 2: Average Rating of County Roads and Bridges By County Engineers, 1999 and 1994 Surveys

Condition	1994 Survey of Engineers		1999 Survey of Engineers	
	Roads	Bridges	Roads	Bridges
Better or equal to present desirable criteria	6	21	18	20
Better or equal to present minimum criteria	62	32	45	49
Meets minimum tolerable condition but with high priority to repair	26	22	24	25
Basically intolerable condition, high priority to repair or replace	3	9	11	5
Immediate repair necessary to put back into service	5	10	3	0
Closed, awaiting repairs or replacement	1	5	1	1

Traffic levels on rural roads show considerable change over the five-year period. The change in miles of county roads in six different categories of Average Daily Traffic (ADT) counts is documented in Figure 1. In the larger survey group, an increase of 22 percent was observed in the miles of county roads with up to 50 average daily trips, while an increase of 57 percent occurred for those with over 1,000 but less than 2,501 average daily trips. The same trends were larger in the smaller sample consisting of the same counties in both surveys, with an increase of 31 percent in miles of rural roads with up to 50 ADT, and an increase of 75 percent in miles with more than 1000 but less than 2,501 ADTs. Declines in ADT ranging from 18 to 43 percent were observed for the other categories of ADT for both survey groups. These changes in traffic levels

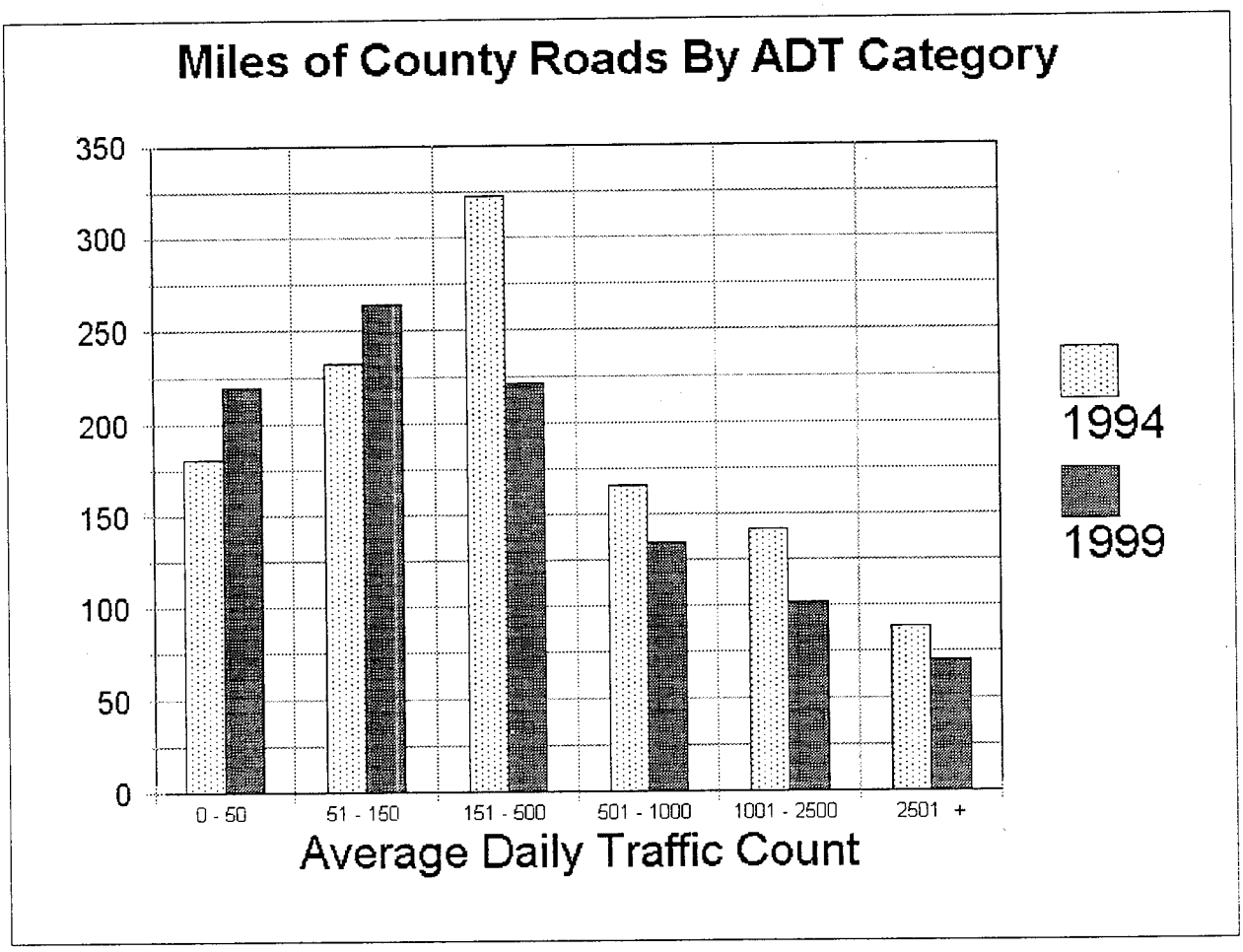

Figure 1: Comparison of County Road Miles by Average Daily Traffic Count, 1994 and 1999 Surveys of County Engineers

will impact road conditions and maintenance requirements and thus merit closer study in order to avoid pockets of destruction.

A trend toward less permanent surfacing choices was apparent in the larger survey group, with a nine percent increase in the percentage of county roads surfaced with gravel over a five-year period, an eight percent decline for surfaces with high or low bituminous (oil and chip) surfaces, and a one percent increase in earth surfaces. However, this trend is not apparent in the smaller sample that compares changes in conditions for the same counties over the five-year period, thus the change in composition of the counties in the larger sample explains this observation. In the smaller sample of counties that participated in both surveys, the percentage of paved county roads increased by 11 percent, while the percentage surfaced with gravel decreased by one percent. High bituminous surfaces declined by five percent, while low bituminous decreased by four percent.

Table 3: County Roads By Surface Type From Surveys of County Engineers (%)

	All participating counties			Counties that participated in both 1994 and 1999 surveys		
	1994	**1999**	**% change**	**1994**	**1999**	**% change**
Earth	5	6	1%	4	4	0%
Gravel	21	30	9%	25	24	-1%
Low Bit	34	33	-1%	38	34	-4%
High Bit	15	8	-7%	13	8	-5%
Paved	22	23	1%	18	29	11%
Concrete	3	1	-2%	2	0	-2%
TOTAL	100	100		100	100	

Prioritizing Funding Needs for Rural Roads and Bridges

In order to help prioritize funding for rural roads and bridges, county engineers were asked to rank a set of common problems in terms of economic importance to their county. Problems were first designated as Very Common, Somewhat Common, or Not Common, then each set of problems was ranked (Table 4). For rural roads, the most common problem as reported by the county engineers is temporary weight limits due to weather (Table 4). Poor surface condition is the next most common problem, followed closely by detours due to construction. While congestion was not considered a common problem on average, the two most urban counties in the state (King and Pierce) ranked this problem highest in terms of economic importance to their county. For bridges, the most common problem is weight limits, and this problem is also most important in terms of economic significance. Delays due to congestion and temporary weight limits due to weather were not common problems on average, but they did affect particular counties. Respondents were encouraged to add other common problems to these lists in an "other" category. More detail on these county-level results are reported in the next section.

Current and Future Intermodal Transportation Issues

Intermodal transportation is the topic of the final section of the survey. Intermodal transportation is defined as the use of various modes of transportation for the same product, including transport before and after processing or packing. Engineers were asked how important various types of intermodal transportation were to the efficient movement of goods and services in their county both today and in the coming decade. Table 5 shows that truck to rail was considered the most important type of intermodal transportation, both in today's economy and the

Table 4 Ranking of Common Problems on Rural Roads and Bridges By County Engineers, 1999 Survey

	How Common?[1]	Rank:[2]
Problems on Rural Roads:		
Temporary weight limits due to weather	1.61	2.12
Poor surface condition	1.97	2.31
Detours due to construction	2.00	2.88
Congestion	2.60	4.46
Weight limits	2.68	4.08
Potholes or other surface deterioration	2.71	4.68
Problems on Rural Bridges:	**How Common?[1]**	**Rank:[2]**
Weight limits	2.26	1.64
Poor surface condition	2.45	2.33
Closures due to weather	2.77	3.32
Temporary weight limits due to weather	2.94	3.21
Delays due to congestion	2.94	4.17

[1] Very Common = 1, Somewhat Common = 2, Not Common = 3

[2] Issues were ranked from 1 to 5 (1 to 6 in second set), with 1 being most important.

economy of the next decade, with its average ranking rising slightly for the future. Ranking types of intermodal transportation in terms of economic importance remained the same over time for the next three choices as well. Truck to ship/barge was considered second most important after truck to rail, rail to truck ranked third, and ship/barge to truck ranked fourth.

Table 5: Importance of Various Intermodal Transportation to County Economy, Today and In Near Future, 1999 Survey of County Engineers

Mode:	Importance [1]:
In Today's Economy:	
Truck to rail	1.72
Truck to ship/barge	1.90
Rail to truck	2.07
Ship/barge to truck	2.37
Air to truck	2.43
Truck to air	2.47
Rail to ship/barge	2.59
Ship/barge to air	2.80
In Economy of Next Decade:	
Truck to rail	1.59
Truck to ship/barge	1.83
Rail to truck	1.90
Ship/barge to truck	2.20
Truck to air	2.34
Rail to ship/barge	2.41
Ship/barge to rail	2.57
Air to truck	2.67

[1] Very Common = 1, Somewhat Common = 2, Not Common = 3

Respondents then ranked a series of common problems by transportation mode as shown in Table 6. An answer of 1 indicated that a problem was very common, 2 indicated the problem was somewhat common, and 3 indicated that a problem was not common. In Table 6, problems were ordered by average ranking for each mode, with the most important category listed first. For trucking, extra wear and tear due to surface condition was the most important problem. Road closures due to weather and detours caused by weight limitations on roads tied for the

second most common problem. Congestion on truck routes was ranked last overall, but this was an important problem in several highly populated counties.

The most common problem for rail as indicated by average responses by county engineers was the lack of cars when needed (Table 6). The next most common problem was lack of flexibility to respond quickly to transport needs. The third and fourth most common problems were ranked nearly the same: other car scheduling problems and non-competitive pricing. Interestingly, infrastructure problems, access to rails, and rail closures were ranked as less common than the previous problems dealing with scheduling and pricing.

For transfer facilities, lack of services was the most common problem on average as ranked by the county engineers (Table 6). The next most common problem was poor or unsafe access to transfer facilities, while congested facilities was ranked least common. The most common problem for air transportation was the lack of facilities, followed by non-competitive pricing. The lack of access to air transportation was ranked least important. A number of open-ended questions were included with these questions. Individual responses by county are discussed in the following section.

Table 6: Average Rank of Common Problems By Transportation Mode, 1999 Survey of County Engineers

Mode:	Importance*:
Truck:	
Extra wear and tear due to surface condition	1.55
Road closures due to weather	2.28
Detours caused by weight limitations on roads	2.28
Detours caused by weight limitations on bridges	2.45
Congestion on truck routes	2.59
Rail:	
Lack of cars when needed	1.67
Inflexibility—can't respond quickly to transport needs	1.80
Other car scheduling problems	2.07
Non-competitive pricing	2.08
Rail infrastructure problems (bridge, rail upkeep)	2.19
Lack of access to railhead	2.29
Rail closures	2.33
Transfer Facilities:	
Lack of services	2.11
Poor or unsafe access to transfer facilities	2.53
Congested facilities	2.67
Air:	
Lack of facilities	1.94
Non-competitive pricing	2.21
Lack of access	2.44

* 1 = Very Important, 2 = Somewhat Important, 3 = Not Very Important

Results by County

Trends in Condition of Rural Roads and Bridges

Appendix C presents the text and responses by county for the portions of the two surveys of county engineers that were identical. Referring to the 1999 survey, this includes the first 42 questions of the survey. Average response for all participating counties for both the 1994 and 1999 surveys is presented in Appendix Table 1, while the average response for counties that participated in both years is presented in Appendix Table 1A. Trends over the five-year period between surveys are easily noted for those counties that participated in both surveys. A report documenting these county-level results was provided to all Washington State counties in September, 1999 (Painter and Casavant, 1999).

Intermodal Issues and Concerns

A two-page section of the survey was devoted to open-ended questions concerning intermodal issues by specific modes. Respondents were asked to describe barriers to increased use of intermodal transportation in their county. They were encouraged to provide specific details. These responses are summarized in this section.

A large number of comments to the open-ended questions were submitted by King County engineering staff. These needs are unique to this urban county and document the vital importance of intermodal issues in this port city and transportation hub for the state (see Table 7). For truck to rail modes, Spokane County listed a number of substandard roads with affected industries including aggregates, manufacturing, and agriculture. Also for the truck to rail mode, Klickitat County cited several bridges and roads needing work, with affected firms including tree fruits,

Table 7: Barriers to Increased Use of Intermodal Transportation By County (Survey of County Engineers, 1999)

County:	Road/bridge:	Affected firms/industries:
Truck to Rail		
Klickitat Co:	Alderdale	Mercer Ranches, Underwood Fruit
	197 bridge	Port of Klickitat, Talmo, SDS
	Hood River Bridge	SDS Lumber, Trout Lake Farms
	SR141	Trout Lake Farms
King Co:	Access to rail terminals & traffic congestion on major highways and principal arterials leading to these facilities.	
Spokane Co:	Park Rd/BNSF Rail Xing	Aggregates
	Sullivan Rd-SR290-SR90	Manufacturing: Kaiser, Johnson Mathey, Sullivan Ind. Park
	Prairie View Rd-Spring Valley-Old 195	Grain
	Euclid Road-Coulee Hite Rd to Lincoln Co.	Grain
	Waverly Road - SR27 to Waverly	Grain
Rail to Truck		
King Co:		Movement of intermodal containers from the Port of Seattle facilities to warehouses and distribution centers in greater Duwamish area and Green River Valley is impaired by traffic congestion in the Puget Sound Region.
Klickitat Co:	Alderdale Road	Mercer Ranches, Underwood Fruit

Table 7, cont.: Barriers to Increased Use of Intermodal Transportation By County (Survey of County Engineers, 1999)

Truck to ship/barge:		
King Co:	Access from I-5 thru Seattle to the Port of Seattle terminals and support facilities particularly with growth & development increasing congestion.	
Ship/barge to truck:		
King County:	From Port of Seattle to terminal facilities in and around the Duwamish area as well as the warehousing and distribution centers particularly on routes in the Green River Valley.	
San Juan County:		asphalt, gravel firms
Rail to ship/barge		
King County:	Need for development of on-dock rail facilities to facilitate the transfer of containers to rail cars and also to help assemble trains.	
Ship/barge to rail		
King County:	Need for on-dock rail car loading/unloading from ships.	
Truck to air		
King County:	Traffic congestion & need for better connections to SeaTac Airport such as SR 509 extension and South Access Road.	

lumber, and the Port of Klickitat. San Juan County noted that asphalt and gravel firms are affected by barriers for ship/barge to truck traffic.

Information on problems by transportation mode other than those listed in the survey was also sought. In terms of trucking, Snohomish County cited lack of funding, presumably for roads and bridges. Common problems for rail included at-grade railroad/road crossings, noted by Snohomish and Spokane counties, and limited capacity (Snohomish County). Problems associated with transfer facilities included poor access between port, state facilities, and the federal highway (Snohomish County). Air facility problems cited were less than adequate access given the size of the airport facilities, specifically to Airport Road via Paine Field (Snohomish County).

Potential future barriers for intermodal transportation are provided in Table 8. Many respondents expressed concerns over river drawdowns or dam removal. Congestion is a problem for a few areas in the state, notably for Wenatchee in Douglas County, and for Pierce and King counties. Funding concerns and a lack of facilities were also common.

The last question in the survey asked respondents for any additional comments regarding intermodal transportation. These specific comments are listed in Table 9. Topics include flooding on Interstate 5; overloaded trucks bypassing scales and using underdesigned county roads; the need for an all-weather road system (several comments); and the lack of freight capability on the Washington State Ferry System, among others.

Table 8. Potential Future Barriers to Intermodal Transportation By County, 1999 Survey of Engineers

County	Future Barriers to Intermodal Transportation
Adams	Many of the railroads have been removed - "rails to trails" program
Benton	Lack of all-weather roadways
Chelan	Lack of intermodal facilities.
Columbia	Dam removal would devastate farming economy and road/bridge, rail systems
Douglas	Increased congestion in the Greater Wenatchee urban area is restricting access to the rail head in Wenatchee for wheat. This congestion also is causing problems for tree fruit and shipping out by rail or air. Most fruit shipped out now has to go to Seattle by truck, plugging up those intermodal sites.
Grant	The change in the current balance between modes caused by the removal of river transportation. Road conditions will become an increasing barrier as truck usage increases on both traditional and non-traditional routes. Also, the lack of adequate rail facilities to replace barge traffic will be a barrier.
Jefferson	County has no rail or ship/barge facilities, except for Port Townsend paper mill which occasionally ships paper products. All other goods are transported by truck from major centers to Jefferson County. Potential future barriers are the Hood Canal Bridge and state highways' congestion/capacity.
Kitsap	Note that Kitsap County is a peninsula connected to other areas by SR 3 & SR 16 land, SR 104 Hood Canal Bridge, & 4 ferry routes serving as bridges. The ferry boat designs are incompatible with freight mobility, although they serve as bridges across Puget Sound and are desigted state highways.
Klickitat	Klickitat Co has access to an unusually wide range of transportation options. Chief threats to that access are: river drawdown proposals, which would devastate ag and the county's leading manufacturers; failure of the State to perform road upgrades in rapidly (industrial) developing rural areas; failure to upgrade the Hood River Bridge. Failure to continue to support rural airport. Funds for rural road improvements, on an accelerated basis, are of particular importance. The county is experiencing rapid growth in its eastern area, making haul road improvements essential in near-term.
Lincoln	As trucks are used more they are also getting bigger. This will greatly affect the life of our road system. The breaching of dams (if it happens) would greatly affect barge service.
Mason	Existing and future barriers consist of geographic/physical barriers, such as the Hood Canal and Case Inlet. Most commercial demand (both export and import, 90%+) is handled by truck. There are a handful of industries that utilize the very limited access to air, rail, and water.

Table 8, cont. Potential Future Barriers to Intermodal Transportation By County, 1999 Survey of Engineers

Pacific	Lack of improvements to existing state routes within the county (rail is located outside the county).
County	**Barriers to Intermodal Transportation**
Pend Oreille	No facilities for transfer site (truck-rail); shrinking industrial base (timber, cement, minerals); lack of access to other forms (air, barge)
Pierce	Continuing congestion of road and rail facilities; increasing conflicts at locations where road & rail meet; rail alignments/configurations/switching activities in the Port of Tacoma area
Skagit	Some potential barriers may be right-of-way issues, at-grade railroad crossings, environmental constraints, and lack of funding for transportation improvements.
Snohomish	SR-525 connections
Spokane	1) "Salmon-caused Problems" drawdowns or breaching would have disastrous impact on road and rail systems; 2) Fluctuation of commodity pricing and/or availability and price of services create uncertainty in producers' shipment choices and selection. Counties can't afford to build infrastructure to meet all choices; 3) Low prices of ag commodities can force producers to change from traditional crops to new crops or totally different land use with different planting and harvest timing which could create potential conflict with maintenance and construction schedules and traffic operations.
Whitman	Breaching of Snake River dams, decrease in rail service; affects agriculture & industry

Table 9. Other Concerns Regarding Intermodal Transportation By County, 1999 Survey of Engineers

County	Barriers to Intermodal Transportation
Adams	Overloaded trucks bypassing scales on state highway and using underdesigned county roads.
Grant	The need to provide an all-weather road system.
Kitsap	The concept is in its infancy due to the selection process ferries serve in the traffic stream: ie intermodal capacity is virtually nil on this component (ferries) of the state highway system. Freight does not use WSF because it cannot use WSF- even though access in/out of the Seattle MTA is paramount, freight diverts to a circuitous surface transit route of SR 3, SR 16, I-5, going 60 miles one way vs. 5 - 10 miles by vessel (if it existed)
Lewis	Flooding of I5 stops all types of transportation between Portland & Seattle.
Pacific	Aquaculture, small commercial fishing affected by lack of improvements to existing state routes
Pend Oreille	Seasonal weight restrictions on key county roads that serve timber industry; north-south freeway through Spokane; decline in industrial base to justify the investment in infrastructure
Skagit	Water transport shows very moderate growth (graph provided). Pipeline transport is anticipated to decline (over next 20 years). Rail is expected to show moderate growth, but it makes up only a negligible portion of the total. These three modes are dominated by the activities at the March's Point refineries. Freight tonnage for trucking shows a 53% growth in the 20-year period.
Spokane	Availability of services at strategic times for shipping; -at grade rail/highway crossing conflicts.

Summary and Conclusions

The condition of Washington's rural roads and bridges is vitally important to the state's economy, which is highly dependent on exporting raw materials and agricultural products to Asia. The rural infrastructure is essential to the well-being of rural citizens, who depend on these roads for access to jobs, services, and education, among others. A survey of the county engineers in Washington State was used to examine the current condition of rural roads and bridges and the

state of intermodal transportation at the county level. An excellent response rate of 79 percent was achieved. The information from this survey covered 92 percent of the 1995 population, and 75 percent of the area of the state. Results from a survey of county engineers conducted five years earlier were used to provide a benchmark for this study.

In terms of the basic condition of roads and bridges, the overall trend is a perception of improvement, compared to five years earlier. The percentage of county roads classified as better or equal to present desirable criteria increased from an average of 6 percent for each county to 18 percent, while the percentage of bridges in this classification increased from 12 percent to 20 percent. The percentage of bridges in the worst two condition categories (closed, or immediate repair necessary to put back into service) went from 11 percent in the 1994 survey to just one percent in the 1999 survey. Projects such as the Rural Arterial Program may be responsible for this positive trend.

Traffic trends on county roads can be studied by examining average daily traffic (ADT) counts. An increase of 22 percent was observed in the miles of county roads with up to 50 average daily trips, while an increase of 57 percent occurred for those with over 1,000 but less than 2,501 average daily trips. The same trends were observed in the smaller sample consisting of the same counties in both surveys, but the increases were even larger, with an increase of 31 percent in miles of rural roads with up to 50 ADT, and an increase of 75 percent in miles with more than 1000 but less than 2,500 ADTs. Declines in ADT ranging from 18 to 43 percent were observed for the other categories of ADT for both survey groups. ADT classification changes for various roads over the five-year period may account for some of this increase. Documenting the location of roads with declining traffic and those with considerable increases in traffic would be

very helpful from a planning perspective. Resources could be redirected from roads with declining traffic to those with large increases in traffic volume.

The most common problems noted by county engineers on their rural roads and bridges were temporary weight limits due to weather (roads), weight limits (bridges), and poor surface condition (both roads and bridges). In terms of common problems by type of transportation, road surface condition was ranked the most important problem for trucking in terms of economic significance. For rail, lack of cars when needed and inflexibility to transport needs were the most important problems. Lack of services or facilities were stated as the most important problems for transfer facilities and air.

Concerns over the potential impact on barging by dam breachings, and the changes in trucking and rail needs for intermodal transportation this would cause, were stated as very important by five county engineers. Problems related to congestion were noted by respondents from the large urban counties, King and Pierce, but also by Spokane, Douglas, and Snohomish respondents. Lack of all weather roads was named as a barrier by Klickitat, Snohomish, Grant, and Benton county respondents. At-grade railroad crossings were mentioned by Snohomish, Skagit, and Spokane county respondents. Geographical barriers were named by engineers in San Juan and Kitsap counties, due to the lack of freight capabilities on Washington State Ferries. Funding issues were mentioned by Snohomish and Skagit county engineers.

Issues of intermodal efficiencies may not be a primary concern of rural county engineers because their attention is probably focused on more immediate concerns such as all-weather roads and surface conditions of roads and bridges, which comprise the vital first segment in the transportation system. Linking these segments in an efficient manner is essential to the success of

the system, but this requires state-wide coordination and vision. This study gave the state's county engineers a chance to express their opinions with respect to the potential for intermodal transportation in their area.

One problem with qualitative analysis of the type used in portions of this survey is the potential for lack of consistency over time. Different engineers may perceive the same situations quite differently, and even the same engineer may rate the same situation differently on different days. However, quantitative data in the surveys helped provide a complete picture of the situation.

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Appendix A

Survey Instruments for the 1999 and 1994 Surveys of County Engineers

February 26, 1999

Stephen Lijek
Adams County Engineer
210 W Alder
Ritzville, WA 99169-1859

Dear Stephen Lijek:

Your input is requested as part of this statewide survey examining the condition of rural roads and bridges and their impact on intermodal transportation for the U.S. Department of Transportation. Washington State has a multi-faceted transportation system consisting of roads, rails, barges, air, and ship movements. How do we prioritize funding and plan for the most efficient use of these modes of transportation? As county engineer, you are in the best position to give us details on rural roads and bridges in your county. Further, your expert opinion on issues relating to the bigger picture of the overall transportation system is sought in this study.

The first part of this survey is similar to one you may have participated in four years ago. The results of the current survey will be used to compare conditions documented in the previous survey. The section on intermodal issues is new and will help policymakers prioritize transportation planning at both the state and national levels. You personally will receive a detailed report summarizing the results of this survey. Your response is very important to the study and the issues being studied. We would appreciate receiving your completed questionnaire in the postage-paid envelope by March 15. I will be calling in a week or so, if I haven't received your response, to see if you have any questions. I can be reached at (509) 335-1806. Thank you for your time.

Sincerely,

Kathleen Painter
Research Associate

Ken Casavant
Professor

Department of Agricultural Economics
Washington State University
Pullman, WA 99164-6210

Enclosures

April 13, 1999

Joel Ristau
Asotin County Engineer
PO Box 160
Asotin, WA 99402-0160

Dear Joel Ristau:

About 6 weeks ago I sent you a survey on the needs of Washington's rural roads and bridges. As you can see from the enclosed spreadsheet, you are one of 15 nonresponding counties. We would appreciate your input on this statewide survey being conducted by Washington State University. The results of this survey will be widely reported at the county, state, and federal levels. We would like to give you another opportunity to voice your opinion on the needs and priorities for your county's roads and bridges. An additional focus in this study is the potential for intermodal transportation in your county. Your input on this topic is very important to us.

The first part of this survey is similar to one you may have participated in four years ago. The results of the current survey will be used to compare conditions documented in the previous survey. The section on intermodal issues is new and will help policymakers prioritize transportation planning at both the state and national levels. You personally will receive a detailed report summarizing the results of this survey. Your response is very important to the study and the issues being studied.

We have enclosed another copy of the 1999 Survey of Needs of Washington's Rural Roads and Bridges. **We need your input by April 26 in order to include your county in our report.** If you have any questions I can be reached at (509) 335-1806 or (509) 397-2585. Thank you for your time.

Sincerely,

Kathleen Painter
Research Associate

Ken Casavant
Professor

Department of Agricultural Economics
Washington State University
Pullman, WA 99164-6210

1999 Survey of Needs for Washington's Rural Roads & Bridges

COUNTY_____ **Date**_____

Your Name_____ **Title**_____

Phone Number_____

PLEASE feel free to add comments or details anywhere on this survey form!! Your input is vital to the planning process. Make your voice heard!

I. County Characteristics

Q-1. Number of miles of county maintained roads in 1998? _____ miles

Q-2. Total number of county maintained bridges in 1998? _____ bridges

Q-3. Number less than 20 feet long? _____ bridges

Q-4. Number 20 feet or longer? _____ bridges

Q-5. Number of County Bridges **ON** the Federal Aid System? _____ bridges

Q-6. Number of County Bridges **OFF** the Federal Aid System? _____ bridges

Q-7. Approximately what percentage of all road miles in your county is county responsibility?

_____ **% of county miles**

Q-8. Approximately what percentage of all bridges in your county is county responsibility?

_____ **% of bridges**

Q-9. How many **bridges** have been posted for some type of limitation in the past 5 years?

_____ bridges (number)

Q-10. How many **bridges** do you estimate might have to be posted or restricted in some manner over the next 5 years?

_____ bridges (number)

Q-11. Approximately how many **miles of roads** have been permanently posted or restricted in some manner in the past 5 years?

_____ miles

Q-12. How many **miles of roads** (if any) do you estimate will have to be posted or restricted in some manner over the next 5 years? _____ miles

II. Characteristics of County Roads and Bridges:

A. In the past 5 years, how has the condition of roads and bridges changed? Please indicate the percentage change for each category, for a total of 100% in each row.

Condition has/is:

	IMPROVED	UNCHANGED	DECLINED:	TOTAL:
Roads	**Q-13**____%	**Q-14**____%	**Q-15**____%	**100%**
Bridges	**Q-16**____%	**Q-17**____%	**Q-18**____%	**100%**

B. Show the approximate percentage of county roads in each category:

	% of Roads	Condition Description:
Q-19	_____	New or perfect
Q-20	_____	Surface adequate or better with normal maintenance
Q-21	_____	Less than adequate with normal maintenance
Q-22	_____	Barely adequate; considerable failures and substantially higher than normal maintenance required
Q-23	_____	Failures to the extent that operation of traffic is severely affected
Q-24	_____	Closed, awaiting repairs
Total:	**100%**	

II. Characteristics of County Roads and Bridges, cont.

C. Indicate the approximate percentage of bridges (less than 20 feet) in each category:

	% of Bridges	Condition Description:
Q-25	_____	Better or equal to present desirable criteria
Q-26	_____	Better or equal to present minimum criteria
Q-27	_____	Meets minimum tolerable condition but with high priority to repair
Q-28	_____	Basically intolerable condition, high priority to repair or replace
Q-29	_____	Immediate repair necessary to put back into service
Q-30	_____	Closed, awaiting repairs or replacement.
Total:	**100%**	

D. Estimate the approximate number of **miles** of county roads in each Average Daily Trip category (ADT based on traffic counts):

Miles	Average Daily Trips (ADT)	Miles	Average Daily Trips (ADT)
Q-31_____	0 to 50 ADT	Q-32_____	501 through 1000 ADT
Q-33_____	51 through 150 ADT	Q-34_____	1001 through 2500 ADT
Q-35_____	151 through 500 ADT	Q-36_____	2501 and over

E. Indicate the approximate number of **miles** by surface type:

Miles:	Surface Type:	Miles:	Surface Type:
Q-37_____	earth	Q-40_____	high bituminous
Q-38_____	gravel or loose aggregate	Q-41_____	paved
Q-39_____	low bituminous (oil and chip)	Q-42 _____	concrete

II. Characteristics of County Roads and Bridges, cont.

F. What problems do you think are most common on your rural roads and bridges? Please rank these problems in terms of economic importance in terms of their impact on shipping to your county in the last column.

RURAL ROADS:		*CIRCLE ONE CHOICE:* VERY COMMON	SOMEWHAT COMMON	NOT COMMON	PRIORITY (RANK)
Q-43	Weight limits	1	2	3	
Q-44	Temporary weight limits due to weather	1	2	3	
Q-45	Poor surface condition	1	2	3	
Q-46	Potholes or other surface deterioration	1	2	3	
Q-47	Detours due to construction	1	2	3	
Q-48	Congestion	1	2	3	

BRIDGES:		*CIRCLE ONE CHOICE:* VERY COMMON	SOMEWHAT COMMON	NOT COMMON	PRIORITY (RANK)
Q-49	Weight limits	1	2	3	
Q-50	Temporary weight limits due to weather	1	2	3	
Q-51	Poor surface condition	1	2	3	
Q-52	Closures due to weather	1	2	3	
Q-53	Delays due to congestion	1	2	3	

III. Intermodal Transportation--Today and Tomorrow

Intermodal transportation refers to the use of various modes of transportation for the same product, including transport before and after processing or packing. How important is intermodal transportation to the efficient movement of goods and services in your county?

A. Please indicate how important you feel the following modes are CURRENTLY to the economy in your county.

		CIRCLE ONE CHOICE:		
		VERY IMPORTANT	SOMEWHAT IMPORTANT	NOT VERY IMPORTANT
Q-54	Truck to rail	**1**	**2**	**3**
Q-55	Rail to truck	**1**	**2**	**3**
Q-56	Truck to ship/barge	**1**	**2**	**3**
Q-57	Ship/barge to truck	**1**	**2**	**3**
Q-58	Rail to ship/barge	**1**	**2**	**3**
Q-59	Ship/barge to air	**1**	**2**	**3**
Q-60	Truck to air	**1**	**2**	**3**
Q-61	Air to truck	**1**	**2**	**3**

B. How important do you feel these modes will be in the future, say 5 to 10 years from now?

		VERY IMPORTANT	SOMEWHAT IMPORTANT	NOT VERY IMPORTANT
Q-62	Truck to rail	**1**	**2**	**3**
Q-63	Rail to truck	**1**	**2**	**3**
Q-64	Truck to ship/barge	**1**	**2**	**3**
Q-65	Ship/barge to truck	**1**	**2**	**3**
Q-66	Rail to ship/barge	**1**	**2**	**3**
Q-67	Ship/barge to rail	**1**	**2**	**3**
Q-68	Truck to air	**1**	**2**	**3**
Q-69	Air to truck	**1**	**2**	**3**

C. In your opinion, what are the biggest barriers to increased use of intermodal transportation in your county? Please identify specific roads or bridges, if applicable, and the affected firms or industries. (Please indicate NA if this question is not applicable in your county.)

Q-70 Truck to rail:

Road or bridge	Affected firms or industries

Q-71 Rail to truck:

Road or bridge	Affected firms or industries

Q-72 Truck to ship/barge:

Road or bridge	Affected firms or industries

Q-73 Ship/barge to truck:

Road or bridge	Affected firms or industries

Q-74 Rail to ship/barge:

Road or bridge	Affected firms or industries

Q-75 Ship/barge to rail:

Road or bridge	Affected firms or industries

Q-76 Truck to air:

Road or bridge	Affected firms or industries

Q-77 Air to truck:

Road or bridge	Affected firms or industries

D. Please indicate how common the following problems are:

Truck:	*Please circle one:* VERY COMMON	SOMEWHAT COMMON	UNCOMMON
Q-78 Extra wear and tear due to surface condition	1	2	3
Q-79 Congestion on truck routes	1	2	3
Q-80 Detours caused by weight limitations on roads	1	2	3
Q-81 Detours caused by weight limitations on bridges	1	2	3
Q-82 Road closures due to weather	1	2	3
Q-83 Other (list)	1	2	3

Rail:	*Please circle one:* VERY COMMON	SOMEWHAT COMMON	UNCOMMON
Q-84 Inflexibility—can't respond quickly to demand	1	2	3
Q-85 Lack of cars when needed	1	2	3
Q-86 Other car scheduling problems	1	2	3
Q-87 Rail closures	1	2	3
Q-88 Rail infrastructure problems (bridge, rail upkeep)	1	2	3
Q-89 Lack of access to railhead	1	2	3
Q-90 Non-competitive pricing	1	2	3
Q-91 Other (list)	1	2	3
Q-92 Other (list)	1	2	3

Please circle one:

Transfer Facilities:	VERY COMMON	SOMEWHAT COMMON	VERY COMMON
Q-93 Lack of services	1	2	3
Q-94 Poor or unsafe access to transfer facilities	1	2	3
Q-95 Congested facilities	1	2	3
Q-96 Other (list)	1	2	3

Please circle one:

Air:	VERY COMMON	SOMEWHAT COMMON	UNCOMMON
Q-97 Lack of access (describe)	1	2	3
Q-98 Non-competitive pricing	1	2	3
Q-99 Lack of facilities	1	2	3
Q-100 Other (list)	1	2	3

E. What do you see as potential future barriers for intermodal transportation in your area? Describe specific projects and affected industries if possible, by mode.

Please identify any other issues concerning intermodal transportation of importance to your county.

Thank you very much. You will receive a summary of this statewide survey.

Survey of Township Highway Officials

STATE _____ Township Name _____

Your Name _____ County _____

Title _____ Phone Number _____

Date _____

If township has no road/bridge responsibility, return first page of questionnaire only.

If don't know answer leave blank.

I. Township Characteristics

A. 1990 Township Population _____

Since 1990 how would you describe the township's population (check only one answer)

- ☐ decreased more than 5 percent
- ☐ decreased less than 5 percent
- ☐ increased less than 5 percent
- ☐ increased more than 5 percent
- ☐ remained the same

B. Number of miles of township maintained roads in 1993? _____ miles

C. Total number of township maintained bridges in 1993? _____

Number less than 20 feet long? _____ Number 20 feet or longer? _____

Number of Township Bridges ON the Federal Aid System? _____

Number of Township Bridges OFF the Federal Aid System? _____

D. If known, approximately what percentage of all road miles and bridges in your township is township responsibility? (enter 0 if none)

_____ % miles _____ % bridges _____ don't know

E. How many bridges have been closed in the past 5 years? _____ number

F. How many miles of roads (if any) have been permanently closed in the past 5 years? _____ number

II. Characteristics of Township Roads and Bridges

A. In the past 5 years, how has the condition of roads and bridges changed: (Please provide percentage breakdown for roads and one for bridges)

	Roads	Bridges
improved	_____	_____
remained the same	_____	_____
declined	_____	_____
Total	*100.0%*	*100.0%*

B. Show the percentage of township roads in each category:

Percentage	Condition Description
_____	New or perfect
_____	Better than adequate with normal maintenance
_____	Surface adequate with normal maintenance
_____	Less than adequate with normal maintenance
_____	Limited failures and barely adequate
_____	Maintenance will be considerably higher to prevent continued deterioration
_____	Considerable failures and beyond practical limits of normal maintenance
_____	Substantial higher than normal maintenance required
_____	Failures to the extent that operation of traffic is severely affected
_____	Closed, awaiting repairs.
100.0%	

C. Indicate the percentage of bridges (less than 20 feet) in each category:

Percentage	Condition Description (Less than 20 feet)
_____	Superior to present desirable criteria
_____	Equal to present desirable criteria
_____	Better than present **minimum** criteria
_____	Equal to present **minimum** criteria
_____	Better than minimum adequacy to tolerate being left in place as is
_____	Meets minimum tolerable condition requiring high priority to repair
_____	Basically intolerable condition requiring high priority to repair
_____	Basically intolerable condition requiring high priority of replacement
_____	Immediate repair necessary to put back into service
_____	Closed, awaiting repairs or replacement.
100.0%	

D. Estimate the number of **miles** of township roads in each Average Daily Trip category (ADT based on traffic counts):

Miles	Average Daily Trips (ADT)	Miles	Average Daily Trips (ADT)
_____	0 to 50 ADT	_____	501 through 1000 ADT
_____	51 through 150 ADT	_____	1001 through 2500 ADT
_____	151 through 500 ADT	_____	2501 and over.

E. Indicate the number of **miles** by surface type:

Miles	Surface Type	Miles	Surface Type
_____	earth	_____	high bituminous (hot mix)
_____	gravel or loose aggregate	_____	paved
_____	low bituminous (oil and chip)	_____	concrete.

F. What is the estimated average annual cost to **maintain** an average mile of township road with the following surface?

$ _____ per mile loose aggregate

$ _____ per mile paved

$ _____ per mile low bituminous (oil and chip)

$ _____ per mile concrete

$ _____ per mile high bituminous (hot mix)

G. In the last 5 years, what percentage of bridges have been rehabilitated or replaced? _____

List number by year:

_____ 1989 _____ 1991 _____ 1993

_____ 1990 _____ 1992

H. On average, how much do you spend (per lane foot) to **replace or rehabilitate** a township bridge in your township if only local funds are used?

Bridges less than 20 feet: $ _____ per lane foot

Bridges equal or more than 20 feet: $ _____ per lane foot

I. What is the estimated **average cost** per mile and per lane foot of bridges to construct roads and bridges to the following standards and requirements:

Local standards and requirements: $_____ / mile; $ _____ / lane foot

State standards and requirements: $_____ / mile; $ _____ / lane foot

Federal standards and requirements: $_____ / mile; $ _____ / lane foot

III. Management Practices

A. How many people does your township highway department employ?

_____ Full-time _____ Part-time

B. Does your township have a formal, or informal, policy of not using volunteer help because of liability issues? (circle one) Yes No

C. If local real property taxes are used for roads and bridges, can you raise property tax rates for roads and bridges without referendum? (circle one) Yes No

If no, when was the last referendum to increase taxes for local roads or bridges? _____ (year)

Did the referendum pass? (circle one) Yes No

If yes, how much increase was requested? $_____; %_____ increase

D. What was the township expenditure for roads and bridge maintenance in FY93? $_____

E. Choose the statement that best describes your current township revenue picture for roads and bridges? (check only one answer)

- ☐ More than adequate revenues, no foreseeable problems
- ☐ Adequate revenues but no room for service increases
- ☐ Inadequate funds but not cutting services yet
- ☐ Inadequate funds and services have been reduced from last year

F. If your township had a revenue shortfall, which of the following strategies do you intend to follow? **(Rank by preference where 1 is first choice; please mark NA if the listed option is not available to you.)**

	Less than 1 year	More than 1 year
Reduce Expenses		
a. Cut by attrition	_____	_____
b. Wage freeze or cut	_____	_____
c. Reduce equipment expenses	_____	_____
d. Postpone new construction	_____	_____
e. Postpone reconstruction	_____	_____
f. Defer maintenance	_____	_____
g. Cut administrative expenses	_____	_____

	Less than 1 year	More than 1 year
Increase Revenue from Other Sources		
a. Local property taxes	_____	_____
b. Local sales tax	_____	_____
c. Motor vehicle license or wheel tax	_____	_____
d. Private development	_____	_____
e. Fees for service	_____	_____
f. More private (in kind) donations	_____	_____
g. Proceeds from bonds and notes	_____	_____

G. How does your township planned highway budget for next fiscal year compare with this year's budget? (Check only one answer)

- ☐ decrease
- ☐ no growth
- ☐ 1 to 5 percent increase
- ☐ 6 to 10 percent increase
- ☐ more than 10 percent increase

H. How much should you spend each year during the next five years to adequately provide roads and bridges?

$_____Roads $_____Bridges

I. How much do you expect to be able to spend each year for the next five years?

$_____Roads $_____Bridges

J. During the past five years have any non tax revenues been imposed for roads and/or bridges? (circle one) Yes No

If yes, briefly explain _____

_____

IV. Capital Improvements Plan

A. Has a needs study for the township been conducted in the last 5 years? (circle one) Yes No

B. Does your township have a capital improvements plan for roads and bridges? (circle one) Yes No

C. How many years does the plan cover? _____ years

D. What are the **top three program priorities** in the capital improvements plan?

1. _____
2. _____
3. _____

E. Under anticipated budget conditions, how long will it take the township to meet its objectives for road and bridge quality? (check one [✓] for roads and one for bridges)

Time needed	Roads (✓)	Bridges (✓)
Fewer than 4 years	_____	_____
4 to 10 years	_____	_____
More than 10 years	_____	_____
Never	_____	_____

V. Overall Work Plan (Operating and Maintenance)

A. What are the work priorities in your overall work plan for the next 5 years? (check [✓] one for each)

Priorities	Very Low	Low	High	Very High
Pothole patching on existing roads	___	___	___	___
Resurface _____ miles of road (not widening)	___	___	___	___
Widen and resurface _____ miles of existing roads	___	___	___	___
New road construction to meet population growth (_____ miles)	___	___	___	___
Rehabilitate existing bridges (how many? _____)	___	___	___	___
Replace existing bridges/culverts (how many? _____)	___	___	___	___
Build new bridges? (how many? _____)	___	___	___	___
Signs, traffic control devices, and guard rails	___	___	___	___
Other, please specify _____	___	___	___	___

B. What factors does your township use to set priorities for township bridge work? (check [✓] one for each)

Priorities	Very Low	Low	High	Very High
Availability of funds	___	___	___	___
Planned development (i.e. residential, commercial)	___	___	___	___
Economic development strategy	___	___	___	___
Traffic volume	___	___	___	___
Functional obsolescence	___	___	___	___
Current structural condition, based on inspection	___	___	___	___
Age of structure	___	___	___	___

Specialized traffic needs—school bus, etc. ____ ____ ____ ____
Safety/Risk management concerns ____ ____ ____ ____
Other, please specify _____ ____ ____ ____ ____

VI. Federal Funding

A. Did you receive Federal funds from the Highway Bridge Replacement and Rehabilitation Program (HBRRP) during Federal FY93 (from October 1992 to September 1993)? (circle one)

Yes No

If yes, how much?

$ _____ OFF-system bridges $ _____ ON-system bridges

How many OFF-the Federal Aid system bridges were **built or replaced** in your township with HBRRP Funds?

Number of bridges? _____ Total expenditure? $_____

How many ON-the Federal Aid system bridges were **built or replaced** in your township with HBRRP Funds?

Number of bridges? _____ Total expenditure? $_____

VII. Internal Operations and Training

A. If **you or staff** regularly participate in training seminars which topics have been attended in past 12 months? (Please check [✓] as many as appropriate for yourself or for your staff)

- ☐ transportation planning & administration
- ☐ design & construction of roads
- ☐ design & construction of bridges
- ☐ maintenance of roads
- ☐ maintenance of bridges
- ☐ equipment maintenance and repair
- ☐ computer applications to management
- ☐ financing strategies and control
- ☐ operations & safety
- ☐ hazardous materials
- ☐ Americans With Disabilities Act
- ☐ risk management/tort liability
- ☐ other, please specify _____

B. What is the main source of training for you or your staff? (check all [✓] that apply)

- ☐ T² Centers (RTAP)
- ☐ State highway department programs
- ☐ Cooperative Extension Service
- ☐ Seminars provided by vendors
- ☐ Seminars by professional associations
- ☐ Other, please specify_____

C. If you have not participated in training, is it because? (check all [✓] that apply)

- ☐ not enough time
- ☐ not enough resources
- ☐ didn't know about programs
- ☐ programs not suitable for our needs
- ☐ limited township funding
- ☐ other, please specify _____

D. During last 3 years how many (if any) road or bridge associated liability claims have been filed against your township? _____

How many have been paid? _____

E. Does your township?

☐ purchase liability insurance ☐ self-insure ☐ participate in a state risk pool

VIII. Relations with State Highway Agency and Other Local Governments

A. How frequent are the contacts between the township highway office and the state highway agency? (check [✓] only one answer)

☐ weekly ☐ biweekly ☐ monthly
☐ quarterly ☐ on a project by project basis

B. Are you satisfied with your state's procedures for local consultation in state road and highway matters? (check [✓] one)

☐ **Very** ☐ **Somewhat** ☐ **Not very** ☐ **Not at All** ☐ **Don't Know**

C. How does your state DOT gather public input into highway decisions as part of the Interstate Surface Transportation Efficiency Act (ISTEA)?

☐ public hearings through the state
☐ regular meetings involving local highway superintendents
☐ local input through district DOT offices
☐ direct surveys of public and interest groups
☐ other, please specify _____

D. Has the method of gathering input regarding transportation planning changed as a result of ISTEA?

(circle one) Yes No

If yes, briefly explain _____

_____

E. Does the township highway department administer any state or federal funds or grants?

If yes, which of the following types of funds and to which governmental units does the township administer? (check as many as appropriate)

Funds	Towns/townships	Municipalities
☐ state highway funds	☐	☐
☐ state bridge funds	☐	☐
☐ federal highway funds	☐	☐
☐ federal bridge funds	☐	☐
☐ none	☐	☐
☐ other, specify _____	☐	☐

If yes, what was the **most important** criterion used to distribute funds to other governments within the township in FY93? (Please check (✓) the most single important criterion)

☐ township engineer's discretion ☐ specialized use—school bus
☐ strictly by age and condition of bridge ☐ complaints of users
☐ proposal by governmental highway administrators ☐ standardized formula

F. On which of the following does your township highway department work with other local governments to provide roads/bridges?

Activity	Since 1987: started or expanded	Since 1987: maintain ongoing
contract for all road maintenance	☐	☐
cooperate on road construction projects	☐	☐
cooperate on bridge construction projects	☐	☐
haul gravel	☐	☐
blacktopping and surface applications	☐	☐
snow plowing	☐	☐
cooperative purchasing programs	☐	☐
training sessions for local road and street officials	☐	☐
budget development	☐	☐
work planning and scheduling	☐	☐
engineering services	☐	☐
administer state highway formula funds	☐	☐
state highway project funds	☐	☐
state bridge project funds	☐	☐
federal highway project funds	☐	☐
federal bridge project funds	☐	☐
share personnel	☐	☐
share equipment	☐	☐
other, please specify _____	☐	☐

E. Rate the overall level of cooperation that occurs between local and State officials on road and highway planning and construction? (circle one)

Excellent **Good** **Fair** **Poor** **Don't Know**

F. During the past 5 years, has the level of State/local road and highway cooperation generally? (circle one)

Improved **Remained the Same** **Deteriorated** **Don't Know**

Appendix B

County by County Responses to the

1999 Survey of County Engineers

Responses to 1999 Survey of County Engineers by County

Participating County:	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Adams	1811	131	190	131	74	57	84	84	17	2
Benton	880	74	18	56	40	34	50	80	2	1
Chelan	659	64	17	47	27	37	50	60	2	0
Clallam	488	35	3	32	12	23	60	40	9	8
Clark	1054	67	7	60	20	47	100		9	3
Columbia	504	DK	DK	67	37	30	DK	DK	5	2
Douglas	1640	55	29	26	10	16	87	80	8	3
Ferry	750	21	3	18	11	10	50	80	11	1
Franklin	1011	111	23	88	20	68	75	79	9	9
Garfield	453	32	11	32			73	60	0	0
Grant	2507	222	27	199	57	169	82	95	40	10
Grays Harbor	560	146		146	49	97	20	20	12	10
Jefferson	392	24	0	24	5	19	40	50	1	1
King	1997	208	41	167	115	93			23	
Kitsap	922	24	0	24	20	4	90	96	0	2
Kittitas	561	232	123	109	53	179	23	50	4	6
Klickitat	1084	158	98	60	43	115	50	50	10	6
Lewis	1056	196	dk	196	43	153	82	dk	0	0
Lincoln	2054	202	77	125	31	94	80	85	35	20
Mason	621	52	6	52	11	42	82	44	2	3
Pacific	350	62	3	59	0	62	65	60	8	3
Pend Oreille	550	22	1	21	11	11	50	80	2	1
Pierce	1522	144	35	109	99	45		30	4	3
San Juan	274	3	1	2	0	3	27	30	0	0
Skagit	807	102	0	102	65	37	66	50	0	1
Snohomish	1625	186	20	166	56	130	45	55	5	3
Spokane	2958	174	42	132	87	45	66	60	10	10
Thurston	1010	92	9	83	72	20	80	75	9	5
Wahkiakum	144	20	1	19	8	12	100	91	1	0
Whitman	1927	322	83	239	58	264	87	dk	49	10
Yakima	1721	1204	315	889	274	930	65	58	48	5
Average value:	**1093**	**146**	**42**	**112**	**47**	**95**	**65**	**63**	**11**	**4**

Responses to 1999 Survey of County Engineers by County

Participating County:	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21
Adams	0	0	5	90	5	5	90	5	7	71	20
Benton	250	200	75	25	0	10	85	5	1	86	5
Chelan	0	200	5	80	15	2	88	10		40	40
Clallam	0	0	13	87	0	9	80	11	5	90	5
Clark			20	45	35	7	90	3	52	22	10
Columbia	220	210	20	70	10	12	78	10	20	20	20
Douglas	10	10	14	73	13	8	73	19	1	26	49
Ferry	700	725	10	20	70	25	50	25	10	10	10
Franklin	968	950	5	90	5	3	57	40	10	40	20
Garfield	40	30	50	40	10	8	80	12	12	60	14
Grant	820	810	5	80	15	3	70	27	2	6	79
Grays Harbor	570	570	5	95	0	5	90	5	10	50	30
Jefferson	2	20	25	50	25	20	50	30	2	55	40
King			20	60	20	50	30	2	15	60	25
Kitsap	0	0	18	77	5	25	65	10	55	20	12
Kittitas	18	18	11	79	10	10	60	30	13	49	30
Klickitat	0	0	5	90	5	3	92	5	2	40	50
Lewis	0	0	5	90	5	5	90	5	5	80	10
Lincoln	0	0	15	45	40	20	65	15	3	50	30
Mason	48	2	12	86	2				17	77	5
Pacific	78	60	25	50	25	16	69	15	25	20	40
Pend Oreille	1	10	10	40	50	10	50	40	5	60	20
Pierce	0	0	1	92	7	5	90	5	68	16	12
San Juan	0	0	10	45	45	0	70	30	5	30	45
Skagit	0	0	22	68	10	20	50	30	77	13	7
Snohomish	5	0	30	20	50	10	50	40	52	12	16
Spokane	25	50	10	30	60	15	40	45	10	30	30
Thurston	4	4	16	63	21	10	85	5	16	63	13
Wahkiakum	2	0	10	80	10	0	90	10	23	70	1
Whitman	12.45*	10	1	24	75	11	50	39	2	35	53
Yakima	0	0	5	90	5	17	73	10	10	85	5
Average value:	**134**	**134**	**15**	**64**	**21**	**11**	**70**	**18**	**18**	**45**	**24**

Responses to 1999 Survey of County Engineers by County

Participating County:	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32
Adams	2	0	0	10	15	70	5	0	0	1000	100
Benton	8	0	0	5	92	3	0	0	0	358	56
Chelan	10	10		60	34	3	3			179	120
Clallam	0	0	0	0	100	0	0	0	0	62	91
Clark	16	0	0	14	86						
Columbia	20	20	14	DK	DK	DK	DK	DK	DK	DK	DK
Douglas	23	1	0	25	47	14	14	0	0	32	6
Ferry	60	5	5	25	39	8	4	4	20	15	20
Franklin	25	5	0	5	10	80	5	0	0	307	44
Garfield	10	4	0	16	80	4	0	0	0	200	0
Grant	10	3	0	1	30	66	3	0	0	140	692
Grays Harbor	9	1	0	10	80	9	1	0	0	30	150
Jefferson	2	0	1	NA	NA	NA	NA	NA	NA	74	35
King	0	0	0	10		20				15	291
Kitsap	6	7	0	NA	NA	NA	NA	NA	NA	69	90
Kittitas	5	3	0	15	35	35	15	0	0	150	63
Klickitat	5	3	0	40	50	10	0	0	0	590	72
Lewis	5	0	0							121	168
Lincoln	15	1	1	10	87	2	1	0	0	760	41
Mason	1									104	96
Pacific	10	5	0	33	33	0	33	0	0	128	10
Pend Oreille	14	1	0	60	20	15	5	0	0	30	8
Pierce	2	2	0	3	94	3	0	0	0	143	191
San Juan	10	1	0	33	33	33	0	0	0	27	110
Skagit	3	0	0							104	107
Snohomish	14	5	1	25	60	15	0	0	0	99	223
Spokane	27	2	1	20	30	43	5	1	1	150	700
Thurston	5	3	0	0	84	5	3	0	0	225	140
Wahkiakum	5	1	0	0	0	100	0	0	0	7	9
Whitman	10	0	0	5	15	70	10	0	0	1150	37
Yakima	0	0	0	81	17	1	1	0	0	100	210
Average value:	**11**	**3**	**1**	**20**	**49**	**25**	**5**	**0**	**1**	**220**	**134**

Responses to 1999 Survey of County Engineers by County

Participating County:	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43
Adams	480	70	140	20	56	1096	615		14		3
Benton	150	97	197	22	10	284	500	52	34	NA	3
Chelan	120	60	120	60	67	67	427		95	3	3
Clallam	172	36	99	30	0	13	370	0	105	0	2
Clark									1054		1
Columbia	DK	DK	DK	DK	89	276	133	0	5	0	2
Douglas	46	3	14	2	525	652	410	0	32	0	2
Ferry	40	5	20	0	8	60	30	0	2	0	2
Franklin	250	47	328	34	15	442	505		49		2
Garfield	100	0	100	0	120	150	80	0	0	0	3
Grant	1000	60	600	15	151	1079	1169	0	108	0	3
Grays Harbor	100	70	200	10	2	62	438	0	55	3	3
Jefferson	95	42	127	28	1	86	235	0	70	0	3
King	44	726	145	532	0	88	550	0	1327	32	3
Kitsap	290	148	133	192	0	10	0	175	746	1	3
Kittitas	120	8	191	9	19	54	447	0	38	3	2
Klickitat	208	16	196	2	133	530	100	211	110	0	2
Lewis	216	69	438	44	0	70	232	600	154	0	3
Lincoln	1027	21	205	0	164	1438	103	226	103	21	3
Mason	175	70	160	21	5	78	357		179	4	3
Pacific	70	13	75	5	1	55	140		156	0	2
Pend Oreille	32	2	28	0	32	251	236	0	32	1	3
Pierce	278	181	428	301	8	37	202	605	650	18	3
San Juan	41	27	55	14	3	66	197	0	8	0	3
Skagit	151	121	265	57	0	60	624	108	0	11	3
Snohomish	359	281	413	251	0	27	371		1220	7	3
Spokane	808	400	800	100	157	1163	770		854	14	3
Thurston	125	150	210	160	0	46	513	0	436	21	3
Wahkiakum	41	6	37	0	4	23	44	73			3
Whitman	425	15	298	0	410	1080	403	0	24	10	3
Yakima	690	200	410	110	1	647	952	0	116	6	3
Average value:	**264**	**102**	**222**	**70**	**66**	**333**	**372**	**89**	**259**	**6**	**3**

Responses to 1999 Survey of County Engineers by County

Participating County:	RankQ43	Q44	Rank Q44	Q45	Rank Q45	Q46	Rank Q46	Q47	Rank Q47	Q48	Rank Q48
Adams	4	1	1	3	2	3	3	3	4	3	4
Benton	4	1	1	2	2	2	3	3	5	3	6
Chelan	6	1	1	2	2	2	3	3	5	3	4
Clallam		1	1	3		3		2	2	3	
Clark	1	2	4	1	2	1	3	2	6	2	5
Columbia		1		2		2		3		3	
Douglas	3	1	1	1	4	2	2	2	5	3	6
Ferry	4	1	1	1	3	1	2	3	6	3	5
Franklin	3	1	1	2	2	2	4	3	5	3	6
Garfield	6	3	5	1	1	2	2	3	3	3	4
Grant	4	1	1	1	2	1	3	3	6	3	5
Grays Harbor	2	2	1	2	3	2	4	3	5	3	6
Jefferson	5	1	1	3	4	2	2	3	3	3	6
King	6	3	5	2	2	2	3	1	4	1	1
Kitsap	6	2	5	2	3	2	4	2	2	2	1
Kittitas	4	2	3	1	1	1	2	3	5	3	6
Klickitat	4	1	1	1	2	1	3	2	5	3	6
Lewis		2		3	3	3		2		3	
Lincoln	6	1	1	2	2	2	3	3	4	3	5
Mason		2		3		3		3		2	
Pacific	1	2	2	2	3	3	4	3	5	3	6
Pend Oreille	5	1	1	2	3	1	2	2	4	3	6
Pierce	3	2	3	2	2	2	3	2	3	1	1
San Juan		2		2		2		2		3	
Skagit		2		3		2				2	
Snohomish	1	2	2	3	4	3	5	3	6	3	3
Spokane	5	1	2	2	1	2	3	3	4	3	6
Thurston	5	2	4	1	1	1	2	2	6	2	3
Wahkiakum	4	2	1	2	3	2	2	3	5	3	6
Whitman	4	1	1	1	2	2	3	3	5	3	6
Yakima	6	3	5	3	1	3	2	3	3	3	4
Average value:	**4**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**4**	**3**	**5**

Responses to 1999 Survey of County Engineers by County

Participating County:	Q49	Rank Q49	Q50	Rank Q50	Q51	Rank Q51	Q52	Rank Q52	Q53	Rank Q53	Q54
Adams	2	1	3	3	2	2	3	3	3	3	1
Benton	3	2	3	3	2	1	3	4	3	5	1
Chelan	2	1	3		3	2	3		3	3	2
Clallam	1	1	3		2	2	3		3		
Clark	2	1	3	4	3	2	3	5	3	3	
Columbia	2		3		3		3		3		2
Douglas	2	1	3	2	3	3	3	4	3	5	1
Ferry	2	1	3	4	2	2	3	3	3	5	2
Franklin	1	1	3	3	2	2	3	4	3	5	1
Garfield	3	5	3	4	2	NA	3	NA	3	NA	1
Grant	2	1	3	4	2	2	2	3	3	5	1
Grays Harbor	3	2	3	1	3	3	3	4	3	5	2
Jefferson	3		3	1	3		3		3		1
King	1	1	3	5	2	2	1	3	3	4	1
Kitsap	3	5	3	4	3	3	2	1	3	2	2
Kittitas	2	1	2	2	2	3	3	4	3	5	3
Klickitat	2	1	3	3	2	2	3	4	3	5	1
Lewis	2		3		2		3		3		2
Lincoln	2	2	2	1	3	3	3	4	3	5	1
Mason	2		3		3		3		3		2
Pacific	3	2	3	4	2	1	3	3	3	5	2
Pend Oreille	2	2	3	4	1	1	2	3	3	5	2
Pierce	3	3	3	3	2	2	3	3	1	1	1
San Juan	3		3		3		3		3		3
Skagit	3		3		2		3		3		3
Snohomish	2	1	3	4	3	2	3	3	3	5	2
Spokane	3	1	3	4	3	5	3	3	3	2	1
Thurston	2	2	3	5	3	3	2	1	3	4	3
Wahkiakum	3	1	3	2	3	3	3	4	3	5	3
Whitman	2	1	3	2	2	3	2	4	3	5	1
Yakima	2	1	3	5	3	2	3	3	3	4	2
Average value:	**2**	**2**	**3**	**3**	**2**	**2**	**3**	**3**	**3**	**4**	**2**

Responses to 1999 Survey of County Engineers by County

Participating County:	Q55	Q56	Q57	Q58	Q59	Q60	Q61	Q62	Q63	Q64
Adams	1	1	3	3	3	3	3	1	1	2
Benton	2	1	2	3	3	3	3	1	2	1
Chelan	2	3	3	3	3	2	2	2	2	3
Clallam		1	3		3	2	2			2
Clark										
Columbia	2	1	2	1	3	3	2	2	2	1
Douglas	2	1	2	2	3	1	2	1	2	1
Ferry	3	3	3	3	3	3	3	2	3	3
Franklin	2	1	2	3	3	3	2	1	2	1
Garfield	1	1	1	3	3	3	2	1	1	1
Grant	2	1	2	3	3	2	2	1	1	1
Grays Harbor	3	1	3	3	3	3	3	2	3	1
Jefferson	1	1	1	3	3	3	3	1	1	1
King	1	1	1	1	1	1	1	1	1	1
Kitsap	3	3	3	3	3	3	3	1	1	1
Kittitas	3	3	3	3	3	3	3	3	3	3
Klickitat	1	1	1	1	1	2	2	1	1	1
Lewis	2	3	3	3	3	3	3	2	2	3
Lincoln	3	2	3	3	3	2	3	1	3	2
Mason	3	3	3	3	3	3	3	2	3	2
Pacific	2	2	2	3	3	3	3	2	2	2
Pend Oreille	1	3	3	3	3	2	2	1	1	3
Pierce	1	1	1	1	1	1	1	1	1	1
San Juan	3	2	2	3	3	3	3	3	3	1
Skagit	2	3	2	3	3	3	3	3	2	3
Snohomish	2	3	3	3	3	2	2	2	2	3
Spokane	1	2	2	2	3	1	1	1	1	2
Thurston	3	2	3	2	3	3	3	1	1	2
Wahkiakum	3	3	3	3	3	3	3	3	3	3
Whitman	3	1	3	2	3	3	3	1	3	1
Yakima	2	3	3	3	3	2	2	2	2	3
Average value:	**2**	**2**	**2**	**3**	**3**	**2**	**2**	**2**	**2**	**2**

Responses to 1999 Survey of County Engineers by County

Participating County:	Q65	Q66	Q67	Q68	Q69	Q78	Q79	Q80	Q81	Q82
Adams	3	3	3	3	3	1	3	2	2	3
Benton	2	3	3	3	3	2	3	1	3	1
Chelan	3	3	3	2	2	2	3	2	2	3
Clallam	2			3	3	2	3	3	2	2
Clark										
Columbia	2	1	3	3	2	1	2	2	2	1
Douglas	2	2	2	1	2	1	3	2	2	3
Ferry	3	3	3	3	3	1	3	2	2	3
Franklin	2	2	3	2	2	1	3	2	2	1
Garfield	1	3	3	3	2	2	3	3	3	3
Grant	2	2	2	2	2	1	3	1	2	2
Grays Harbor	3	3	3	3	3	1	3	3	3	3
Jefferson	1	3	3	3	3	1	3	2	3	3
King	1	1	1	1	1	2	1	2	2	2
Kitsap	1	1	1	1	1	3	2	3	3	2
Kittitas	3	3	3		12	2	3	3	3	3
Klickitat	1	1	1	2	2	1	3	2	2	1
Lewis	3	3	3	3	3	3	2	3	3	2
Lincoln	3	3	3	2	3	1	3	2	2	3
Mason	3	3		2	2		3	3	3	2
Pacific	2	3	3	3	3	2	3	2	3	2
Pend Oreille	3	3	3	2	2	1	3	1	1	2
Pierce	1	1	1	1	1	1	1	2	3	3
San Juan	1	3	3	3	3	1	2	3	3	2
Skagit	2	3	2	3	3	2	2	3	3	2
Snohomish	3	3	3	2	2	2	2	3	2	2
Spokane	2	2	2	1	1	1	1	2	3	2
Thurston	2	1	3	3	3	2				
Wahkiakum	3	3	3	3	3	2	3	3	3	3
Whitman	3	2	3	3	3	1	3	1	2	2
Yakima	3	3	3	2	2	2	3	3	2	3
Average value:	**2**	**2**	**3**	**2**	**3**	**2**	**3**	**2**	**2**	**2**

Responses to 1999 Survey of County Engineers by County

Participating County:	Q83	Q84	Q85	Q86	Q87	Q88	Q89	Q90	Q91
Adams		2	2		1		2	2	
Benton		2	1	2	3	3	3	3	
Chelan									
Clallam									
Clark									
Columbia		1	1	1	1	1	1	1	
Douglas		1	1	2	3	3	3	2	
Ferry	2								
Franklin		1	2	3	3	2	3	2	
Garfield	3	NA	NA	NA	NA	NA	NA	NA	NA
Grant		1	1	1	3	2	2	1	
Grays Harbor		3	3	3	3	3	3	3	
Jefferson		NA	NA	NA	NA	NA	NA	NA	
King		2		1	1				
Kitsap		NA	NA	NA	NA	NA	NA	NA	
Kittitas	3	3	3	3	3	3	3	3	
Klickitat			1	2	3	3	2	1	
Lewis									
Lincoln	3	2	1	3	3	3	2	2	3
Mason	3	3	3	3	3	3	2		
Pacific									
Pend Oreille		2	2	2	1	1	2	2	
Pierce		2	2	2	3	2	3	3	
San Juan									
Skagit					1	1	1		
Snohomish	1				2	1	3		1
Spokane		1	1	1	3	3	2	2	1
Thurston									
Wahkiakum	3								
Whitman		1	1	na	2	1	2	DK	
Yakima									
Average value:	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**

Responses to 1999 Survey of County Engineers by County

Participating County:	Q92	Q93	Q94	Q95	Q96	Q97	Q98	Q99	Q100
Adams		2	3	3				1	1
Benton									
Chelan									
Clallam		2	3	3		3	3	3	
Clark									
Columbia		1	3	2		3	3	2	
Douglas		1	1	3		3	2	1	
Ferry				750	21	3	18	11	10
Franklin		2	3	3		3	2	2	
Garfield	NA	3	3	3		3	3	2	2
Grant		1	3	3		3	1	3	
Grays Harbor		3	3	3		3	3	1	
Jefferson		NA	NA	NA	NA	NA	NA	NA	NA
King	3	2	2		1				
Kitsap									
Kittitas		3	3	3	3	1	3	3	
Klickitat		2	3	3		1	1	1	2
Lewis									
Lincoln	3	2	2	3	3	NA	NA	NA	NA
Mason		3	3	3		3		3	
Pacific									
Pend Oreille		1	3	3		2	3	1	
Pierce		2	1	1		2	2	2	
San Juan		3	2	3					
Skagit		3	3	2		3	3	3	1
Snohomish	1				2	2		1	
Spokane		2	2	2		3	1	3	
Thurston									
Wahkiakum									
Whitman		2	2	2		1	1	1	
Yakima									
Average value:	**2**	**2**	**3**	**42**	**6**	**2**	**3**	**2**	**3**

Appendix C

Survey of County Engineers, 1999 and 1994 Comparison

County Level Results

Appendix Table 1: County Results, Survey Average	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	1093	1055
Total number of county maintained bridges in 1998 [1993]?	146	132
Number of bridges less than 20 feet long	42	91
Number of bridges 20 feet or longer	112	105
Number of County Bridges ON the Federal Aid System	47	44
Number of County Bridges OFF the Federal Aid System	95	75
Road miles in your county that are county responsibility (%)	65	66
Number of bridges in your county that are county responsibility (%)	63	69
Number of bridges posted for some type of limitation in the past 5 years?	11	5
Miles of roads posted for some type of limitation in the past 5 years?	134	9
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	15	16
Unchanged (%)	64	67
Declined (%)	21	17
Bridges:		
Improved (%)	12	11
Unchanged (%)	70	72
Declined (%)	18	13
Percentage of county roads in each category:		
New or perfect	18	6
Surface adequate or better with normal maintenance	45	62
Less than adequate with normal maintenance	24	26
Barely adequate; substantially higher than normal maintenance required	11	3
Failures to the extent that operation of traffic is severely affected	3	5
Closed, awaiting repairs	1	1
Percentage of bridges in each category:		
Better or equal to present desirable criteria	20	21
Better or equal to present minimum criteria	49	32
Meets minimum tolerable condition but with high priority to repair	25	22
Basically intolerable condition, high priority to repair or replace	5	9
Immediate repair necessary to put back into service	0	10
Closed, awaiting repairs or replacement.	1	5
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	220	181
51 through 150 ADT	134	233
151 through 500 ADT	264	322
501 through 1000 ADT	102	166
1001 through 2500 ADT	222	141
2501 and over	70	89
Number of miles by surface type:		
Earth	66	61
Gravel or loose aggregate	333	273
Low bituminous (oil and chip)	372	455
High bituminous (hot mix)	89	198
Paved	259	298
Concrete	6	42

Appendix Table 1a: Survey Averages For Those Counties that Participated in Both Surveys	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	1084	1111
Total number of county maintained bridges in 1998 [1993]?	175	136
Number of bridges less than 20 feet long	47	94
Number of bridges 20 feet or longer	133	111
Number of County Bridges ON the Federal Aid System	53	49
Number of County Bridges OFF the Federal Aid System	119	71
Road miles in your county that are county responsibility (%)	62	63
Number of bridges in your county that are county responsibility (%)	58	66
Number of bridges posted for some type of limitation in the past 5 years?	10	5
Miles of roads posted for some type of limitation in the past 5 years?	111	9
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	14	17
Unchanged (%)	66	67
Declined (%)	20	16
Bridges:		
Improved (%)	10	10
Unchanged (%)	71	76
Declined (%)	19	14
Percentage of county roads in each category:		
New or perfect	19	7
Surface adequate or better with normal maintenance	50	52
Less than adequate with normal maintenance	21	14
Barely adequate; substantially higher than normal maintenance required	9	16
Failures to the extent that operation of traffic is severely affected	2	6
Closed, awaiting repairs	0	1
Percentage of bridges in each category:		
Better or equal to present desirable criteria	23	15
Better or equal to present minimum criteria	54	26
Meets minimum tolerable condition but with high priority to repair	21	32
Basically intolerable condition, high priority to repair or replace	3	11
Immediate repair necessary to put back into service	0	7
Closed, awaiting repairs or replacement.	0	5
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	219	167
51 through 150 ADT	139	236
151 through 500 ADT	256	350
501 through 1000 ADT	105	185
1001 through 2500 ADT	265	151
2501 and over	76	101
Number of miles by surface type:		
Earth	48	69
Gravel or loose aggregate	275	289
Low bituminous (oil and chip)	392	449
High bituminous (hot mix)	126	245
Paved	317	343
Concrete	6	52

Appendix Table 2: Adams County Results	1999
Number of miles of county maintained roads in 1998 [1993]?	1811
Total number of county maintained bridges in 1998 [1993]?	131
Number of bridges less than 20 feet long	190
Number of bridges 20 feet or longer	131
Number of County Bridges ON the Federal Aid System	74
Number of County Bridges OFF the Federal Aid System	57
Road miles in your county that are county responsibility (%)	84
Number of bridges in your county that are county responsibility (%)	84
Number of bridges posted for some type of limitation in the past 5 years?	17
Miles of roads posted for some type of limitation in the past 5 years?	1.5
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	5
Unchanged (%)	90
Declined (%)	5
Bridges:	
Improved (%)	5
Unchanged (%)	90
Declined (%)	5
Percentage of county roads in each category:	
New or perfect	7
Surface adequate or better with normal maintenance	71
Less than adequate with normal maintenance	20
Barely adequate; substantially higher than normal maintenance required	1.5
Failures to the extent that operation of traffic is severely affected	0
Closed, awaiting repairs	0
Percentage of bridges in each category:	
Better or equal to present desirable criteria	10
Better or equal to present minimum criteria	15
Meets minimum tolerable condition but with high priority to repair	70
Basically intolerable condition, high priority to repair or replace	5
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	1000
51 through 150 ADT	100
151 through 500 ADT	480
501 through 1000 ADT	70
1001 through 2500 ADT	140
2501 and over	20
Number of miles by surface type:	
Earth	56
Gravel or loose aggregate	1096
Low bituminous (oil and chip)	615
High bituminous (hot mix)	0
Paved	14.3
Concrete	0

Appendix Table 3: Benton County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	880	886
Total number of county maintained bridges in 1998 [1993]?	74	76
Number of bridges less than 20 feet long	18	23
Number of bridges 20 feet or longer	56	53
Number of County Bridges ON the Federal Aid System	40	0
Number of County Bridges OFF the Federal Aid System	34	0
Road miles in your county that are county responsibility (%)	50	0
Number of bridges in your county that are county responsibility (%)	80	0
Number of bridges posted for some type of limitation in the past 5 years?	2	0
Miles of roads posted for some type of limitation in the past 5 years?	1	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	75	10
Unchanged (%)	25	80
Declined (%)	0	10
Bridges:		
Improved (%)	10	5
Unchanged (%)	85	50
Declined (%)	5	45
Percentage of county roads in each category:		
New or perfect	1	1
Surface adequate or better with normal maintenance	86	65
Less than adequate with normal maintenance	5	24
Barely adequate; substantially higher than normal maintenance required	8	10
Failures to the extent that operation of traffic is severely affected	0	0
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	5	5
Better or equal to present minimum criteria	92	45
Meets minimum tolerable condition but with high priority to repair	3	40
Basically intolerable condition, high priority to repair or replace	0	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	5
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	358	310
51 through 150 ADT	56	186
151 through 500 ADT	150	137
501 through 1000 ADT	97	111
1001 through 2500 ADT	197	55
2501 and over	22	15
Number of miles by surface type:		
Earth	10	15
Gravel or loose aggregate	284	312
Low bituminous (oil and chip)	500	502
High bituminous (hot mix)	52	57
Paved	34	0
Concrete	NA	0

Appendix Table 4: Chelan County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	659	358
Total number of county maintained bridges in 1998 [1993]?	64	44
Number of bridges less than 20 feet long	17	0
Number of bridges 20 feet or longer	47	44
Number of County Bridges ON the Federal Aid System	27	23
Number of County Bridges OFF the Federal Aid System	37	21
Road miles in your county that are county responsibility (%)	50	0
Number of bridges in your county that are county responsibility (%)	60	0
Number of bridges posted for some type of limitation in the past 5 years?	2	1
Miles of roads posted for some type of limitation in the past 5 years?	0	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	5	20
Unchanged (%)	80	80
Declined (%)	15	0
Bridges:		
Improved (%)	2	20
Unchanged (%)	88	85
Declined (%)	10	5
Percentage of county roads in each category:		
New or perfect	0	0
Surface adequate or better with normal maintenance	40	85
Less than adequate with normal maintenance	40	15
Barely adequate; substantially higher than normal maintenance required	10	0
Failures to the extent that operation of traffic is severely affected	10	0
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	60	0
Better or equal to present minimum criteria	34	0
Meets minimum tolerable condition but with high priority to repair	3	0
Basically intolerable condition, high priority to repair or replace	3	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	179	170
51 through 150 ADT	120	83
151 through 500 ADT	120	31
501 through 1000 ADT	60	72
1001 through 2500 ADT	120	23
2501 and over	60	68
Number of miles by surface type:		
Earth	67	68
Gravel or loose aggregate	67	70
Low bituminous (oil and chip)	427	441
High bituminous (hot mix)	0	0
Paved	95	75
Concrete	3	4

Appendix Table 5: Clallam County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	488	487
Total number of county maintained bridges in 1998 [1993]?	35	34
Number of bridges less than 20 feet long	3	0
Number of bridges 20 feet or longer	32	34
Number of County Bridges ON the Federal Aid System	12	16
Number of County Bridges OFF the Federal Aid System	23	18
Road miles in your county that are county responsibility (%)	60	61
Number of bridges in your county that are county responsibility (%)	40	65
Number of bridges posted for some type of limitation in the past 5 years?	9	1
Miles of roads posted for some type of limitation in the past 5 years?	8	1
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	13	15
Unchanged (%)	87	85
Declined (%)	0	0
Bridges:		
Improved (%)	9	10
Unchanged (%)	80	90
Declined (%)	11	0
Percentage of county roads in each category:		
New or perfect	5	5
Surface adequate or better with normal maintenance	90	90
Less than adequate with normal maintenance	5	5
Barely adequate; substantially higher than normal maintenance required	0	0
Failures to the extent that operation of traffic is severely affected	0	0
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	0	0
Better or equal to present minimum criteria	100	0
Meets minimum tolerable condition but with high priority to repair	0	0
Basically intolerable condition, high priority to repair or replace	0	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	62	114
51 through 150 ADT	91	174
151 through 500 ADT	172	54
501 through 1000 ADT	36	44
1001 through 2500 ADT	99	15
2501 and over	30	0
Number of miles by surface type:		
Earth	0	0
Gravel or loose aggregate	13	50
Low bituminous (oil and chip)	370	330
High bituminous (hot mix)	0	0
Paved	105	107
Concrete	0	0

Appendix Table 6: Clark County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	1054	1600
Total number of county maintained bridges in 1998 [1993]?	67	72
Number of bridges less than 20 feet long	7	0
Number of bridges 20 feet or longer	60	72
Number of County Bridges ON the Federal Aid System	20	27
Number of County Bridges OFF the Federal Aid System	47	45
Road miles in your county that are county responsibility (%)	100	50
Number of bridges in your county that are county responsibility (%)	0	50
Number of bridges posted for some type of limitation in the past 5 years?	9	0
Miles of roads posted for some type of limitation in the past 5 years?	3	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	20	5
Unchanged (%)	45	80
Declined (%)	35	15
Bridges:		
Improved (%)	7	3
Unchanged (%)	90	94
Declined (%)	3	3
Percentage of county roads in each category:		
New or perfect	52	10
Surface adequate or better with normal maintenance	22	70
Less than adequate with normal maintenance	10	5
Barely adequate; substantially higher than normal maintenance required	16	14
Failures to the extent that operation of traffic is severely affected	0	1
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	14	7
Better or equal to present minimum criteria	86	86
Meets minimum tolerable condition but with high priority to repair	0	0
Basically intolerable condition, high priority to repair or replace	0	6
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	0	150
51 through 150 ADT	0	250
151 through 500 ADT	0	400
501 through 1000 ADT	0	400
1001 through 2500 ADT	0	300
2501 and over	0	20
Number of miles by surface type:		
Earth	0	20
Gravel or loose aggregate	0	50
Low bituminous (oil and chip)	0	100
High bituminous (hot mix)	0	230
Paved	1054	1100
Concrete	0	100

Appendix Table 7: Columbia County Results	1999
Number of miles of county maintained roads in 1998 [1993]?	504
Total number of county maintained bridges in 1998 [1993]?	DK
Number of bridges less than 20 feet long	DK
Number of bridges 20 feet or longer	67
Number of County Bridges ON the Federal Aid System	37
Number of County Bridges OFF the Federal Aid System	30
Road miles in your county that are county responsibility (%)	DK
Number of bridges in your county that are county responsibility (%)	DK
Number of bridges posted for some type of limitation in the past 5 years?	5
Miles of roads posted for some type of limitation in the past 5 years?	220
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	20
Unchanged (%)	70
Declined (%)	10
Bridges:	
Improved (%)	12
Unchanged (%)	78
Declined (%)	10
Percentage of county roads in each category:	
New or perfect	20
Surface adequate or better with normal maintenance	20
Less than adequate with normal maintenance	20
Barely adequate; substantially higher than normal maintenance required	20
Failures to the extent that operation of traffic is severely affected	20
Closed, awaiting repairs	14
Percentage of bridges in each category:	
Better or equal to present desirable criteria	DK
Better or equal to present minimum criteria	DK
Meets minimum tolerable condition but with high priority to repair	DK
Basically intolerable condition, high priority to repair or replace	DK
Immediate repair necessary to put back into service	DK
Closed, awaiting repairs or replacement.	DK
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	DK
51 through 150 ADT	DK
151 through 500 ADT	DK
501 through 1000 ADT	DK
1001 through 2500 ADT	DK
2501 and over	DK
Number of miles by surface type:	
Earth	89
Gravel or loose aggregate	276
Low bituminous (oil and chip)	133
High bituminous (hot mix)	0
Paved	5
Concrete	0

Appendix Table 8: Douglas County Results	1999
Number of miles of county maintained roads in 1998 [1993]?	1640
Total number of county maintained bridges in 1998 [1993]?	55
Number of bridges less than 20 feet long	29
Number of bridges 20 feet or longer	26
Number of County Bridges ON the Federal Aid System	10
Number of County Bridges OFF the Federal Aid System	16
Road miles in your county that are county responsibility (%)	87
Number of bridges in your county that are county responsibility (%)	80
Number of bridges posted for some type of limitation in the past 5 years?	8
Miles of roads posted for some type of limitation in the past 5 years?	10
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	14
Unchanged (%)	73
Declined (%)	13
Bridges:	
Improved (%)	8
Unchanged (%)	73
Declined (%)	19
Percentage of county roads in each category:	
New or perfect	1.2
Surface adequate or better with normal maintenance	26.2
Less than adequate with normal maintenance	48.6
Barely adequate; substantially higher than normal maintenance required	23.2
Failures to the extent that operation of traffic is severely affected	0.8
Closed, awaiting repairs	0
Percentage of bridges in each category:	
Better or equal to present desirable criteria	25
Better or equal to present minimum criteria	47
Meets minimum tolerable condition but with high priority to repair	14
Basically intolerable condition, high priority to repair or replace	14
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	32
51 through 150 ADT	6
151 through 500 ADT	46
501 through 1000 ADT	3
1001 through 2500 ADT	14
2501 and over	2
Number of miles by surface type:	
Earth	525
Gravel or loose aggregate	652
Low bituminous (oil and chip)	410
High bituminous (hot mix)	0
Paved	32
Concrete	0

Appendix Table 9: Ferry County Results	1999
Number of miles of county maintained roads in 1998 [1993]?	750
Total number of county maintained bridges in 1998 [1993]?	21
Number of bridges less than 20 feet long	3
Number of bridges 20 feet or longer	18
Number of County Bridges ON the Federal Aid System	11
Number of County Bridges OFF the Federal Aid System	10
Road miles in your county that are county responsibility (%)	50
Number of bridges in your county that are county responsibility (%)	80
Number of bridges posted for some type of limitation in the past 5 years?	11
Miles of roads posted for some type of limitation in the past 5 years?	700
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	10
Unchanged (%)	20
Declined (%)	70
Bridges:	
Improved (%)	25
Unchanged (%)	50
Declined (%)	25
Percentage of county roads in each category:	
New or perfect	10
Surface adequate or better with normal maintenance	10
Less than adequate with normal maintenance	10
Barely adequate; substantially higher than normal maintenance required	60
Failures to the extent that operation of traffic is severely affected	5
Closed, awaiting repairs	5
Percentage of bridges in each category:	
Better or equal to present desirable criteria	25
Better or equal to present minimum criteria	39
Meets minimum tolerable condition but with high priority to repair	8
Basically intolerable condition, high priority to repair or replace	4
Immediate repair necessary to put back into service	4
Closed, awaiting repairs or replacement.	20
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	15
51 through 150 ADT	20
151 through 500 ADT	40
501 through 1000 ADT	5
1001 through 2500 ADT	20
2501 and over	0
Number of miles by surface type:	
Earth	8
Gravel or loose aggregate	60
Low bituminous (oil and chip)	30
High bituminous (hot mix)	0
Paved	2
Concrete	0

Appendix Table 10: Franklin County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	1011	1015
Total number of county maintained bridges in 1998 [1993]?	111	112
Number of bridges less than 20 feet long	23	23
Number of bridges 20 feet or longer	88	89
Number of County Bridges ON the Federal Aid System	20	21
Number of County Bridges OFF the Federal Aid System	68	91
Road miles in your county that are county responsibility (%)	75	0
Number of bridges in your county that are county responsibility (%)	79	0
Number of bridges posted for some type of limitation in the past 5 years?	9	0
Miles of roads posted for some type of limitation in the past 5 years?	968	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	5	10
Unchanged (%)	90	80
Declined (%)	5	10
Bridges:		
Improved (%)	3	2
Unchanged (%)	57	28
Declined (%)	40	70
Percentage of county roads in each category:		
New or perfect	10	2
Surface adequate or better with normal maintenance	40	60
Less than adequate with normal maintenance	20	10
Barely adequate; substantially higher than normal maintenance required	25	28
Failures to the extent that operation of traffic is severely affected	5	0
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	5	0
Better or equal to present minimum criteria	10	0
Meets minimum tolerable condition but with high priority to repair	80	0
Basically intolerable condition, high priority to repair or replace	5	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	307	250
51 through 150 ADT	44	288
151 through 500 ADT	250	65
501 through 1000 ADT	47	68
1001 through 2500 ADT	328	24
2501 and over	34	0
Number of miles by surface type:		
Earth	15	0
Gravel or loose aggregate	442	452
Low bituminous (oil and chip)	505	511
High bituminous (hot mix)	0	41
Paved	49	0
Concrete	0	0

Appendix Table 11: Garfield County Results	1999
Number of miles of county maintained roads in 1998 [1993]?	453
Total number of county maintained bridges in 1998 [1993]?	32
Number of bridges less than 20 feet long	11
Number of bridges 20 feet or longer	32
Number of County Bridges ON the Federal Aid System	0
Number of County Bridges OFF the Federal Aid System	0
Road miles in your county that are county responsibility (%)	73
Number of bridges in your county that are county responsibility (%)	60
Number of bridges posted for some type of limitation in the past 5 years?	0
Miles of roads posted for some type of limitation in the past 5 years?	40
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	50
Unchanged (%)	40
Declined (%)	10
Bridges:	
Improved (%)	8
Unchanged (%)	80
Declined (%)	12
Percentage of county roads in each category:	
New or perfect	12
Surface adequate or better with normal maintenance	60
Less than adequate with normal maintenance	14
Barely adequate; substantially higher than normal maintenance required	10
Failures to the extent that operation of traffic is severely affected	4
Closed, awaiting repairs	0
Percentage of bridges in each category:	
Better or equal to present desirable criteria	16
Better or equal to present minimum criteria	80
Meets minimum tolerable condition but with high priority to repair	4
Basically intolerable condition, high priority to repair or replace	0
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	200
51 through 150 ADT	0
151 through 500 ADT	100
501 through 1000 ADT	0
1001 through 2500 ADT	100
2501 and over	0
Number of miles by surface type:	
Earth	120
Gravel or loose aggregate	150
Low bituminous (oil and chip)	80
High bituminous (hot mix)	0
Paved	0
Concrete	0

Appendix Table 12: Grant County Results	1999
Number of miles of county maintained roads in 1998 [1993]?	2507
Total number of county maintained bridges in 1998 [1993]?	222
Number of bridges less than 20 feet long	27
Number of bridges 20 feet or longer	199
Number of County Bridges ON the Federal Aid System	57
Number of County Bridges OFF the Federal Aid System	169
Road miles in your county that are county responsibility (%)	82
Number of bridges in your county that are county responsibility (%)	95
Number of bridges posted for some type of limitation in the past 5 years?	40
Miles of roads posted for some type of limitation in the past 5 years?	820
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	5
Unchanged (%)	80
Declined (%)	15
Bridges:	
Improved (%)	3
Unchanged (%)	70
Declined (%)	27
Percentage of county roads in each category:	
New or perfect	2
Surface adequate or better with normal maintenance	6
Less than adequate with normal maintenance	79
Barely adequate; substantially higher than normal maintenance required	10
Failures to the extent that operation of traffic is severely affected	3
Closed, awaiting repairs	0
Percentage of bridges in each category:	
Better or equal to present desirable criteria	1
Better or equal to present minimum criteria	30
Meets minimum tolerable condition but with high priority to repair	66
Basically intolerable condition, high priority to repair or replace	3
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	140
51 through 150 ADT	692
151 through 500 ADT	1000
501 through 1000 ADT	60
1001 through 2500 ADT	600
2501 and over	15
Number of miles by surface type:	
Earth	151
Gravel or loose aggregate	1079
Low bituminous (oil and chip)	1169
High bituminous (hot mix)	0
Paved	108
Concrete	0

Appendix Table 13: Grays Harbor County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	560	570
Total number of county maintained bridges in 1998 [1993]?	146	180
Number of bridges less than 20 feet long	DK	30
Number of bridges 20 feet or longer	146	150
Number of County Bridges ON the Federal Aid System	49	60
Number of County Bridges OFF the Federal Aid System	97	120
Road miles in your county that are county responsibility (%)	20	20
Number of bridges in your county that are county responsibility (%)	20	20
Number of bridges posted for some type of limitation in the past 5 years?	12	0
Miles of roads posted for some type of limitation in the past 5 years?	570	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	5	5
Unchanged (%)	95	95
Declined (%)	0	0
Bridges:		
Improved (%)	5	3
Unchanged (%)	90	95
Declined (%)	5	2
Percentage of county roads in each category:		
New or perfect	10	1
Surface adequate or better with normal maintenance	50	90
Less than adequate with normal maintenance	30	9
Barely adequate; substantially higher than normal maintenance required	9	28
Failures to the extent that operation of traffic is severely affected	1	0
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	10	0
Better or equal to present minimum criteria	80	50
Meets minimum tolerable condition but with high priority to repair	9	0
Basically intolerable condition, high priority to repair or replace	1	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	30	70
51 through 150 ADT	150	100
151 through 500 ADT	100	100
501 through 1000 ADT	70	175
1001 through 2500 ADT	200	100
2501 and over	10	25
Number of miles by surface type:		
Earth	2	0
Gravel or loose aggregate	62	90
Low bituminous (oil and chip)	438	370
High bituminous (hot mix)	0	0
Paved	55	110
Concrete	3	0

Appendix Table 14: Island County Results	1994
Number of miles of county maintained roads in 1998 [1993]?	594
Total number of county maintained bridges in 1998 [1993]?	0
Number of bridges less than 20 feet long	0
Number of bridges 20 feet or longer	0
Number of County Bridges ON the Federal Aid System	0
Number of County Bridges OFF the Federal Aid System	0
Road miles in your county that are county responsibility (%)	0
Number of bridges in your county that are county responsibility (%)	0
Number of bridges posted for some type of limitation in the past 5 years?	0
Miles of roads posted for some type of limitation in the past 5 years?	0
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	0
Unchanged (%)	0
Declined (%)	0
Bridges:	
Improved (%)	0
Unchanged (%)	0
Declined (%)	0
Percentage of county roads in each category:	
New or perfect	0
Surface adequate or better with normal maintenance	90
Less than adequate with normal maintenance	10
Barely adequate; substantially higher than normal maintenance required	0
Failures to the extent that operation of traffic is severely affected	0
Closed, awaiting repairs	0
Percentage of bridges in each category:	
Better or equal to present desirable criteria	0
Better or equal to present minimum criteria	0
Meets minimum tolerable condition but with high priority to repair	0
Basically intolerable condition, high priority to repair or replace	0
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	101
51 through 150 ADT	180
151 through 500 ADT	100
501 through 1000 ADT	83
1001 through 2500 ADT	50
2501 and over	2
Number of miles by surface type:	
Earth	2
Gravel or loose aggregate	27
Low bituminous (oil and chip)	324
High bituminous (hot mix)	0
Paved	241
Concrete	0

Appendix Table 15: Jefferson County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	392	389
Total number of county maintained bridges in 1998 [1993]?	24	24
Number of bridges less than 20 feet long	0	0
Number of bridges 20 feet or longer	24	24
Number of County Bridges ON the Federal Aid System	5	8
Number of County Bridges OFF the Federal Aid System	19	16
Road miles in your county that are county responsibility (%)	40	80
Number of bridges in your county that are county responsibility (%)	50	73
Number of bridges posted for some type of limitation in the past 5 years?	1	0
Miles of roads posted for some type of limitation in the past 5 years?	2	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	25	5
Unchanged (%)	50	80
Declined (%)	25	15
Bridges:		
Improved (%)	20	0
Unchanged (%)	50	100
Declined (%)	30	0
Percentage of county roads in each category:		
New or perfect	2	5
Surface adequate or better with normal maintenance	55	60
Less than adequate with normal maintenance	40	30
Barely adequate; substantially higher than normal maintenance required	2	5
Failures to the extent that operation of traffic is severely affected	0	0
Closed, awaiting repairs	1	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	NA	0
Better or equal to present minimum criteria	NA	0
Meets minimum tolerable condition but with high priority to repair	NA	0
Basically intolerable condition, high priority to repair or replace	NA	0
Immediate repair necessary to put back into service	NA	0
Closed, awaiting repairs or replacement.	NA	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	74	75
51 through 150 ADT	35	132
151 through 500 ADT	95	43
501 through 1000 ADT	42	43
1001 through 2500 ADT	127	14
2501 and over	28	4
Number of miles by surface type:		
Earth	1	4
Gravel or loose aggregate	86	88
Low bituminous (oil and chip)	235	231
High bituminous (hot mix)	0	66
Paved	70	0
Concrete	0	0

Appendix Table 16: King County Results	1999
Number of miles of county maintained roads in 1998 [1993]?	1997
Total number of county maintained bridges in 1998 [1993]?	208
Number of bridges less than 20 feet long	41
Number of bridges 20 feet or longer	167
Number of County Bridges ON the Federal Aid System	115
Number of County Bridges OFF the Federal Aid System	93
Road miles in your county that are county responsibility (%)	0
Number of bridges in your county that are county responsibility (%)	0
Number of bridges posted for some type of limitation in the past 5 years?	23
Miles of roads posted for some type of limitation in the past 5 years?	0
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	20
Unchanged (%)	60
Declined (%)	20
Bridges:	
Improved (%)	50
Unchanged (%)	30
Declined (%)	2
Percentage of county roads in each category:	
New or perfect	15
Surface adequate or better with normal maintenance	60
Less than adequate with normal maintenance	25
Barely adequate; substantially higher than normal maintenance required	0
Failures to the extent that operation of traffic is severely affected	0
Closed, awaiting repairs	0
Percentage of bridges in each category:	
Better or equal to present desirable criteria	10
Better or equal to present minimum criteria	0
Meets minimum tolerable condition but with high priority to repair	20
Basically intolerable condition, high priority to repair or replace	0
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	see notes
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	15
51 through 150 ADT	291
151 through 500 ADT	44
501 through 1000 ADT	726
1001 through 2500 ADT	145
2501 and over	532
Number of miles by surface type:	
Earth	0
Gravel or loose aggregate	88
Low bituminous (oil and chip)	550
High bituminous (hot mix)	0
Paved	1327
Concrete	32

Appendix Table 17: Kitsap County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	922	990
Total number of county maintained bridges in 1998 [1993]?	24	23
Number of bridges less than 20 feet long	0	0
Number of bridges 20 feet or longer	24	23
Number of County Bridges ON the Federal Aid System	20	4
Number of County Bridges OFF the Federal Aid System	4	19
Road miles in your county that are county responsibility (%)	90	100
Number of bridges in your county that are county responsibility (%)	96	100
Number of bridges posted for some type of limitation in the past 5 years?	0	2
Miles of roads posted for some type of limitation in the past 5 years?	0	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	18	5
Unchanged (%)	77	95
Declined (%)	5	0
Bridges:		
Improved (%)	25	10
Unchanged (%)	65	90
Declined (%)	10	0
Percentage of county roads in each category:		
New or perfect	55	5
Surface adequate or better with normal maintenance	20	90
Less than adequate with normal maintenance	12	5
Barely adequate; substantially higher than normal maintenance required	6	0
Failures to the extent that operation of traffic is severely affected	7	0
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	NA	75
Better or equal to present minimum criteria	NA	25
Meets minimum tolerable condition but with high priority to repair	NA	0
Basically intolerable condition, high priority to repair or replace	NA	0
Immediate repair necessary to put back into service	NA	0
Closed, awaiting repairs or replacement.	NA	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	69	50
51 through 150 ADT	90	100
151 through 500 ADT	290	400
501 through 1000 ADT	148	300
1001 through 2500 ADT	133	100
2501 and over	192	50
Number of miles by surface type:		
Earth	0	50
Gravel or loose aggregate	10	50
Low bituminous (oil and chip)	0	50
High bituminous (hot mix)	175	50
Paved	746	800
Concrete	1	0

Appendix Table 18: Kittitas County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	561	487
Total number of county maintained bridges in 1998 [1993]?	232	217
Number of bridges less than 20 feet long	123	92
Number of bridges 20 feet or longer	109	125
Number of County Bridges ON the Federal Aid System	53	55
Number of County Bridges OFF the Federal Aid System	179	162
Road miles in your county that are county responsibility (%)	23	0
Number of bridges in your county that are county responsibility (%)	50	80
Number of bridges posted for some type of limitation in the past 5 years?	4	0
Miles of roads posted for some type of limitation in the past 5 years?	18	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	11	0
Unchanged (%)	79	0
Declined (%)	10	0
Bridges:		
Improved (%)	10	10
Unchanged (%)	60	85
Declined (%)	30	5
Percentage of county roads in each category:		
New or perfect	13	0
Surface adequate or better with normal maintenance	49	0
Less than adequate with normal maintenance	30	0
Barely adequate; substantially higher than normal maintenance required	5	0
Failures to the extent that operation of traffic is severely affected	3	0
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	15	60
Better or equal to present minimum criteria	35	40
Meets minimum tolerable condition but with high priority to repair	35	0
Basically intolerable condition, high priority to repair or replace	15	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	150	127
51 through 150 ADT	63	190
151 through 500 ADT	120	45
501 through 1000 ADT	8	27
1001 through 2500 ADT	191	6
2501 and over	9	19
Number of miles by surface type:		
Earth	19	19
Gravel or loose aggregate	54	67
Low bituminous (oil and chip)	447	464
High bituminous (hot mix)	0	0
Paved	38	11
Concrete	3	350

Appendix Table 19: Klickitat County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	1084	1083
Total number of county maintained bridges in 1998 [1993]?	158	148
Number of bridges less than 20 feet long	98	88
Number of bridges 20 feet or longer	60	60
Number of County Bridges ON the Federal Aid System	43	43
Number of County Bridges OFF the Federal Aid System	115	105
Road miles in your county that are county responsibility (%)	50	0
Number of bridges in your county that are county responsibility (%)	50	0
Number of bridges posted for some type of limitation in the past 5 years?	10	1
Miles of roads posted for some type of limitation in the past 5 years?	0	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	5	10
Unchanged (%)	90	85
Declined (%)	5	5
Bridges:		
Improved (%)	3	5
Unchanged (%)	92	94
Declined (%)	5	1
Percentage of county roads in each category:		
New or perfect	2	2
Surface adequate or better with normal maintenance	40	38
Less than adequate with normal maintenance	50	30
Barely adequate; substantially higher than normal maintenance required	5	22
Failures to the extent that operation of traffic is severely affected	3	8
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	40	10
Better or equal to present minimum criteria	50	70
Meets minimum tolerable condition but with high priority to repair	10	0
Basically intolerable condition, high priority to repair or replace	0	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	590	668
51 through 150 ADT	72	50
151 through 500 ADT	208	5
501 through 1000 ADT	16	0
1001 through 2500 ADT	196	0
2501 and over	2	137
Number of miles by surface type:		
Earth	133	137
Gravel or loose aggregate	530	552
Low bituminous (oil and chip)	100	297
High bituminous (hot mix)	211	97
Paved	110	0
Concrete	0	0

Appendix Table 20: Lewis County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	1056	1052
Total number of county maintained bridges in 1998 [1993]?	196	201
Number of bridges less than 20 feet long	dk	7
Number of bridges 20 feet or longer	196	194
Number of County Bridges ON the Federal Aid System	43	37
Number of County Bridges OFF the Federal Aid System	153	64
Road miles in your county that are county responsibility (%)	82	90
Number of bridges in your county that are county responsibility (%)	dk	85
Number of bridges posted for some type of limitation in the past 5 years?	0	0
Miles of roads posted for some type of limitation in the past 5 years?	0	2
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	5	30
Unchanged (%)	90	40
Declined (%)	5	30
Bridges:		
Improved (%)	5	20
Unchanged (%)	90	75
Declined (%)	5	5
Percentage of county roads in each category:		
New or perfect	5	3
Surface adequate or better with normal maintenance	80	25
Less than adequate with normal maintenance	10	15
Barely adequate; substantially higher than normal maintenance required	5	37
Failures to the extent that operation of traffic is severely affected	0	0
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	0	3
Better or equal to present minimum criteria	0	0
Meets minimum tolerable condition but with high priority to repair	0	0
Basically intolerable condition, high priority to repair or replace	0	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	121	300
51 through 150 ADT	168	381
151 through 500 ADT	216	143
501 through 1000 ADT	69	50
1001 through 2500 ADT	438	18
2501 and over	44	0
Number of miles by surface type:		
Earth	0	0
Gravel or loose aggregate	70	72
Low bituminous (oil and chip)	232	828
High bituminous (hot mix)	600	0
Paved	154	149
Concrete	0	10

Appendix Table 21: Lincoln County Results	1999
Number of miles of county maintained roads in 1998 [1993]?	2054
Total number of county maintained bridges in 1998 [1993]?	202
Number of bridges less than 20 feet long	77
Number of bridges 20 feet or longer	125
Number of County Bridges ON the Federal Aid System	31
Number of County Bridges OFF the Federal Aid System	94
Road miles in your county that are county responsibility (%)	80
Number of bridges in your county that are county responsibility (%)	85
Number of bridges posted for some type of limitation in the past 5 years?	35
Miles of roads posted for some type of limitation in the past 5 years?	0
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	15
Unchanged (%)	45
Declined (%)	40
Bridges:	
Improved (%)	20
Unchanged (%)	65
Declined (%)	15
Percentage of county roads in each category:	
New or perfect	3
Surface adequate or better with normal maintenance	50
Less than adequate with normal maintenance	30
Barely adequate; substantially higher than normal maintenance required	15
Failures to the extent that operation of traffic is severely affected	1
Closed, awaiting repairs	1
Percentage of bridges in each category:	
Better or equal to present desirable criteria	10
Better or equal to present minimum criteria	87
Meets minimum tolerable condition but with high priority to repair	2
Basically intolerable condition, high priority to repair or replace	1
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	760
51 through 150 ADT	41
151 through 500 ADT	1027
501 through 1000 ADT	21
1001 through 2500 ADT	205
2501 and over	0
Number of miles by surface type:	
Earth	164
Gravel or loose aggregate	1438
Low bituminous (oil and chip)	103
High bituminous (hot mix)	226
Paved	103
Concrete	21

Appendix Table 22: Mason County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	621.1	619
Total number of county maintained bridges in 1998 [1993]?	52	57
Number of bridges less than 20 feet long	6	5
Number of bridges 20 feet or longer	52	52
Number of County Bridges ON the Federal Aid System	11	10
Number of County Bridges OFF the Federal Aid System	42	47
Road miles in your county that are county responsibility (%)	82	44
Number of bridges in your county that are county responsibility (%)	44	0
Number of bridges posted for some type of limitation in the past 5 years?	2	10
Miles of roads posted for some type of limitation in the past 5 years?	48	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	12	70
Unchanged (%)	86	25
Declined (%)	2	5
Bridges:		
Improved (%)	0	0
Unchanged (%)	0	0
Declined (%)	0	0
Percentage of county roads in each category:		
New or perfect	17	5
Surface adequate or better with normal maintenance	77	80
Less than adequate with normal maintenance	5	10
Barely adequate; substantially higher than normal maintenance required	1	5
Failures to the extent that operation of traffic is severely affected	0	0
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	0	80
Better or equal to present minimum criteria	0	5
Meets minimum tolerable condition but with high priority to repair	0	0
Basically intolerable condition, high priority to repair or replace	0	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	104	175.2
51 through 150 ADT	96.1	154.9
151 through 500 ADT	175.2	94.8
501 through 1000 ADT	69.5	65.7
1001 through 2500 ADT	160.4	20
2501 and over	21.2	0
Number of miles by surface type:		
Earth	4.8	0
Gravel or loose aggregate	77.7	97.4
Low bituminous (oil and chip)	357.4	359.7
High bituminous (hot mix)	0	0
Paved	179.3	157.5
Concrete	4.4	0

Appendix Table 23: Okanogan County Results	1994
Number of miles of county maintained roads in 1998 [1993]?	1396
Total number of county maintained bridges in 1998 [1993]?	59
Number of bridges less than 20 feet long	0
Number of bridges 20 feet or longer	59
Number of County Bridges ON the Federal Aid System	14
Number of County Bridges OFF the Federal Aid System	45
Road miles in your county that are county responsibility (%)	0
Number of bridges in your county that are county responsibility (%)	0
Number of bridges posted for some type of limitation in the past 5 years?	0
Miles of roads posted for some type of limitation in the past 5 years?	0
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	0
Unchanged (%)	0
Declined (%)	0
Bridges:	
Improved (%)	3.4
Unchanged (%)	0
Declined (%)	0
Percentage of county roads in each category:	
New or perfect	0
Surface adequate or better with normal maintenance	75
Less than adequate with normal maintenance	15
Barely adequate; substantially higher than normal maintenance required	10
Failures to the extent that operation of traffic is severely affected	0
Closed, awaiting repairs	0
Percentage of bridges in each category:	
Better or equal to present desirable criteria	0
Better or equal to present minimum criteria	0
Meets minimum tolerable condition but with high priority to repair	0
Basically intolerable condition, high priority to repair or replace	0
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	339
51 through 150 ADT	448
151 through 500 ADT	150
501 through 1000 ADT	147
1001 through 2500 ADT	5
2501 and over	146
Number of miles by surface type:	
Earth	146
Gravel or loose aggregate	587
Low bituminous (oil and chip)	654
High bituminous (hot mix)	3
Paved	0
Concrete	0.5

Appendix Table 24: Pacific County Results	1999
Number of miles of county maintained roads in 1998 [1993]?	350
Total number of county maintained bridges in 1998 [1993]?	62
Number of bridges less than 20 feet long	3
Number of bridges 20 feet or longer	59
Number of County Bridges ON the Federal Aid System	0
Number of County Bridges OFF the Federal Aid System	62
Road miles in your county that are county responsibility (%)	65
Number of bridges in your county that are county responsibility (%)	60
Number of bridges posted for some type of limitation in the past 5 years?	8
Miles of roads posted for some type of limitation in the past 5 years?	78
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	25
Unchanged (%)	50
Declined (%)	25
Bridges:	
Improved (%)	16
Unchanged (%)	69
Declined (%)	15
Percentage of county roads in each category:	
New or perfect	25
Surface adequate or better with normal maintenance	20
Less than adequate with normal maintenance	40
Barely adequate; substantially higher than normal maintenance required	10
Failures to the extent that operation of traffic is severely affected	5
Closed, awaiting repairs	0
Percentage of bridges in each category:	
Better or equal to present desirable criteria	33
Better or equal to present minimum criteria	33
Meets minimum tolerable condition but with high priority to repair	0
Basically intolerable condition, high priority to repair or replace	33
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	128
51 through 150 ADT	10
151 through 500 ADT	70
501 through 1000 ADT	13
1001 through 2500 ADT	75
2501 and over	5
Number of miles by surface type:	
Earth	1
Gravel or loose aggregate	55
Low bituminous (oil and chip)	140
High bituminous (hot mix)	0
Paved	156
Concrete	0.32

Appendix Table 25: Pend Oreille County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	550	491
Total number of county maintained bridges in 1998 [1993]?	22	20
Number of bridges less than 20 feet long	1	2
Number of bridges 20 feet or longer	21	18
Number of County Bridges ON the Federal Aid System	11	10
Number of County Bridges OFF the Federal Aid System	11	10
Road miles in your county that are county responsibility (%)	50	25
Number of bridges in your county that are county responsibility (%)	80	20
Number of bridges posted for some type of limitation in the past 5 years?	2	0
Miles of roads posted for some type of limitation in the past 5 years?	1	30
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	10	5
Unchanged (%)	40	92
Declined (%)	50	3
Bridges:		
Improved (%)	10	20
Unchanged (%)	50	70
Declined (%)	40	10
Percentage of county roads in each category:		
New or perfect	5	10
Surface adequate or better with normal maintenance	60	50
Less than adequate with normal maintenance	20	20
Barely adequate; substantially higher than normal maintenance required	14	20
Failures to the extent that operation of traffic is severely affected	1	0
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	60	0
Better or equal to present minimum criteria	20	0
Meets minimum tolerable condition but with high priority to repair	15	50
Basically intolerable condition, high priority to repair or replace	5	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	30	0
51 through 150 ADT	8	0
151 through 500 ADT	32	0
501 through 1000 ADT	2	0
1001 through 2500 ADT	28	0
2501 and over	0	34
Number of miles by surface type:		
Earth	32	34
Gravel or loose aggregate	251	255
Low bituminous (oil and chip)	236	248
High bituminous (hot mix)	0	4
Paved	32	0
Concrete	0.5	1

Appendix Table 26: Pierce County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	1522	1848
Total number of county maintained bridges in 1998 [1993]?	144	166
Number of bridges less than 20 feet long	35	37
Number of bridges 20 feet or longer	109	129
Number of County Bridges ON the Federal Aid System	99	82
Number of County Bridges OFF the Federal Aid System	45	84
Road miles in your county that are county responsibility (%)	0	0
Number of bridges in your county that are county responsibility (%)	30	0
Number of bridges posted for some type of limitation in the past 5 years?	4	0
Miles of roads posted for some type of limitation in the past 5 years?	0	2
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	1	20
Unchanged (%)	92	60
Declined (%)	7	20
Bridges:		
Improved (%)	5	4
Unchanged (%)	90	25
Declined (%)	5	72
Percentage of county roads in each category:		
New or perfect	68	0
Surface adequate or better with normal maintenance	16	0
Less than adequate with normal maintenance	12	0
Barely adequate; substantially higher than normal maintenance required	2	0
Failures to the extent that operation of traffic is severely affected	2	0
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	3	20
Better or equal to present minimum criteria	94	32
Meets minimum tolerable condition but with high priority to repair	3	0
Basically intolerable condition, high priority to repair or replace	0	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	143	341
51 through 150 ADT	191	514
151 through 500 ADT	278	222
501 through 1000 ADT	181	247
1001 through 2500 ADT	428	371
2501 and over	301	2
Number of miles by surface type:		
Earth	8	2
Gravel or loose aggregate	37	51
Low bituminous (oil and chip)	202	891
High bituminous (hot mix)	605	0
Paved	650	878
Concrete	18	26

Appendix Table 27: San Juan County Results	1999
Number of miles of county maintained roads in 1998 [1993]?	274
Total number of county maintained bridges in 1998 [1993]?	3
Number of bridges less than 20 feet long	1
Number of bridges 20 feet or longer	2
Number of County Bridges ON the Federal Aid System	0
Number of County Bridges OFF the Federal Aid System	3
Road miles in your county that are county responsibility (%)	27
Number of bridges in your county that are county responsibility (%)	30
Number of bridges posted for some type of limitation in the past 5 years?	0
Miles of roads posted for some type of limitation in the past 5 years?	0
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	10
Unchanged (%)	45
Declined (%)	45
Bridges:	
Improved (%)	0
Unchanged (%)	70
Declined (%)	30
Percentage of county roads in each category:	
New or perfect	5
Surface adequate or better with normal maintenance	30
Less than adequate with normal maintenance	45
Barely adequate; substantially higher than normal maintenance required	10
Failures to the extent that operation of traffic is severely affected	1
Closed, awaiting repairs	0
Percentage of bridges in each category:	
Better or equal to present desirable criteria	33
Better or equal to present minimum criteria	33
Meets minimum tolerable condition but with high priority to repair	33
Basically intolerable condition, high priority to repair or replace	0
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	27
51 through 150 ADT	110
151 through 500 ADT	41
501 through 1000 ADT	27
1001 through 2500 ADT	55
2501 and over	14
Number of miles by surface type:	
Earth	3
Gravel or loose aggregate	66
Low bituminous (oil and chip)	197
High bituminous (hot mix)	0
Paved	8
Concrete	0

Appendix Table 28: Skagit County Results	1999
Number of miles of county maintained roads in 1998 [1993]?	807
Total number of county maintained bridges in 1998 [1993]?	102
Number of bridges less than 20 feet long	0
Number of bridges 20 feet or longer	102
Number of County Bridges ON the Federal Aid System	65
Number of County Bridges OFF the Federal Aid System	37
Road miles in your county that are county responsibility (%)	66
Number of bridges in your county that are county responsibility (%)	50
Number of bridges posted for some type of limitation in the past 5 years?	0
Miles of roads posted for some type of limitation in the past 5 years?	0
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	22
Unchanged (%)	68
Declined (%)	10
Bridges:	
Improved (%)	20
Unchanged (%)	50
Declined (%)	30
Percentage of county roads in each category:	
New or perfect	77
Surface adequate or better with normal maintenance	13
Less than adequate with normal maintenance	7
Barely adequate; substantially higher than normal maintenance required	3
Failures to the extent that operation of traffic is severely affected	0
Closed, awaiting repairs	0
Percentage of bridges in each category:	
Better or equal to present desirable criteria	0
Better or equal to present minimum criteria	0
Meets minimum tolerable condition but with high priority to repair	0
Basically intolerable condition, high priority to repair or replace	0
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	104
51 through 150 ADT	107
151 through 500 ADT	151
501 through 1000 ADT	121
1001 through 2500 ADT	265
2501 and over	57
Number of miles by surface type:	
Earth	0
Gravel or loose aggregate	60
Low bituminous (oil and chip)	624
High bituminous (hot mix)	108
Paved	0
Concrete	11

Appendix Table 29: Skamania County Results	1994
Number of miles of county maintained roads in 1998 [1993]?	265
Total number of county maintained bridges in 1998 [1993]?	29
Number of bridges less than 20 feet long	0
Number of bridges 20 feet or longer	29
Number of County Bridges ON the Federal Aid System	5
Number of County Bridges OFF the Federal Aid System	24
Road miles in your county that are county responsibility (%)	0
Number of bridges in your county that are county responsibility (%)	0
Number of bridges posted for some type of limitation in the past 5 years?	0
Miles of roads posted for some type of limitation in the past 5 years?	0
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	10
Unchanged (%)	30
Declined (%)	60
Bridges:	
Improved (%)	4
Unchanged (%)	86
Declined (%)	10
Percentage of county roads in each category:	
New or perfect	1
Surface adequate or better with normal maintenance	70
Less than adequate with normal maintenance	20
Barely adequate; substantially higher than normal maintenance required	9
Failures to the extent that operation of traffic is severely affected	0
Closed, awaiting repairs	0
Percentage of bridges in each category:	
Better or equal to present desirable criteria	0
Better or equal to present minimum criteria	0
Meets minimum tolerable condition but with high priority to repair	0
Basically intolerable condition, high priority to repair or replace	0
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	150
51 through 150 ADT	30
151 through 500 ADT	10
501 through 1000 ADT	0
1001 through 2500 ADT	0
2501 and over	10
Number of miles by surface type:	
Earth	10
Gravel or loose aggregate	50
Low bituminous (oil and chip)	150
High bituminous (hot mix)	0
Paved	55
Concrete	0

Appendix Table 30: Snohomish County Results		1994
Number of miles of county maintained roads in 1998 [1993]?	1625	1588
Total number of county maintained bridges in 1998 [1993]?	186	185
Number of bridges less than 20 feet long	20	15
Number of bridges 20 feet or longer	166	170
Number of County Bridges ON the Federal Aid System	56	56
Number of County Bridges OFF the Federal Aid System	130	129
Road miles in your county that are county responsibility (%)	45	0
Number of bridges in your county that are county responsibility (%)	55	0
Number of bridges posted for some type of limitation in the past 5 years?	5	0
Miles of roads posted for some type of limitation in the past 5 years?	5	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	30	35
Unchanged (%)	20	15
Declined (%)	50	50
Bridges:		
Improved (%)	10	20
Unchanged (%)	50	70
Declined (%)	40	10
Percentage of county roads in each category:		
New or perfect	52	45
Surface adequate or better with normal maintenance	12	16
Less than adequate with normal maintenance	16	5
Barely adequate; substantially higher than normal maintenance required	14	19
Failures to the extent that operation of traffic is severely affected	5	15
Closed, awaiting repairs	1	1
Percentage of bridges in each category:		
Better or equal to present desirable criteria	25	0
Better or equal to present minimum criteria	60	100
Meets minimum tolerable condition but with high priority to repair	15	0
Basically intolerable condition, high priority to repair or replace	0	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	99	50
51 through 150 ADT	223	1050
151 through 500 ADT	359	200
501 through 1000 ADT	281	185
1001 through 2500 ADT	413	100
2501 and over	251	0
Number of miles by surface type:		
Earth	0	0
Gravel or loose aggregate	27	120
Low bituminous (oil and chip)	371	260
High bituminous (hot mix)	0	1200
Paved	1220	0
Concrete	7	8

Appendix Table 31: Spokane County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	2958	2954
Total number of county maintained bridges in 1998 [1993]?	174	214
Number of bridges less than 20 feet long	42	37
Number of bridges 20 feet or longer	132	177
Number of County Bridges ON the Federal Aid System	87	67
Number of County Bridges OFF the Federal Aid System	45	147
Road miles in your county that are county responsibility (%)	66	72
Number of bridges in your county that are county responsibility (%)	60	65
Number of bridges posted for some type of limitation in the past 5 years?	10	15
Miles of roads posted for some type of limitation in the past 5 years?	25	10
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	10	10
Unchanged (%)	30	30
Declined (%)	60	60
Bridges:		
Improved (%)	15	20
Unchanged (%)	40	70
Declined (%)	45	10
Percentage of county roads in each category:		
New or perfect	10	2
Surface adequate or better with normal maintenance	30	15
Less than adequate with normal maintenance	30	20
Barely adequate; substantially higher than normal maintenance required	27	56
Failures to the extent that operation of traffic is severely affected	2	5
Closed, awaiting repairs	1	2
Percentage of bridges in each category:		
Better or equal to present desirable criteria	20	0
Better or equal to present minimum criteria	30	11
Meets minimum tolerable condition but with high priority to repair	43	22
Basically intolerable condition, high priority to repair or replace	5	14
Immediate repair necessary to put back into service	1	8
Closed, awaiting repairs or replacement.	1	5
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	150	700
51 through 150 ADT	700	800
151 through 500 ADT	808	300
501 through 1000 ADT	400	300
1001 through 2500 ADT	800	250
2501 and over	100	163
Number of miles by surface type:		
Earth	157	163
Gravel or loose aggregate	1163	1240
Low bituminous (oil and chip)	770	748
High bituminous (hot mix)	0	792
Paved	854	0
Concrete	14	11

Appendix Table 32: Thurston County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	1010	993
Total number of county maintained bridges in 1998 [1993]?	92	100
Number of bridges less than 20 feet long	9	12
Number of bridges 20 feet or longer	83	88
Number of County Bridges ON the Federal Aid System	72	58
Number of County Bridges OFF the Federal Aid System	20	42
Road miles in your county that are county responsibility (%)	80	0
Number of bridges in your county that are county responsibility (%)	75	0
Number of bridges posted for some type of limitation in the past 5 years?	9	0
Miles of roads posted for some type of limitation in the past 5 years?	4	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	16	41
Unchanged (%)	63	0
Declined (%)	21	59
Bridges:		
Improved (%)	10	19
Unchanged (%)	85	72
Declined (%)	5	9
Percentage of county roads in each category:		
New or perfect	16	0
Surface adequate or better with normal maintenance	63	34
Less than adequate with normal maintenance	13	21
Barely adequate; substantially higher than normal maintenance required	5	45
Failures to the extent that operation of traffic is severely affected	3	0
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	0	0
Better or equal to present minimum criteria	84	0
Meets minimum tolerable condition but with high priority to repair	5	0
Basically intolerable condition, high priority to repair or replace	3	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	225	154
51 through 150 ADT	140	217
151 through 500 ADT	125	137
501 through 1000 ADT	150	135
1001 through 2500 ADT	210	143
2501 and over	160	0.5
Number of miles by surface type:		
Earth	0	0.5
Gravel or loose aggregate	46	69
Low bituminous (oil and chip)	513	545
High bituminous (hot mix)	0	0
Paved	436	374
Concrete	21	5

Appendix Table 33: Wahkiakum County Results	1999
Number of miles of county maintained roads in 1998 [1993]?	144
Total number of county maintained bridges in 1998 [1993]?	20
Number of bridges less than 20 feet long	1
Number of bridges 20 feet or longer	19
Number of County Bridges ON the Federal Aid System	8
Number of County Bridges OFF the Federal Aid System	12
Road miles in your county that are county responsibility (%)	100
Number of bridges in your county that are county responsibility (%)	91
Number of bridges posted for some type of limitation in the past 5 years?	1
Miles of roads posted for some type of limitation in the past 5 years?	2
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	10
Unchanged (%)	80
Declined (%)	10
Bridges:	
Improved (%)	0
Unchanged (%)	90
Declined (%)	10
Percentage of county roads in each category:	
New or perfect	23
Surface adequate or better with normal maintenance	70
Less than adequate with normal maintenance	1
Barely adequate; substantially higher than normal maintenance required	5
Failures to the extent that operation of traffic is severely affected	1
Closed, awaiting repairs	0
Percentage of bridges in each category:	
Better or equal to present desirable criteria	0
Better or equal to present minimum criteria	0
Meets minimum tolerable condition but with high priority to repair	100
Basically intolerable condition, high priority to repair or replace	0
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	7
51 through 150 ADT	9
151 through 500 ADT	41
501 through 1000 ADT	6
1001 through 2500 ADT	37
2501 and over	0
Number of miles by surface type:	
Earth	4
Gravel or loose aggregate	23
Low bituminous (oil and chip)	44
High bituminous (hot mix)	73
Paved	0
Concrete	0

Appendix Table 34: Walla Walla County Results	1994
Number of miles of county maintained roads in 1998 [1993]?	967
Total number of county maintained bridges in 1998 [1993]?	212
Number of bridges less than 20 feet long	110
Number of bridges 20 feet or longer	102
Number of County Bridges ON the Federal Aid System	40
Number of County Bridges OFF the Federal Aid System	172
Road miles in your county that are county responsibility (%)	100
Number of bridges in your county that are county responsibility (%)	100
Number of bridges posted for some type of limitation in the past 5 years?	3
Miles of roads posted for some type of limitation in the past 5 years?	0
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	2
Unchanged (%)	88
Declined (%)	10
Bridges:	
Improved (%)	8
Unchanged (%)	87
Declined (%)	5
Percentage of county roads in each category:	
New or perfect	2
Surface adequate or better with normal maintenance	73
Less than adequate with normal maintenance	10
Barely adequate; substantially higher than normal maintenance required	15
Failures to the extent that operation of traffic is severely affected	0
Closed, awaiting repairs	0
Percentage of bridges in each category:	
Better or equal to present desirable criteria	0
Better or equal to present minimum criteria	0
Meets minimum tolerable condition but with high priority to repair	5
Basically intolerable condition, high priority to repair or replace	3
Immediate repair necessary to put back into service	0
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	427
51 through 150 ADT	167
151 through 500 ADT	58
501 through 1000 ADT	34
1001 through 2500 ADT	9
2501 and over	53
Number of miles by surface type:	
Earth	53
Gravel or loose aggregate	348
Low bituminous (oil and chip)	529
High bituminous (hot mix)	24
Paved	0
Concrete	13

Appendix Table 35: Whatcom County Results	1994
Number of miles of county maintained roads in 1998 [1993]?	974
Total number of county maintained bridges in 1998 [1993]?	160
Number of bridges less than 20 feet long	28
Number of bridges 20 feet or longer	129
Number of County Bridges ON the Federal Aid System	41
Number of County Bridges OFF the Federal Aid System	116
Road miles in your county that are county responsibility (%)	0
Number of bridges in your county that are county responsibility (%)	0
Number of bridges posted for some type of limitation in the past 5 years?	0
Miles of roads posted for some type of limitation in the past 5 years?	0
In the past five years, how has the condition of roads and bridges changed?	
Roads:	
Improved (%)	20
Unchanged (%)	70
Declined (%)	10
Bridges:	
Improved (%)	40
Unchanged (%)	45
Declined (%)	15
Percentage of county roads in each category:	
New or perfect	7
Surface adequate or better with normal maintenance	30
Less than adequate with normal maintenance	30
Barely adequate; substantially higher than normal maintenance required	30
Failures to the extent that operation of traffic is severely affected	2
Closed, awaiting repairs	1
Percentage of bridges in each category:	
Better or equal to present desirable criteria	20
Better or equal to present minimum criteria	45
Meets minimum tolerable condition but with high priority to repair	5
Basically intolerable condition, high priority to repair or replace	5
Immediate repair necessary to put back into service	5
Closed, awaiting repairs or replacement.	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):	
0 to 50 ADT	106
51 through 150 ADT	283
151 through 500 ADT	166
501 through 1000 ADT	131
1001 through 2500 ADT	97
2501 and over	2
Number of miles by surface type:	
Earth	2
Gravel or loose aggregate	63
Low bituminous (oil and chip)	724
High bituminous (hot mix)	56
Paved	110
Concrete	16

Appendix Table 36: Whitman County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	1927	1951
Total number of county maintained bridges in 1998 [1993]?	322	346
Number of bridges less than 20 feet long	83	107
Number of bridges 20 feet or longer	239	239
Number of County Bridges ON the Federal Aid System	58	249
Number of County Bridges OFF the Federal Aid System	264	93
Road miles in your county that are county responsibility (%)	87	88
Number of bridges in your county that are county responsibility (%)	dk	100
Number of bridges posted for some type of limitation in the past 5 years?	49	0
Miles of roads posted for some type of limitation in the past 5 years?	13	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	1	10
Unchanged (%)	24	90
Declined (%)	75	0
Bridges:		
Improved (%)	11	10
Unchanged (%)	50	90
Declined (%)	39	0
Percentage of county roads in each category:		
New or perfect	2	2
Surface adequate or better with normal maintenance	35	40
Less than adequate with normal maintenance	53	12
Barely adequate; substantially higher than normal maintenance required	10	45
Failures to the extent that operation of traffic is severely affected	0	1
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	5	19
Better or equal to present minimum criteria	15	31
Meets minimum tolerable condition but with high priority to repair	70	10
Basically intolerable condition, high priority to repair or replace	10	14
Immediate repair necessary to put back into service	0	6
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	1150	312
51 through 150 ADT	37	1132
151 through 500 ADT	425	332
501 through 1000 ADT	15	127
1001 through 2500 ADT	298	0
2501 and over	0	371
Number of miles by surface type:		
Earth	410	371
Gravel or loose aggregate	1080	1119
Low bituminous (oil and chip)	403	439
High bituminous (hot mix)	0	13
Paved	24	11

Appendix Table 37: Yakima County Results	1999	1994
Number of miles of county maintained roads in 1998 [1993]?	1721	1754
Total number of county maintained bridges in 1998 [1993]?	1204	362
Number of bridges less than 20 feet long	315	841
Number of bridges 20 feet or longer	889	362
Number of County Bridges ON the Federal Aid System	274	0
Number of County Bridges OFF the Federal Aid System	930	0
Road miles in your county that are county responsibility (%)	65	0
Number of bridges in your county that are county responsibility (%)	58	0
Number of bridges posted for some type of limitation in the past 5 years?	48	0
Miles of roads posted for some type of limitation in the past 5 years?	0	0
In the past five years, how has the condition of roads and bridges changed?		
Roads:		
Improved (%)	5	3
Unchanged (%)	90	97
Declined (%)	5	0
Bridges:		
Improved (%)	17	2
Unchanged (%)	73	94
Declined (%)	10	1
Percentage of county roads in each category:		
New or perfect	10	3
Surface adequate or better with normal maintenance	85	81
Less than adequate with normal maintenance	5	10
Barely adequate; substantially higher than normal maintenance required	0	6
Failures to the extent that operation of traffic is severely affected	0	0
Closed, awaiting repairs	0	0
Percentage of bridges in each category:		
Better or equal to present desirable criteria	81	0
Better or equal to present minimum criteria	17	0
Meets minimum tolerable condition but with high priority to repair	1	0
Basically intolerable condition, high priority to repair or replace	1	0
Immediate repair necessary to put back into service	0	0
Closed, awaiting repairs or replacement.	0	0
Number of miles of county roads in each Average Daily Trip category (ADT based on traffic counts):		
0 to 50 ADT	100	200
51 through 150 ADT	210	500
151 through 500 ADT	690	553
501 through 1000 ADT	200	300
1001 through 2500 ADT	410	150
2501 and over	110	9
Number of miles by surface type:		
Earth	1	9
Gravel or loose aggregate	647	680
Low bituminous (oil and chip)	952	617
High bituminous (hot mix)	0	142
Paved	116	0
Concrete	6	7