

WASHINGTON'S CITY ARTERIALS CONDITION REPORT 2010

By Bob Brooks – WSDOT's Highways & Local Programs

BACKGROUND:

In April 2003 the legislature passed the transportation efficiencies bill. This legislation established planning and efficiency goals for the state and local transportation network. Among other provisions of the bill is a requirement for cities to report pavement condition data for their arterial and collector streets beginning with the 2003-2005 biennium (RCW 46.68.113).

To meet this reporting requirement Highways & Local Programs (H&LP) working in partnership with the Association of Washington Cities (AWC) established a split between large and small cities based on a population threshold of 22,500, now raised to 25,000. This is the threshold at which the large cities assume a greater maintenance responsibility for city streets that are also state highways. It was determined that large cities generally had sufficient resources to survey their street networks and report the results while small cities would need assistance in accomplishing this reporting requirement.

To assist the small cities, H&LP arranged with the WSDOT Materials Laboratory to use their automated data collection van to survey the state's small cities and forward the results of the survey to H&LP for analysis and reporting. Starting in 2006, half the states small cities will be surveyed each year split basically between east and west.

In response to our 2009-2011 biennium request, 32 large cities submitted condition data on 1,547.37 centerline miles of federal functionally classified arterials and 868.06 centerline miles of federal functionally classified collector routes. The small city survey collected data from 221 cities with 483.86 centerline miles of federal functionally classified arterials and 794.22 centerline miles of federal functionally classified collector routes. The legislatively set goal for 09-11 biennium was 85% of the entire arterial and collector city network, or 3,398.90 centerline miles based on the January 2009 functional class report. We exceeded that goal by 7% as summarized in the table below.

DISCUSSION:

The following table summarizes the data for the surveyed city streets for 2009-2011:

Functional Class	Centerline Miles	Weighted Rating Score
Principal & Minor Arterials	2,031.23	69
Major & Minor Collectors	1,662.28	65
Total – Average	3,693.51	68

THE ARTERIAL NETWORK:

City Data: The combined principal and minor arterial network information for each city is shown in Appendix A at the back of this report. The data shown in Appendix A represents 92% of the statewide total city arterial mileage as listed in the January 2009 Functional Class Report from the WSDOT's Transportation Data Office .

The city and statewide Pavement Condition Index (PCI) rating scores are calculated using an average weighted on segment lengths, the same as the 2008 report. The weighted average provides a more representative picture of the true condition of the arterial network. The statewide arterial average for this biennium is 69. The average for arterials for the 2008 and 2006 reporting periods were 70 and 72 respectively. The 2006 report was a partial report containing only half the state's small cities. This indicates that the overall arterial system has deteriorated only slightly, if at all over the past two survey cycles. Future surveys will better determine the rate of deterioration for the arterial system.

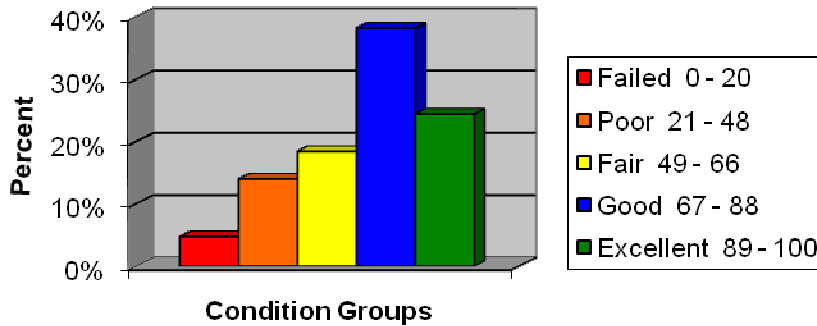
Survey Year	Statewide Rating Score
2006	72
2008	70
2010	69

The difference between the arterial rating scores for the states large and small cities, above and below 25,000, again presented quite a contrast and may help illustrate the difference between available resources for these two groups. The arterial score for small cities was 59 while the score for large cities remained at 73, a significant 14 point difference, a 4 point increase over last biennium's 10 point difference.

Condition Groups: The following pavement score condition grouping shows the distribution of the arterial system within the various condition groups. The distribution shows that 63% of arterials fall within the good to excellent categories, a 1.4% drop from 2008. The failed to poor groupings gained 1%, at 19% with the remainder falling into the central fair category. This distribution is nearly identical to the distribution seen in the 2008 report. This again indicates that the arterial system is basically being maintained near its current condition with only a very slight shift towards the lower condition groups.

Condition Group	Centerline Miles	Percentage
Failed 0-20	96.76	4.8%
Poor 21-48	284.89	14.0%
Fair 49-66	374.92	18.5%
Good 67-88	777.65	38.3%
Excellent 89-100	497.01	24.5%
Totals	2,031.23	100.0%

Distribution of arterials within the pavement condition rating groups



Percent arterial network within condition groups

Surface Types: As noted in past reports, approximately 90% + of the arterial network has an asphalt surface of some type, Hot Mix Asphalt, composite, or Bituminous Surface Treatment. The remainder of the network is comprised almost entirely of Portland Cement Concrete with minor amounts of other paving materials.

THE COLLECTOR NETWORK:

City Data: The combined major and minor collector network information for each city is shown in Appendix A at the back of this report. The data shown in the appendix represents 93% of the statewide total city collector mileage as listed in the January 2009 Functional Class Report from the WSDOT's Transportation Data Office. Under RCW 47.26.090 the states collector network is considered to be a part of the arterial system.

The statewide weighted average collector score for this biennium is 65, a one point increase from the 2008 average of 64. The 2006 weighted average was 66. As with the arterials, this indicates that the system has been maintained in nearly the same condition for the last two biennial surveys and further surveys will be needed to determine at what rate the system may be deteriorating.

Survey Year	Statewide Rating Score
2006	66
2008	64
2010	65

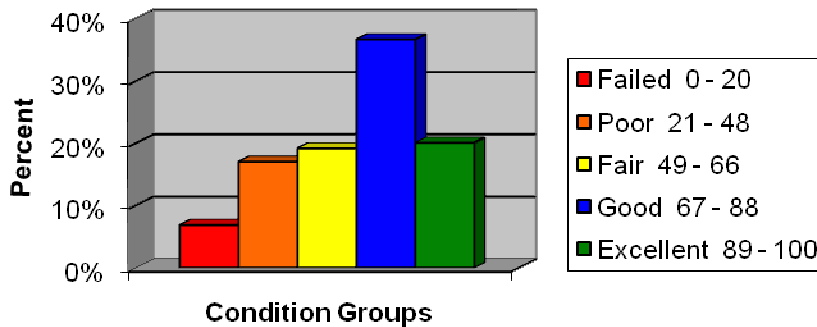
The average collector score for small cities surveyed was 62, a 2 point increase over the 2008 report, while the average score for large cities remained at 69, a 7 point difference. This is only half the variation shown on the arterial system and indicates a more uniform condition of the collector network between large and small cities.

Condition Groups: The following table and chart show the distribution of the collector mileage within the various condition groups. The distribution shows that 57% of the mileage falls within the good to excellent categories, a 7% increase from the 2008 report, and that 24% of the collector mileage falls

within the failed to poor categories. The remaining 19% falls into the central fair category. The collector distribution shows that the majority of the increase in the good to excellent categories came primarily from the fair category with little change to the lower condition groups.

Condition Group	Centerline Miles	Percentage
Failed 0-20	114.87	6.9%
Poor 21-48	283.70	17.1%
Fair 49-66	319.05	19.2%
Good 67-88	610.32	36.7%
Excellent 89-100	334.33	20.1%
Totals	1,662.28	100.0%

Distribution of collectors within the pavement condition rating groups



Percent collector network within condition groups

Surface Types: As is the case with arterials, approximately 90% + of the collector network has an asphalt surface of some type. The remainder of the network is comprised of approximately 7% Portland Cement Concrete with the remaining 2% +/- mixed surfacing including gravel.

THE COMBINED NETWORK:

The map in Appendix B shows the distribution of the combined arterial and collector network PCI scores for each city statewide. While the map shows an apparent random distribution of the condition groups, it's interesting to note the clusters of poor to failed pavements occurring around the rural areas of Tacoma, Yakima, and Spokane to a lesser extent. The cluster around Tacoma seems to have worsened over 2008 while the Yakima cluster is about the same and the Spokane cluster has improved. Why these clusters would occur in these locations is unknown.

Appendix C shows the statewide mileage distribution between the condition groups for three population groupings of cities and towns; large cities greater than 25,000, medium cities between 5,000 and 25,000, and small cities less than 5,000. This distribution has remained almost unchanged from 2008 except for the small cities group. That group has seen a shift of approximately 6% from the poor to failed groups to the upper three groups with most of the shift occurring in the good to excellent categories.

Appendix A - 2010 Pavement Condition Data By City

City	Federal Functionally Classified Arterial C/L Mileage ¹	Weighted Arterial PCI Scores - 2010 ²	Federal Functionally Classified Collector C/L Mileage ¹	Weighted Collector PCI Scores - 2010 ²	Weighted Combined PCI Scores - 2010 ³
ABERDEEN	5.64	43	15.70	53	50
AIRWAY HEIGHTS			1.50	82	82
ALBION			0.75	94	94
ALGONA	1.70	56	3.87	66	63
ALMIRA			2.02	89	89
ANACORTES	7.98	58	13.17	54	56
ARLINGTON	6.49	59	3.37	45	54
ASOTIN	1.46	85			85
AUBURN	27.86	73	31.08	70	71
BAINBRIDGE ISLAND	24.63	74	14.90	60	69
BATTLE GROUND	6.26	32	2.12	80	44
BEAUX ARTS VILLAGE			0.56	82	82
BELLEVUE	60.96	71	51.52	78	74
BELLINGHAM	41.94	87	26.67	80	84
BLACK DIAMOND	4.22	57	0.75	49	56
BLAINE			3.64	65	65
BONNEY LAKE	1.91	82	7.93	70	72
BOTHELL	8.46	76	16.59	68	71
BREMERTON	14.59	43	25.90	42	42
BREWSTER			2.63	77	77
BRIDGEPORT			2.98	70	70
BRIER			4.53	56	56
BUCKLEY	4.02	48	2.64	40	45
BUCODA			0.51	72	72
BURLINGTON	5.28	72	6.11	70	71
CAMAS	15.95	76	8.18	70	74
CASHMERE			3.36	61	61
CASTLE ROCK			2.89	70	70
CATHLAMET			0.78	84	84
CENTRALIA	7.71	63	12.77	57	59
CHEHALIS	10.89	65	3.31	58	63
CHELAN			1.65	75	75
CHENEY	4.49	70	6.34	75	73
CHEWELAH	0.60	44	3.98	29	31
CLARKSTON	2.86	60	7.71	70	67
CLE ELUM			1.77	63	63
CLYDE HILL	0.50	44	2.99	71	67
COLFAX			0.56	62	62
COLLEGE PLACE	6.41	20	1.99	19	20
COLTON			0.35	100	100

Appendix A - 2010 Pavement Condition Data By City - Cont

City	Federal Functionally Classified Arterial C/L Mileage ¹	Weighted Arterial PCI Scores - 2010 ²	Federal Functionally Classified Collector C/L Mileage ¹	Weighted Collector PCI Scores - 2010 ²	Weighted Combined PCI Scores - 2010 ³
COLVILLE			6.00	46	46
CONCONULLY			0.79	95	95
CONCRETE			1.52	60	60
CONNELL			2.72	82	82
COSMOPOLIS			1.03	69	69
COULEE DAM			1.68	65	65
COUPEVILLE			3.30	54	54
COVINGTON	4.69	46	3.64	75	59
CRESTON			0.84	87	87
CUSICK			0.69	75	75
DARRINGTON			1.94	55	55
DAVENPORT			2.90	80	80
DAYTON			3.62	75	75
DEER PARK			2.78	71	71
DES MOINES	10.48	69	8.98	72	70
DUPONT	0.87	85	0.44	98	89
DUVALL	0.10	100	0.95	66	69
EAST WENATCHEE	7.68	45	6.34	65	54
EATONVILLE	0.65	35	1.45	52	47
EDGEWOOD	9.36	72	11.13	55	63
EDMONDS	10.30	62	11.21	55	58
ELECTRIC CITY			1.14	84	84
ELLENSBURG	14.29	67	9.49	69	68
ELMA			2.97	55	55
ELMER CITY			0.73	64	64
ENDICOTT			1.00	97	97
ENTIAT			0.12	100	100
ENUMCLAW	6.14	45	6.05	48	46
EPHRATA	6.91	62	3.39	80	68
EVERETT	49.88	79	26.70	80	79
EVERSON			1.75	45	45
FAIRFIELD			1.78	75	75
FARMINGTON			1.06	77	77
FEDERAL WAY	25.76	73	18.51	82	77
FERNDALE	7.55	60	8.74	50	55
FIFE	12.21	43	4.94	25	38
FIRCREST	3.57	43	2.85	54	48
FORKS			2.55	56	56
FRIDAY HARBOR			3.37	54	54
GARFIELD			0.57	23	23
GEORGE			1.51	70	70
GIG HARBOR	16.34	69	2.62	33	64



Appendix A - 2010 Pavement Condition Data By City - Cont

City	Federal Functionally Classified Arterial C/L Mileage ¹	Weighted Arterial PCI Scores - 2010 ²	Federal Functionally Classified Collector C/L Mileage ¹	Weighted Collector PCI Scores - 2010 ²	Weighted Combined PCI Scores - 2010 ³
GOLDENDALE			5.07	71	71
GRAND COULEE			2.54	64	64
GRANDVIEW	8.03	47	6.33	32	40
GRANGER			6.24	46	46
GRANITE FALLS	3.53	31	0.25	5	29
HAMILTON			0.82	74	74
HARRAH			1.09	90	90
HARRINGTON			0.71	73	73
HARTLINE			1.39	65	65
HATTON			0.89	71	71
HOQUIAM	1.76	60	13.14	62	62
HUNTS POINT			1.11	82	82
ILWACO			3.38	64	64
IONE			0.66	31	31
ISSAQUAH	16.32	72	12.27	68	70
KAHLOTUS			0.27	81	81
KALAMA			7.69	70	70
KELSO	14.12	76	8.29	58	69
KENMORE	7.60	71	6.59	85	78
KENNEWICK	56.86	89	21.20	83	87
KETTLE FALLS			1.52	61	61
KIRKLAND	21.93	57	30.66	65	62
KITTITAS			1.89	57	57
KRUPP			1.13	79	79
LA CENTER			1.79	80	80
LA CONNER			1.71	83	83
LACEY	26.90	82	6.27	87	83
LACROSSE			0.78	82	82
LAKE FOREST PARK	1.50	38	1.99	66	54
LAKE STEVENS	1.30	66	3.19	65	65
LAKESWOOD	46.39	76	21.94	74	75
LAMONT			0.43	66	66
LANGLEY			4.05	70	70
LATAH			1.04	48	48
LEAVENWORTH			1.39	36	36
LIND			1.65	77	77
LONG BEACH	1.84	18	3.56	57	44
LONGVIEW	16.79	84	19.50	78	81
LYNDEN	5.89	65	6.39	70	77
LYNNWOOD	11.14	55	18.35	54	54
MABTON			1.26	51	51
MALDEN			1.18	34	34

Appendix A - 2010 Pavement Condition Data By City - Cont

City	Federal Functionally Classified Arterial C/L Mileage ¹	Weighted Arterial PCI Scores - 2010 ²	Federal Functionally Classified Collector C/L Mileage ¹	Weighted Collector PCI Scores - 2010 ²	Weighted Combined PCI Scores - 2010 ³
MANSFIELD			1.39	79	79
MAPLE VALLEY	0.96	60	3.15	83	78
MARYSVILLE	16.35	84	5.12	74	82
MATTAWA			2.30	79	79
MC CLEARY			0.98	71	71
MEDICAL LAKE			6.11	51	51
MEDINA	0.84	64	4.88	73	72
MERCER ISLAND	5.08	64	18.37	70	69
MESA			1.90	82	82
MILL CREEK	2.11	86	5.82	82	83
MILLWOOD	0.96	59	1.43	60	60
MILTON	2.65	55	2.48	32	44
MONROE	4.32	53	1.75	35	48
MONTESANO			4.53	34	34
MORTON			0.34	25	25
MOSES LAKE	16.51	65	15.01	74	69
MOSSYROCK			0.84	83	83
MOUNT VERNON	20.24	68	7.76	65	67
MOUNTLAKE TERRACE	8.76	39	9.84	45	42
MOXEE	1.36	88	1.53	60	73
MUKILTEO	1.78	54	10.45	52	52
NACHES			1.62	68	68
NAPAVINE	3.86	71			71
NESPELEM			0.85	70	70
NEWCASTLE	5.83	54	3.13	67	59
NEWPORT			1.40	75	75
NORMANDY PARK	0.72	64	8.31	63	63
NORTH BEND	2.32	51	2.22	44	48
NORTH BONNEVILLE			1.00	49	49
NORTHPORT			1.38	77	77
OAK HARBOR	15.90	36	6.91	43	38
OAKESDALE			0.52	72	72
OAKVILLE			0.48	67	67
OCEAN SHORES			22.87	99	99
ODESSA			0.79	40	40
OKANOGAN			1.59	71	71
OLYMPIA	40.52	78	25.35	72	76
OMAK			1.79	59	59
OROVILLE			1.21	68	68
ORTING	0.72	4			4
OTHELLO	7.79	38	3.04	36	37
PACIFIC	2.62	46	5.72	20	28

Appendix A - 2010 Pavement Condition Data By City - Cont

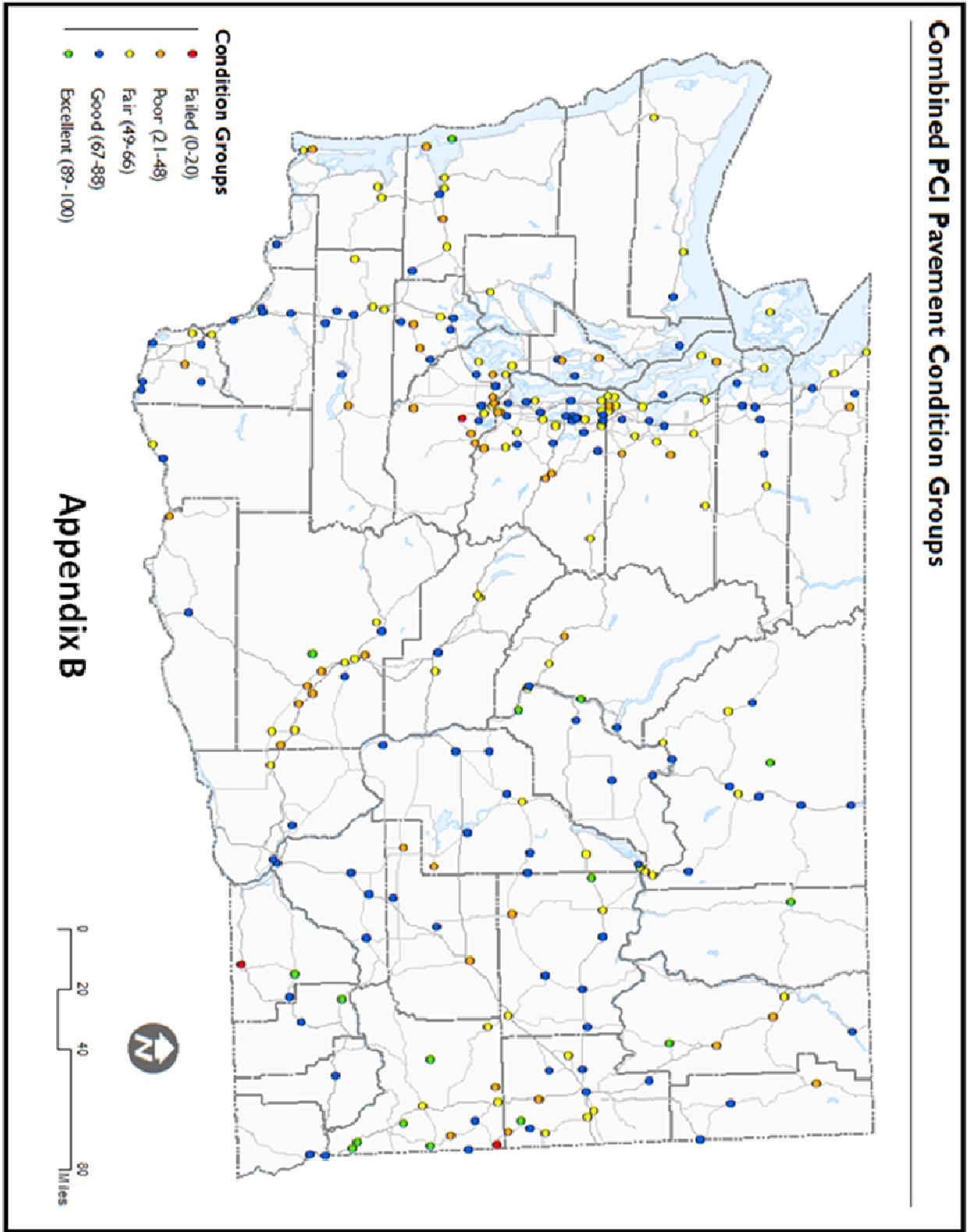
City	Federal Functionally Classified Arterial C/L Mileage ¹	Weighted Arterial PCI Scores - 2010 ²	Federal Functionally Classified Collector C/L Mileage ¹	Weighted Collector PCI Scores - 2010 ²	Weighted Combined PCI Scores - 2010 ³
PALOUSE			0.29	97	97
PASCO	33.66	75	24.14	80	77
PATEROS			1.48	61	61
PE ELL			0.34	65	65
POMEROY			1.42	80	80
PORT ANGELES	5.88	66	30.99	54	56
PORT ORCHARD	6.72	68	3.24	74	70
PORT TOWNSEND			19.57	70	70
POULSBO	6.44	48	2.66	41	46
PRESCOTT			0.63	98	98
PROSSER			8.04	56	56
PUYALLUP	24.39	82	14.02	84	83
QUINCY	3.32	60	3.74	75	68
RAINIER			1.95	39	39
RAYMOND			3.29	49	49
REARDAN			0.59	80	80
REDMOND	28.16	77	13.74	75	76
RENTON	37.73	63	21.90	72	66
REPUBLIC			3.23	93	93
RIDGEFIELD			6.83	61	61
RITZVILLE			4.77	34	34
RIVERSIDE			1.11	71	71
ROCK ISLAND	1.71	95			95
ROCKFORD			0.44	50	50
ROSALIA			1.64	51	51
RUSTON			0.59	55	55
SEATAC	20.42	84	9.60	77	82
SEATTLE	309.81	72	141.42	64	69
SEDRO-WOOLLEY	3.63	74	7.91	65	68
SELAH	2.95	55	2.11	34	46
SEQUIM	5.03	80	4.32	66	74
SHELTON	6.95	54	7.99	49	51
SHORELINE	18.73	64	16.43	57	61
SKYKOMISH			1.06	58	58
SNOHOMISH	6.29	57	5.88	68	62
SNOQUALMIE			1.81	43	43
SOAP LAKE			5.53	52	52
SOUTH BEND			4.74	52	52
SOUTH CLE ELUM			1.17	66	66
SOUTH PRAIRIE			0.64	42	42
SPANGLE			1.10	46	46
SPOKANE	158.25	73	63.75	71	72

Appendix A - 2010 Pavement Condition Data By City - Cont

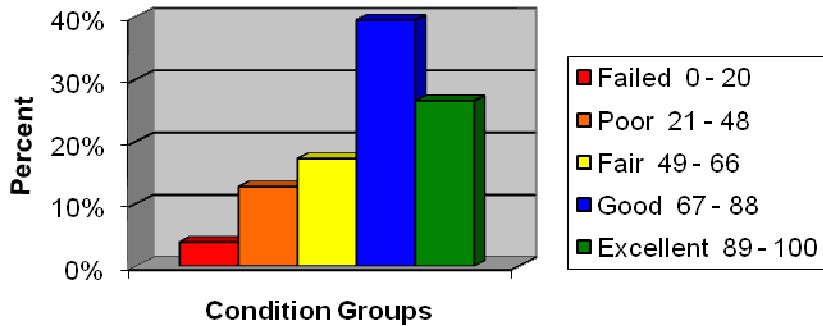
City	Federal Functionally Classified Arterial C/L Mileage ¹	Weighted Arterial PCI Scores - 2010 ²	Federal Functionally Classified Collector C/L Mileage ¹	Weighted Collector PCI Scores - 2010 ²	Weighted Combined PCI Scores - 2010 ³
SPOKANE VALLEY	90.34	64	32.61	67	65
SPRAGUE			1.54	50	50
SPRINGDALE			0.07	100	100
ST. JOHN			0.69	32	32
STANWOOD			4.03	65	65
STARBUCK			0.55	97	97
STEILACOOM	7.40	63			63
STEVENSON			3.61	81	81
SUMNER	9.29	54	10.01	64	59
SUNNYSIDE	9.52	49	9.21	57	53
TACOMA	127.30	69	65.94	68	69
TEKOA			0.45	17	17
TENINO	0.10	85	2.61	46	47
TIETON			4.59	62	62
TOLEDO			0.11	67	67
TONASKET			1.11	70	70
TOPPENISH	2.67	54	4.63	23	34
TUKWILA	18.52	70	16.48	64	67
TUMWATER	17.96	47	10.98	55	50
TWISP			1.03	66	66
UNION GAP	8.77	46	4.48	58	50
UNIONTOWN			0.63	100	100
VANCOUVER	89.00	71	50.02	61	67
WAITSBURG			2.09	88	88
WAPATO			4.11	33	33
WARDEN			3.66	48	48
WASHOUGAL	7.30	64	7.66	70	67
WATERVILLE			2.60	71	71
WAVERLY			0.82	94	94
WENATCHEE	21.71	79			79
WEST RICHLAND	3.08	78	13.44	72	73
WESTPORT			1.38	44	44
WHITE SALMON			1.03	46	1.03
WILBUR			1.70	53	53
WILSON CREEK			2.35	82	82
WINLOCK			1.40	80	80
WINTHROP			1.54	73	73
WOODINVILLE	8.31	61	3.69	52	58
WOODLAND			6.13	52	52
WOODWAY			2.47	65	65
YACOLT			0.92	88	88
YAKIMA	66.20	68	18.40	59	66

Appendix A - 2010 Pavement Condition Data By City - Cont					
City	Federal Functionally Classified Arterial C/L Mileage¹	Weighted Arterial PCI Scores - 2010²	Federal Functionally Classified Collector C/L Mileage¹	Weighted Collector PCI Scores - 2010²	Weighted Combined PCI Scores - 2010³
YARROW POINT			1.21	62	62
YELM			6.63	68	68
ZILLAH			3.95	47	47
STATEWIDE TOTALS	2,031.23	69	1,662.28	65	68

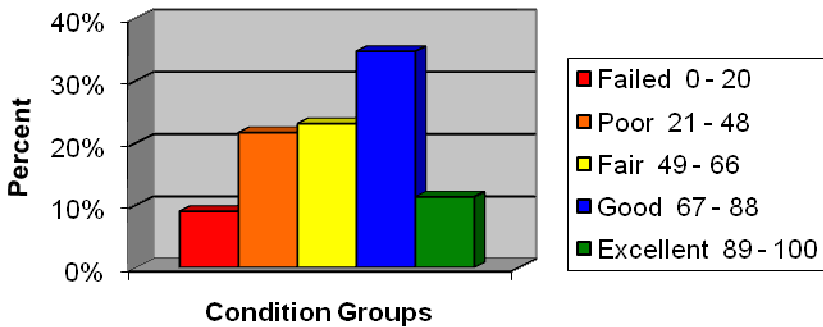
1. Federally functionally classified arterial and collector mileage from WSDOT functional class database, effective 1-25-09
2. Arterial and collector Pavement Condition Index (PCI) scores weighted on segment length.
3. Combined city PCI scores weighted on arterial and collector mileage.



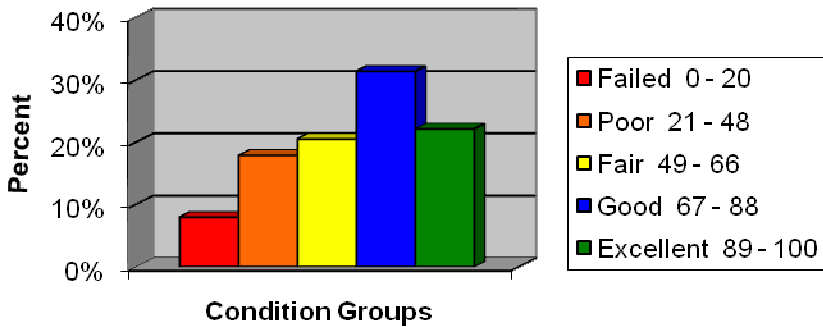
Appendix C



2010 Arterial and Collector Mileage Distribution – Large Cities > 25,000
66% Good to Excellent



2010 Arterial and Collector Mileage Distribution – Medium Cities 5,000 to 25,000
46% Good to Excellent



2010 Arterial and Collector Mileage Distribution – Small Cities < 5,000
54% Good to Excellent