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Development and Validation of Urban Alaskan Pavement Rutting Models

Alaska Department of Transportation and Public Facilities
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13. ABSTRACT (Maximum 200 words)

This study analyzes laser Road Surface Profiler (RSP) pavement rutting data collected in Alaska from 1998 through 2004. The data is used to compare and develop urban rutting prediction models for the wearing courses used in three major cities of the state: Fairbanks, Juneau and Anchorage. Here the rutting measurements also include studded tire wear. The aim is to apply urban rutting models to properly time rehabilitation projects saving users and agency money.

Thirteen wearing courses in urban areas are analyzed including twelve asphalt concrete mixes (conventional, polymer-modified, SMA, Superpave and PlusRide) as well as Portland cement concrete on weigh-in-motion slabs and bridge decking. It was found that the pavement age, rather than accumulated AADT or studded tire passes, correlates best with rut depth accumulation. Further, it was found that models applied to individual pavement sections with consistent pavement age, type and traffic distribution is superior to any type of generalization. The use of hard aggregates seems to enhance wearing surface service life. Limited mix abrasion testing using the Prall device showed that test results have good correlation with field wear rates.

In addition, a model is presented for estimating pavement rutting service life. Assuming a linear increase in rut depth with time, a Remaining Service Life (RSL) model is introduced. This is a prediction of the time until a pavement segment reaches terminal rut depth at which point pavement rehabilitation activity is recommended. Finally, comparing actual and predicted RSL values for different mixes demonstrates RSL model validation.

14. KEY WORDS:

Rutting, deformation, prediction models , SMA, asphalt, asphalt concrete, polymer, PlusRide, weigh-in-motion, WIM, remaining service life, RSL, AADT, studded tire, urban roadways, wear

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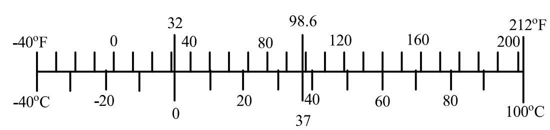
APPROXIMATE CONVERSIONS TO SI UNITS					APPROXIMATE CONVERSIONS FROM SI UNITS				
Symbol	When You Know	Multiply By	To Find	Symbol	Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH					LENGTH		
in	inches	25.4		mm	mm	millimeters	0.039	inches	in
ft	feet	0.3048		m	m	meters	3.28	feet	ft
yd	yards	0.914		m	m	meters	1.09	yards	yd
mi	Miles (statute)	1.61		km	km	kilometers	0.621	Miles (statute)	mi
		AREA					AREA		
in^2	square inches	645.2	millimeters squared	cm^2	mm^2	millimeters squared	0.0016	square inches	in^2
ft^2	square feet	0.0929	meters squared	m^2	m^2	meters squared	10.764	square feet	ft^2
yd^2	square yards	0.836	meters squared	m^2	km^2	kilometers squared	0.39	square miles	mi^2
mi^2	square miles	2.59	kilometers squared	km^2	ha	hectares (10,000 m^2)	2.471	acres	ac
ac	acres	0.4046	hectares	ha					
		MASS (weight)					MASS (weight)		
oz	Ounces (avdp)	28.35	grams	g	g	grams	0.0353	Ounces (avdp)	oz
lb	Pounds (avdp)	0.454	kilograms	kg	kg	kilograms	2.205	Pounds (avdp)	lb
T	Short tons (2000 lb)	0.907	megagrams	mg	mg	megagrams (1000 kg)	1.103	short tons	T
		VOLUME					VOLUME		
fl oz	fluid ounces (US)	29.57	milliliters	mL	mL	milliliters	0.034	fluid ounces (US)	fl oz
gal	Gallons (liq)	3.785	liters	liters	liters	liters	0.264	Gallons (liq)	gal
ft^3	cubic feet	0.0283	meters cubed	m^3	m^3	meters cubed	35.315	cubic feet	ft^3
yd^3	cubic yards	0.765	meters cubed	m^3	m^3	meters cubed	1.308	cubic yards	yd^3
Note: Volumes greater than 1000 L shall be shown in m^3									
		TEMPERATURE (exact)					TEMPERATURE (exact)		
^oF	Fahrenheit temperature	5/9 (^{o}F-32)	Celsius temperature	^oC	^oC	Celsius temperature	9/5 ^{o}C+32	Fahrenheit temperature	^oF
		ILLUMINATION					ILLUMINATION		
fc	Foot-candles	10.76	lux	lx	lx	lux	0.0929	foot-candles	fc
fl	foot-lamberts	3.426	candela/m^2	cd/cm^2	cd/cm^2	candela/m^2	0.2919	foot-lamberts	fl
		FORCE and PRESSURE or STRESS					FORCE and PRESSURE or STRESS		
lbf	pound-force	4.45	newtons	N	N	newtons	0.225	pound-force	lbf
psi	pound-force per square inch	6.89	kilopascals	kPa	kPa	kilopascals	0.145	pound-force per square inch	psi

These factors conform to the requirement of FHWA Order 5190.1A *SI is the symbol for the International System of Measurements



EXECUTIVE SUMMARY

Accurate and reasonable prediction of rutting performance is one piece of the puzzle in pavement management. A good prediction method for rutting development of various mixes and locations helps manage pavement for proper rehabilitation project timing. Proper timing of rehabilitation projects is found to save agency money and improve user's safety (15,17,18). In this study, accurate, reasonable and easy to understand methods for rut prediction are developed and validated. The findings are useful for pavement management and pavement wearing course performance analysis.

Alaskan urban roadways are subject to studded tire wear in the winter and plastic flow during the long, warm days in the summer:

- Freeze-thaw action leaves roads bare and/or wet for much of the wintertime in Anchorage and Southeast Alaska. Bare roadways leave the pavement surface directly prone to aggregate picking and the abrasive action of studded tires. These studs are used by approximately 50% of the traveling public (2,15,25,31). Studded tire usage is legal from September 15 to May 1 north of 60 degrees latitude and from September 30 to April 15 south of that (31). Studs are therefore legally used on Alaskan roadways from 6.5 to 7.5 months of the year.
- The long warm days of summer soften asphalt mixes allowing plastic deformation to occur. Results of this study found that, in Anchorage, the studded tire wear component of rutting is about 50% to 70%. Thus pavement deformation due to plastic flow is about 30% to 50% of the total rut depth, assuming negligible deformation of other pavement layers.

For pavement management purposes, rutting data is collected annually on most Alaskan roadways using a laser Road Surface Profiler (RSP). For this study, historical rutting data (1998 to 2004) were used to analyze the rutting performance of urban pavement segments constructed using 13 types of wearing courses. In particular attempts were made to use various forms of predictive models to quantify the effect of the following factors on rut accumulation: pavement type and age, accumulated traffic passes, studded tire passes, Nordic Prall abrasion test results, and Georgia loaded wheel rut test results.

Alaska's pavement management system uses accumulated traffic passes in its transfer function for studded tire wear prediction. Thus initial efforts in this study focused on development of more accurate prediction models to fit the form of the management system. However curve-fitting methods for various segments of the same type of pavement, but constructed by different contractors at different times, were found to yield low correlation coefficients. This was mainly due to questionable traffic data for multilane roadways where the total, two-way average annual daily traffic (AADT) is divided by the number of lanes in order to get a traffic estimate in the lane where rut data is collected. It was found that by concentrating on each pavement segment separately, the prediction models improved. Furthermore computing rut progression models in terms of wearing course age in each section was found to be simple and could be done using spreadsheet calculations. The rut depth and age data is already contained in the pavement management database and is simply queried out for spreadsheet analysis.

For pavement management purposes, Remaining Service Life (RSL) for any pavement section (segment) is of primary interest. Simple means of predicting RSL are developed and validated herein. These methods can also be used to compare mix performance in terms of total service life. This is meant to help in improving the selection process for rut and studded tire wear resistant mixes used on urban roadways in Alaska. The primary variables used are simply present rut depth and pavement age of a given pavement segment. It was found that Remaining Service Life (RSL, years) for a given pavement segment is best computed by the equation:

$$RSL = Age\left(\frac{0.5''}{\text{Rut Depth}} - 1\right)$$

where: *Age* is in years for a particular pavement segment
Rut Depth is the average rut depth (inches) within the segment

Here the RSL is a prediction of the time until the section reaches an average rut depth of 0.5 inches (12.7 mm). At this point, a pavement rehabilitation design project or maintenance work is recommended.

Segments with rut depths larger than 0.5 inches will have a negative RSL. Those with greater negative values get higher priority for rehabilitation/maintenance work in the pavement management system.

By adding the pavement age of a given section to its RSL, a prediction of the total service life for the pavement is obtained: total service life = pavement age + RSL. The report presents a table (11.1) summarizing the average ages, RSL and service life of each of the thirteen pavement types, localities and traffic types considered in this study.

TABLE OF CONTENTS

EXECUTIVE SUMMARY III
LIST OF FIGURES VI
LIST OF TABLES VII
LIST OF PHOTOS VIII
LIST OF APPENDICES IX
1.0 PROBLEM STATEMENT 1
1.1 A BRIEF HISTORY OF PAVEMENT RUTTING IN URBAN ALASKA 2
2.0 RUT MODELING BACKGROUND 7
2.1 PAVEMENT TYPES 8
3.0 OBJECTIVES AND SCOPE OF WORK 35
4.0 DATA ANALYSIS METHODS 37
4.1 MIX DATA 40
5.0 INITIAL MODELS 43
5.1 GENERAL MIX COMPARISONS 43
5.2 SECTION ANALYSIS EXAMPLES 46
6.0 CURVE FITTING MODELS 51
6.1 AC TYPE I – ANCHORAGE 51
6.2 AC TYPE II – ANCHORAGE 54
6.3 AC TYPE II – FAIRBANKS 56
6.4 AC TYPE II – SOUTHEAST 58
6.5 SUPERPAVE AC - SOUTHEAST 59
6.6 SMA FOR ARTERIALS AND FREEWAYS - ANCHORAGE 61
6.7 PORTLAND CEMENT CONCRETE WIM SECTIONS - ANCHORAGE 71
6.8 PLUS RIDE – DRY PROCESS CRUMB RUBBER ASPHALT MIXES - ANCHORAGE 73
7.0 CURVE FIT RUTTING MODEL SUMMARY 77
8.0 PRALL TESTING OF MIXES 81
9.0 GEORGIA LOADED WHEEL TESTER RESULTS 85
10.0 REMAINING SERVICE LIFE VALIDATION 87
10.1 EXAMPLE 1 87
10.2 EXAMPLE 2 89
10.3 EXAMPLE 3 90
10.4 EXAMPLE 4 92
10.5 EXAMPLE 5 94
10.6 EXAMPLE 6 96
10.7 EXAMPLE 7 97
11.0 GENERAL APPLICATION OF REMAINING SERVICE LIFE (RSL) MODEL 99
12.0 SUMMARY AND CONCLUSIONS 103
13.0 RECOMMENDATIONS FOR CONTINUED RESEARCH 105
ACKNOWLEDGEMENTS 106
REFERENCES 107
APPENDICES 109

LIST OF FIGURES

Figure 1.1: Alaska Urban Areas and Regional Boundaries 6
Figure 2.1: Anchorage, Type I, 75-blows Marshall Mix Design 10
Figure 2.2: Anchorage, Type II, 75-blows Marshall Mix Design 13
Figure 2.3: Fairbanks Type II Mix Design 16
Figure 2.4: Mix Design Report for Anchorage SMA with AC-5 asphalt cement 19
Figure 2.5: SMA with PG58-28 Mix Design, Anchorage 22
Figure 2.6: SMA with PG64-28 Mix Design, Anchorage 25
Figure 2.7: Plus Ride Mix Design for Anchorage 30
Figure 2.8: Anchorage SMA and PlusRide Gradations 33
Figure 4. 1: Remaining Service Life Example 39
Figure 5. 2. 1: "Rut Depth vs. Mix Age" Example 46
Figure 5. 2. 2: "Rut Depth vs. Accumulated Traffic Passes" Exmaple 47
Figure 5.2.3: Linear Rutting Models 48
Figure 5.2.4: Power Function Rutting Models 49
Figure 6.1.1: Models for Type I AC - Anchorage 53
Figure 6.1.2: Type I AC – Anchorage Mixes 54
Figure 6.2.1: Models for Type II AC – Anchorage Mixes 55
Figure 6.3: Models for Type II AC – Fairbanks Mixes 57
Figure 6.4: Models for Type II AC – Southeast Mixes 59
Figure 6.5: Models for Superpave AC – Southeast Mixes 61
Figure 6.6.1: Models for SMA with AC-5 Binder – Anchorage Arterial Mixes 63
Figure 6.6.2: Models for SMA with AC-5 Binder – Anchorage Freeway Mixes 64
Figure 6.6.3: Models for SMA with PG58-28 PMA – Anchorage Arterial Mixes 65
Figure 6.6.4: Models for SMA with PG58-28 PMA – Anchorage Freeway Mixes ... 66
Figure 6.6.5: Models for SMA with PG64-28 PMA – Anchorage Arterial Mixes 67
Figure 6.6.6: Models for SMA with Hard aggregate – Anchorage Mixes 69
Figure 6.7.1: Models for Anchorage PCC WIM Slabs 72
Figure 6.8.1: PlusRide and SMA Aggregate Gradation Comparison 74
Figure 6.8.2: Models for Anchorage PlusRide Mix 75
Figure 8.1: Rutting Rate Variation with Prall Index Value 82
Figure 8.2: Yearly Rutting Rate Variation with Prall Index Value 83
Figure 9.1: Rutting Rate Variation with LWT Rut Index Value 86
Figure 10.1: Example 1 Data - Anchorage 88
Figure 10.2: Example 2 Data - Anchorage 89
Figure 10.3.1: Example 3 Data - Fairbanks 1 90
Figure 10.3.2: Example 3 Data - Fairbanks 2 92
Figure 10.4: Example 4 Data - Ketchikan 93
Figure 10.5: Example 5 Data - Juneau 95
Figure 10.6: Example 6 Data - Tudor Road - Anchorage 96
Figure 10.7: Example 7 Data - Fairbanks 98

LIST OF TABLES

Table 5.1: Average Rutting and Wearing Rates for Various Mix Types and Locations 44
Table 5.2: Average Rutting and Wearing Service Lives for Various Mix Types and Locations 45
Table 6.1: Anhorage Area Type I Mix Rutting Model Comparison 52
Table 6.2: Anhorage Area Type II Mix Rutting Model Comparison 55
Table 6.3: Fairbanks Area Type II Mix Rutting Model Comparison 56
Table 6.4: Southeast Region Type II Mix Rutting Model Comparison 58
Table 6.5: Southeast Region Super Pave Mix Rutting Model Comparison 60
Table 6.6.1: Anchorage SMA with PG52-28 – High vs Low Speed Model Comparison 62
Table 6.6.2: Anchorage SMA with PG58-28 PMA - High vs Low Speed Model Comparison 65
Table 6.6.3: SMA with Polymer Modified PG64-28 Asphalt - Anchorage 67
Table 6.6.4: Anchorage Hard Aggregate SMA Rutting Model Comparison 68
Table 6.6.5: Summary of SMA Life Predictions Models - Anchorage 70
Table 6.7: Anchorage WIM PCC Slab Rutting Model Comparison 72
Table 6.8: Anchorage Plus Ride Rutting Model Comparison 74
Table 7.1: Models with Highest R^2 Values for Each Mix 77
Table 7.2: Models with Highest R^2 Values for Each Mix 79
Table 8.1: Nordic Classes and Rating for Prall Tests 81
Table 8.2: Prall Values and Rutting Rates 81
Table 8.3: Alaskan Maximum Lane AADT from Prall Tests shown in Figure 8.1 84
Table 9.1: Georgia Loaded Wheel Test Results 86
Table 10.1: RSL Comparison for Example 1 88
Table 10.2.1: RSL Comparison for Example 2 89
Table 10.3.1: RSL Comparison 1 - Fairbanks 91
Table 10.3.2: RSL Comparison 2 - Fairbanks 92
Table 10.4.1: RSL Comparison 1 - Ketchikan 93
Table 10.4.2: RSL Comparison 2 - Ketchikan 94
Table 10.5.1: RSL Comparison 1 - Juneau 95
Table 10.5.2: RSL Comparison 2 - Juneau 96
Table 10.6.1: RSL Comparison 1 - Tudor Road 97
Table 10.6.2: RSL Comparison 2 - Tudor Road 97
Table 11.1: Average Age, RSL and Rutting Service Life For Urban Alaskan Pavements 101

LIST OF PHOTOS

Photo 1.1: Laser Profiler 5
Photo 2.1: Anchorage Type I mix overlay, nearly 13 years old. 8
Photo 2.2: Anchorage Type I at intersection of Tudor Road and C Street, placed in 1991 9
Photo 2.3: Anchorage Asphalt Concrete Type II mix placed in 1994 with nearly 2-in ruts 11
Photo 2.4: Anchorage Asphalt Concrete, Type II overlay placed in 1982 12
Photo 2.5: Asphalt Concrete, Type II placed in 1994 12
Photo 2.6: Anchorage, Type III Maintenance overlay, 3.5-years old 14
Photo 2.7: Anchorage studded tire wear on Type III overlay mix (< 1 year old) 14
Photo 2.8: Pavement Rutting in Fairbanks – 12-year old pavement 15
Photo 2.9: Pavement Rutting in Fairbanks – 18-year old pavement 15
Photo 2.10: File photo of Egan Drive in Juneau, Type II mix prior to Superpave 17
Photo 2.11: Juneau's Egan Drive, Type II mix prior to Superpave 17
Photo 2.12: 10.5 year old SMA with AC-5 overlay with 1-in ruts – Anchorage 20
Photo 2.13: 7.5 year old SMA with AC-5 with +0.75-in ruts - Anchorage 20
Photo 2.14: 7.5 year old SMA with AC-5 with +0.5-in ruts - Anchorage 21
Photo 2.15: SMA with PG58-28, 2-year old mix in Anchorage with +0.3-in ruts 23
Photo 2.16: SMA with PG58-28, 4-year old mix in Anchorage starting to rut/wear 23
Photo 2.17: Anchorage SMA, PG-64-28, heavy truck traffic area, 4 years old, ~ 0.4-in rut 26
Photo 2.18: Anchorage intersection paving from background of photo 2.17 26
Photo 2.19: Upstream edge of Anchorage WIM slabs with adjoining SMA with PG58-28 .. 28
Photo 2.20: Three-year old WIM slabs in Anchorage 28
Photo 2.21: Close up photo of Anchorage Plus Ride Mix – note ground rubber pieces 31
Photo 2.22: Anchorage Plus Ride mix placed in 1985 still performing well 32
Photo 2.23: Worn through areas in 1985 Anchorage Plus Ride mix 32

LIST OF APPENDICES

APPENDIX A
DATA FOR ANCHORAGE TYPE I HOT-MIX ASPHALT PAVEMENT

APPENDIX B
DATA FOR ANCHORAGE TYPE II HOT-MIX ASPHALT PAVEMENT

APPENDIX C
DATA FOR FAIRBANKS TYPE II HOT-MIX ASPHALT PAVEMENT

APPENDIX D
DATA FOR SOUTHEAST REGION TYPE II HOT-MIX ASPHALT PAVEMENT

APPENDIX E
DATA FOR JUNEAU SUPERPAVE HOT-MIX ASPHALT PAVEMENT

APPENDIX F
DATA FOR ANCHORAGE SMA WITH AC-5 WEARING COURSES

APPENDIX G
DATA FOR ANCHORAGE SMA WITH PG58-28 WEARING COURSES

APPENDIX H
DATA FOR ANCHORAGE SMA WITH PG64-28 WEARING COURSES

APPENDIX I
DATA FOR ANCHORAGE HARD AGGREGATE SMA WEARING COURSE

APPENDIX J
DATA FOR ANCHORAGE PORTLAND CEMENT CONCRETE WEIGH-IN-MOTION SLABS

APPENDIX K
DATA FOR ANCHORAGE PLUSRIDE WEARING COURSES

1.0 Problem Statement

The primary pavement engineering/management problem in urban areas of Alaska is premature failure due to rutting or wearing of the asphalt concrete surface courses. This rutting is due to a combination of studded-tire wear and mix plastic flow. It has been said that in the “old days”, there were no ruts in Anchorage. There may not have been ruts in the 1960s or earlier, but before the Trans-Alaska Pipeline was built in the late 1970s, the population (and the traffic) was much lower. Nowadays almost everyone who drives on urban roads in Alaska has an *expert* opinion about the rapid “grooving” of urban roads. Some opinions of the causes for urban rutting in Alaska include: studded tires, steel belted tires, radial tires, deformation of the soft mix, soft aggregates in the mix, lack of mix compaction, poor gradations, bad paving joints, bad asphalt, too much asphalt, not enough asphalt, dust/asphalt ratios off, wrong type of fines in mix, wear from chained up snow plows, wear from road sanding beneath tires and … catalytic converters.

Studded tire use is allowed for six months of the year in most places. Based on counts in large parking lots in the marine influenced environments of Anchorage and Southeast Alaska, studded tire use is typically 50% or more. In Fairbanks similar counts run around 25% for studded tire use.

Studded tire wear is weather related. Wear rates seem to increase when the road surfaces are wet. Some years, the snow and ice pack, that the studded tires are used to gain traction on, are not on road surfaces for much of that six-month period in the marine influenced environments.

It is an unavoidable fact that whatever paving combination is used for surfacing, it is not as hard as the carbide steel tire studs that slam on to it, picking and gouging. Users of vehicles with studded tires favor them for the confidence they give in accelerating and stopping on slick surfaces.

The contribution of studded tire wear to pavement rutting seems to be with us in the foreseeable future. Until we can afford to pave the roads with something as strong as the carbide steel the studs are made of, we will have wearing of the surface. However, all is not lost. With this study we can see what lasts longer and try to build wearing courses to best meet the hard demands on them.

Asphalt concrete pavement surfaces on relatively high traffic roads and highways in the Anchorage, Juneau and Ketchikan areas tend to develop rutting patterns in less than 5 years of use. This is attributed to studded tire wear and plastic deformation of mixes to varying degrees, depending on the location. For the purpose of this study, roadways with documented average annual daily traffic (AADT) of at least 4000 per lane are considered. Premature rutting failures of Alaskan roadways are generally seen at traffic level above 4000 AADT per lane.

When the average rut depth measured within a pavement management segment exceeds 0.5 inch, the segment is recommended for rehabilitation project development. The intent is to have a rehabilitation project designed and ready for construction prior to or by the time the average rut depths exceed 0.75 inch. The 0.75-inch average rut depth level is considered failure. For the purpose of project development, the 0.5-inch average rut depth level is considered at the point of zero (0) remaining service life.

Unfortunately there is not always enough funding to repair all the areas that need it. Structural designs for roads and highways use a minimum design period of 15 years. If the surface fails prior to this, rehabilitation activities must take place along with the inherent costs for design, construction, traffic control and user dissatisfaction.

In light of the studded tire related problems and the unanswered questions mentioned above, the goals of this study are:

1) to find objective methods to model and compare pavement rutting performance,
2) to apply these models for determining remaining service life of any given pavement section (segment), 3) to validate the models to assure accuracy,
4) to use the remaining service life to develop reasonable rehabilitation project needs, and
5) to use these models to find the service life of a given wearing course type or pavement section.

Comparison of performance of the various types of wearing courses used at various urban locations in Alaska will help determine the most cost effective materials for rutting rehabilitation.

This report presents summary results of an exhaustive analysis of hard data – measurements of rut depths, traffic counts and wearing course properties. It summarizes a 4-year study analyzing rut depth, wearing course mix properties and traffic data collected through the fall of 2004. The study developed models to accurately predict rut progression for different mix types on high-volume urban roads in Alaska. The models developed will help predict pavement life so that rehabilitation can take be place in a more orderly manner. Comparative results of this study will point towards superior paving mixtures.

1.1 A Brief History of Pavement Rutting in Urban Alaska

In the 1980s it was found that typical dense-graded asphalt mixes on high traffic urban areas in Anchorage were lasting only 3 to 5 years before rehabilitation was necessary. Since that time many alternative asphalt mixes have been tried to increase pavement performance.

Around 1985 several projects were constructed using the patented Plus-Ride rubberized asphalt system. This is a relatively coarse-graded aggregate mix with granulated crumb rubber added to the aggregate, then mixed with asphalt cement. This mix was expensive, costing approximately twice as a dense-graded asphalt concrete. There were several immediate failures of the Plus-Ride mixes that required removal and replacement. Paying royalties to an outside patent holder was never very popular either. Two road sections in Anchorage remain with the Plus-Ride mix.

From 1991 to 1994 the Type I dense graded mixes with 1-inch maximum aggregate size replaced the typical Type II dense grade mixes with 0.75 inch maximum aggregate size. A few of these remain today. Some lasted only 5 years. Picking of the fine aggregates by studded tires, leaving a very coarse textured surface was one problem with Type I mixes.

In 1991 test sections on the New Seward Highway in Anchorage were constructed using Stone Mastic Asphalt (SMA) (21). Two years of rut measurements on the SMA indicated improved rut resistance compared to adjacent Type I mix. Thus, starting in 1993, SMA, using AC-5 asphalt cement became the material of choice to resist studded tire wear and rutting in the Anchorage area.

In 1996 a test section was constructed on the New Seward Highway in Anchorage using SMA with styrene-butadiene rubber (SBR) modified asphalt. That area appeared to be performing at least as well as adjacent SMA areas with unmodified asphalt.

In 1998 pavements built using SMA with AC-5 showed premature rutting. This prompted a change to using polymer-modified asphalt in SMA mixes in future projects. Favorable Rut Index results with the Georgia Loaded Wheel Tester (LWT) helped substantiate the change. In general, mixes with the same aggregates and gradation but with polymer modified asphalt showed superior resistance to rutting in the LWT.

A test section was constructed in 1998 using SMA with AC-5 and imported hard aggregates. It was constructed with aggregates from near Cantwell, Alaska. This test section is in Anchorage on the Seward Highway between 36th Avenue and Benson Boulevard in the northbound lanes. Cantwell is over 200 miles to the north, but along the Alaska Rail Road lines.

In interior Alaska, Fairbanks has several roadways with traffic levels that could cause premature rutting or wear. However, rutting is generally not a problem in the Fairbanks area at this time. Studded tire use in Fairbanks is approximately ½ that in Anchorage and Juneau where 50% studded tire usage is common. Cooler winter temperatures in the north tend to leave more snow cover on the roads for longer periods than in Anchorage and Juneau, where freeze-thaw cycles are common. Thus Engineers in the Northern regions of Alaska have not had to develop special mixes to resist rutting and studded tire wear.

Juneau, Ketchikan and Sitka have several roads with high traffic levels (AADT>4000). Premature rutting in the Southeast Region of Alaska has prompted Engineers to use Superpave mixes with hard aggregates and polymer modified asphalt. Their first Superpave mix was placed in 1999 on the Glacier Highway, just north of Juneau.

In 2000 a large project was let overlaying Egan Drive in Juneau with a Superpave mix. Egan Drive is the main highway in Juneau, with 4 lanes carrying 5000-8000 vehicles per day.   This road has long been problematic having several premature rutting failures. Thus a superior mix is warranted.

The State of Alaska has been contracting (ASTM E 950, Class 1) (14) laser profilers to measure roadway conditions annually since 1998. These laser profilers measure ruts at highway speeds in the left and right wheel paths and beneath an imaginary string line connecting the edges of the driving lane. This data is summarized and averaged for pavement management sections that cover approximately on mile in length. Pavement management sections are chosen in areas with the same traffic levels and construction times and methods. The average maximum rut measured within each pavement management section is entered into a condition table in a pavement management database each year. Photo 1.1 shows a Dynatest laser profiler with a 7-laser rut-measuring bar attached to the bumper as used in this study. The arrows show the approximate locations of laser measurements.

Repeatability tests were run in 2004 where the profiler was run over the same 21 sections ten times. The average standard deviation of the ten measurements in these 21 sections is found at 0.01 inches. The maximum standard deviation found was 0.021 inches and the least was 0.000 inches in the 21 sections.

The AADT (4, 5, 6) for each pavement management (PM) section is entered from Annual Traffic Volume Reports each year. This data is stored in a Traffic table in the PM database with a section identifier that links it to the condition data and other section information. A Wearing Course table in the PM database contains data regarding the pavement age and type for each PM section. It is updated as work is completed.

As of 2004 we have up to 6 years of rut measurement data and keep track of changing traffic levels and construction projects. It is time to analyze this information and make use of it. Figure 1.1 shows locations of Urban areas in Alaska and Regional Boundaries.

Photo 1.1: Laser Profiler

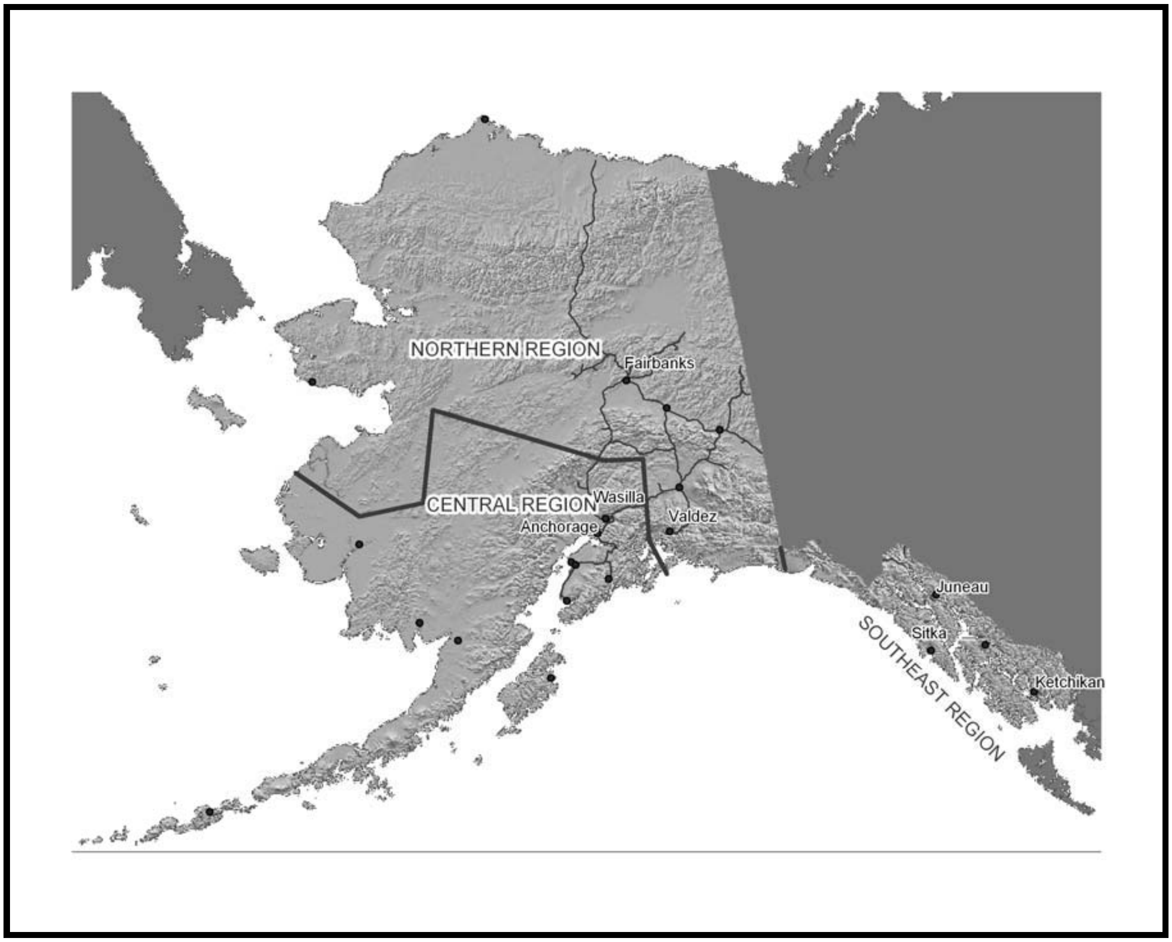


Figure 1.1: Alaska Urban Areas and Regional Boundaries

2.0 Rut Modeling Background

Rutting of asphalt pavements is a primary mode of distress for our urban roadways. The combined effect of permanent deformation and studded-tire wear can create hazardous driving conditions. In the past, the Alaska Department of Transportation and Public Facilities (ADOT&PF) performed manual rut depth measurements on high-speed, high-volume roads (e.g. Seward and Glenn Highways) and developed models and plots to relate rut depth and number of vehicle passes, i.e. studded tire applications. This was done for SMA (stone mastic asphalt) and various dense-graded mixes in the Anchorage area. That information was used to compare mix performance and help predict conditions and timing for rehabilitation needs. However, the data was limited and only applied to certain situations in the Anchorage area.

Personnel in the Southeast Region also conduct manual rut measurements for the same purposes as in Anchorage. That data is used for monitoring specific pavement projects and for design of pavement rehabilitation.

For each pavement type, the State pavement management system (PMS) programs have studded tire wear prediction models in the form of (16, 28):

$$W = A\left(\frac{N}{10^6}\right)^B \quad \text{................} \qquad \text{Equation 1}$$

Where: W = Wear depth, in.
A = coefficient depending on typical mix performance with traffic
N = accumulated number of traffic repetitions (AADT)
B = coefficient depending on typical mix performance with traffic

Equation 1 can be written as:

$$\log W = \log A + B \log\left(\frac{N}{10^6}\right) \quad \text{..............} \qquad \text{Equation 2}$$

Thus a linear prediction model (logarithmic form) is used for predicting wear depth and plastic deformation in the pavement wearing mix under traffic loads. The current study will look at both linear (B = 1.0) and non-linear (B ≠ 1.0) models for prediction of urban rutting in Alaska.

The PMS backcalculates effective traffic levels for each section and moves forward with future wearing predictions based on future traffic in the model with proper coefficients.

The PMS also has a rut prediction model that is based on computed vertical stain in the subgrade using mechanistic analysis of hand-input structural data. That is for rutting as a result of permanent deformation in the subgrade and is not considered herein. However, structural data is not available for many of the roadway sections. Thus, the models developed here will take rutting/wear, by whatever means, into account.

Pavement rehabilitation projects are recommended for design when the average rut depth in a section of roadway is 0.5 inches or greater. Sections with average rut depths of 0.75 inches or greater are considered in need of immediate repair.

It should be emphasized that rut measurements are summarized every 0.01 mile (52.8 feet, 16.1 m). Thus the *average* here will include an equal number of rut measurements higher *and* lower. For example, a section of road that has an average rut depth of 0.5 inches may have several segments with over 1 inch ruts.

2.1 Pavement Types

This section presents background information on the pavement/mix types considered in the study.

2.1.1 Asphalt Concrete, Type I, Class A - Anchorage

This is a dense-graded mix (nominal max aggregate size = 1 in) with AC-5 asphalt cement. Mix designs were completed using the Marshall method with 75 blows (i.e. Class A). This type of mix was used from 1991 to 1994. Photos 2.1 and 2.2 show examples of Anchorage pavements where Type I mix was used. Note that the pavement is worn through in some areas.

Photo 2.1: Anchorage Type I mix overlay, nearly 13 years old.

Photo 2.2: Anchorage Type I at intersection of Tudor Road and C Street, placed in 1991

Figure 2.1 shows the Marshall design sheet for the Anchorage Type I mix shown in the photos above. The mix went to the fine side of the gradation band during construction.

25-229B
3-03

STATE OF ALASKA
Department of Transportation & Public Facilities
Central Materials

5750 EAST TUDOR RD, ANCHORAGE AK 99507
Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

QUALITY

PROJECT NAME: Tudor Road Rehabilitation   PROJECT NO. M-0544(11) / 57485

LABORATORY NO. 91A-0570
FIELD NO.: MD-1
DATE SAMPLED: 05/08/1991
DATE RECEIVED: 05/08/1991
DATE COMPLETED: 05/17/1991
DATE REPORTED: 05/17/1991

SAMPLE OF: Class IA HAP Mix Design   ITEM/SPECIFICATION NO.: 401(1)
SAMPLED FROM: Stockpiles CPP Yard Anchorage
SOURCE/SUPPLIER: CPP Pit MP 38 Glenn Hwy.   QUANTITY REPRESENTED As Req'd.
LOCATION/ADDRESS: SUBMITTED BY: Wilder Const.
EXAMINED FOR: Mix Design

AGGREGATE
Blend Specific Gravity
Bulk
Effective
Blend Ratio: 25:10:63:2
CA:IA:NF:CF:MF:BS

ATM T-17
75 BLOW

Sieve	% Pass		Specs
1"	100		100
3/4"	90		82-98
1/2"	82		74-90
3/8"	77		70-84
#4	61		54-68
#10	45		39-51
#40	22		18-26
#80	13		9-17
#200	6.0		3-9
FA FM			
% Fracture			
Single Face			
Double Face			
All Face			
% Thin Elongated			
@ 3:1			
@ 5:1			
PI			

Quality No.s
90A-619

ASPHALT CONTENT	% Asphalt
@ 4.0% Voids Total Mix..	5.0
Approved Optimum......	5.3
Specifications........	4.8-5.8

PROPERTIES @ OPTIMUM		Specs
Max. SpG. (AASHTO T209)		
Max. SpG Unit Wt,pcf		
Voids		
Filled	78	
Total Mix	3.6	3-5
In Mineral Aggregate	14.8	14 min
In Coarse Aggregate		
Stability, lbs.	2660	1500+
Flow, 0.01 inches	11	8-16
Unit Weight, pcf	152.0	
Dust/Asphalt Ratio ...	1.1	
Rut Index		

ASPHALT
Brand & Type MAPCO AC-5
Specific Gravity 1.010
Max. Mixing Temp. 290° F

ANTI-STRIP ADDITIVE
Brand & Type Pavebond Special
Minimum Required 0.25 %

Remarks: 8-7-91 revised Optimum Asphalt Content and Anti-Strip Additive.

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[ ]

Signature
Newton J. Bingham, PE
Regional Materials Engineer

TRL THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

Figure 2.1: Anchorage, Type I, 75-blows Marshall Mix Design

2.1.2 Asphalt Concrete, Type II, Class A - Anchorage

This is a dense-graded mix (nominal max aggregate size = 0.75 in) and AC-5 (PG52-28), neat asphalt cement. Mix designs are done by Marshall methods with 75 blows (i.e. Class A). This type of mix was the standard urban mix prior to the use of Type I and SMA that started in 1994. Some old areas with this mix type still remain and the Municipality of Anchorage still uses an improved version of this type of mix. Photos 2.3 to 2.5 show examples of this type of mix in Anchorage.

Photo 2.3: Anchorage Asphalt Concrete Type II mix placed in 1994 with nearly 2-in ruts

Photo 2.4: Anchorage Asphalt Concrete, Type II overlay placed in 1982

Photo 2.5: Asphalt Concrete, Type II placed in 1994

Figure 2.2 is a Type II, Class A mix design that was used in Anchorage. It is a fine, very densely-graded mix that is fairly typical of this type of mix.

25-229B
3-03

STATE OF ALASKA
Department of Transportation & Public Facilities
Central Materials

5750 EAST TUDOR RD, ANCHORAGE AK 99507
Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

QUALITY

PROJECT NAME: Port Access Rehabilitation   PROJECT NO. FM-0527(10) / 58715

LABORATORY NO.	94A-2202
FIELD NO.:	ACP-MD-IIA-1
DATE SAMPLED:	/ /
DATE RECEIVED:	08/25/1994
DATE COMPLETED:	08/30/1994
DATE REPORTED:	08/31/1994

SAMPLE OF: Type IIA ACP Mix Design   ITEM/SPECIFICATION NO.:
SAMPLED FROM:
SOURCE/SUPPLIER: AS&G   QUANTITY REPRESENTED Source
LOCATION/ADDRESS: SUBMITTED BY: Contractor
EXAMINED FOR: Mix Design

AGGREGATE

Blend Specific Gravity
Bulk 2.678
Effective 2.772
Blend Ratio: 20:05: :75:
CA:IA:NF:CF:MF:BS

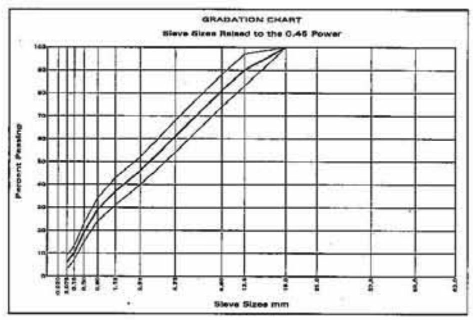
ATM T-17
75 BLOW

ASPHALT CONTENT	% Asphalt
@ 4.0% Voids Total Mix..	5.5
Approved Optimum......	5.8
Specifications........	5.4-6.2

Sieve	% Pass		Specs
1"			
3/4"	100		100
1/2"	90		83-97
3/8"	81		74-88
#4	61		54-68
#8	46		40-52
#16	37		31-43
#30	29		24-34
#50	19		15-23
#100	10		7-13
#200	6.0		3-9
FA FM		2.69	
% Fracture			
Single Face		99	80 min
Double Face			
All Face			
% Thin Elongated			
@ 3:1			
@ 5:1		0	8 max
PI		NP	4 max

Quality No.s

PROPERTIES @ OPTIMUM		Specs
Max. SpG. (AASHTO T209)	2.518	
Max. SpG Unit Wt,pcf	156.7	
Voids		
Filled	77	
Total Mix	3.2	2-5
In Mineral Aggregate	14.2	
In Coarse Aggregate		
Stability, lbs.	2880	1800+
Flow, 0.01 inches	11	8-14
Unit Weight, pcf	152.1	
Dust/Asphalt Ratio ...	1.0	
Rut Index		



ASPHALT

Brand & Type Mapco AC-5
Specific Gravity 1.012
Max. Mixing Temp. 290° F

ANTI-STRIP ADDITIVE

Brand & Type Pavebond Special
Minimum Required 0.25 %

Remarks:

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[ ]

Signature
Newton J. Bingham, PE
Regional Materials Engineer

TRL THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

Figure 2.2: Anchorage, Type II, 75-blows Marshall Mix Design

2.1.3 Asphalt Concrete, Type III, Class A - Anchorage

This is a dense-graded mix (nominal max aggregate size = 0.5-in) and unmodified PG52-28 asphalt cement. Mix designs are completed using Marshall method with 75 blows (i.e Class A). It is generally used only as maintenance overlays in order to fill deeply rutted areas that do not have project funding. Type III mix overlays in ruts typically only extend the pavement life by 1 to 3 years in high traffic areas. It is therefore a temporary wearing course and not directly considered in this study. Photos 2.6 and 2.7 show examples of Type III overlays in Anchorage.

Photo 2.6: Anchorage, Type III Maintenance overlay, 3.5-years old

Photo 2.7: Anchorage studded tire wear on Type III overlay mix (< 1 year old)

2.1.4 Asphalt Concrete, Type II - Fairbanks

This is a dense-graded mix (nominal max aggregate size = 0.75 in). Mix designs are completed using Marshall methods with 75 blows. Figure 2.3 shows a typical mix design. Photos 2.8 and 2.9 are recent photos of this mix in Fairbanks.

Photo 2.8: Pavement Rutting in Fairbanks – 12-year old pavement

Photo 2.9: Pavement Rutting in Fairbanks – 18-year old pavement

STATE OF ALASKA - NORTHERN REGION
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

BITUMINOUS MIX DESIGN
MARSHALL METHOD

PROJECT NAME: GEIST EXT. COLLEGE- PEGER
PROJECT #: 30177542

DATE RECEIVED: MAY 13 1988
DATE COMPLETED: JUNE 1 1988

SUBMITTED BY: EARTHMOVERS
AGGREGATE SOURCE: SEALAND PIT
ASPHALT SOURCE AND GRADE: MAPCO AC-2.5

LAB #: 88-052A
FIELD #: MD-1
AGGREGATE QUALITY #: 87-615

TYPE II MIX
% ASPHALT CALCULATED
BY WEIGHT OF TOTAL MIX

CRITIERIA

STABILITY: (EALS >1,000,000)	1500 MIN.
FLOW:	8-16
VOIDS FILLED:	70-95
VOIDS TOTAL MIX:	1-5
COMPACTING TEMP:	240-247 F
~XING TEMP:	258-268 F
. ANTI-STRIP:	1/4 OF 1%

SIEVE SIZE	GRADATION AS SUBMITTED	NARROW BAND RANGE
3/4"	100	100
3/8"	77	70 - 84
#4	51	45 - 58
#10	37	31 - 43
#40	25	21 - 28
#200	6	3 - 9

OPTIMUM DETERMINATION

% ASPHALT @ MAX UNIT WT:	5.2
% ASPHALT @ MAX STABILITY:	4.8
% ASPHALT @ 3% VOIDS:	4.8
% ASPHALT @ 80% VOIDS FILLED:	4.90
OPTIMUM ASPHALT CONTENT:	4.9+.4 =5.3
STABILITY @ OPTIMUM:	1950
UNIT WEIGHT @ OPTIMUM:	151.0
VOIDS TOTAL MIX @ OPTIMUM:	2
VOIDS FILLED @ OPTIMUM	88
FLOW @ OPTIMUM:	9

CALIBRATION POINTS FOR NUCLEAR CONTENT GAUGE

TARGET WEIGHT:	8176
% ASPHALT - LOW:	4.39
% ASPHALT - HIGH:	6.19
COLD/HOT FACTOR:	.984

REMARKS:
APPROVED % AC BY WT OF TOTAL MIX: 5.3

APPROVED: Paul W. Misterek
PAUL W. MISTEREK, RME

Figure 2.3: Fairbanks Type II Mix Design

2.1.5 Asphalt Concrete, Type II, Class A – Southeast Region

This is a dense-graded mix (nominal max aggregate size = 0.75 in). Mix designs are completed using the Marshall method with 75 blows.

Photo 2.10: File photo of Egan Drive in Juneau, Type II mix prior to Superpave

Photo 2.11: Juneau's Egan Drive, Type II mix prior to Superpave

2.1.6 Superpave – Egan Drive in Juneau

This is a dense-graded but coarse mix containing higher quality (harder) aggregates with a 0.75-in nominal max aggregate size (13). Performance graded (12) PG58-28 asphalt cement is used as a binder. No photos are available at this time.

2.1.7 Stone Mastic Asphalt (SMA) with AC-5 – Anchorage

This is a gap-graded mix (nominal max aggregate size = 0.75-in). The aggregates are approximately 70% well crushed coarse aggregate, 20% sand and 10% fines. Asphalt contents are typically high (>6%) and a cellulose stabilizer is added to the mix to prevent drain down of the hot asphalt cement during construction. Use of SMA started in Alaska in 1992 with a test section on the New Seward Highway (21). It became interesting after the 1990 European Asphalt Study Tour (23). Figure 2.4 is a copy of an SMA with AC-5 (PG52-28) mix design.

25-229B
3-03

STATE OF ALASKA
Department of Transportation & Public Facilities
Central Materials
5750 EAST TUDOR RD, ANCHORAGE AK 99507
Phone (907)-269-6200 FAX (907) 269-6201
Laboratory Report

QUALITY

PROJECT NAME: Debarr Rd. Rehab. Airport H.- Mul. PROJECT NO. FM-0536(2) / 59147
LABORATORY NO. 95A-1261
SAMPLE OF: SMA Mix Design ITEM/SPECIFICATION NO.: 407(1A) FIELD NO.: SMA-MD-EW-1
SAMPLED FROM: Manufacturer's Stock DATE SAMPLED: 07/07/1995
SOURCE/SUPPLIER: Eastwind, Inc. QUANTITY REPRESENTED Source DATE RECEIVED: 07/07/1995
LOCATION/ADDRESS: Anchorage, AK SUBMITTED BY: Eastwind, Inc. DATE COMPLETED: 07/19/1995
EXAMINED FOR: Mix Design DATE REPORTED: 07/22/1995

AGGREGATE
Blend Specific Gravity
Bulk 2.681
Effective 2.730
Blend Ratio: 34: :44:11:11
CA:IA:NF:CF:MF:BS

ATM T-17
50 BLOW

ASPHALT CONTENT	% Asphalt
@ 3.0% Voids Total Mix..	6.8
Approved Optimum......	6.8
Specifications........	6.4-7.2

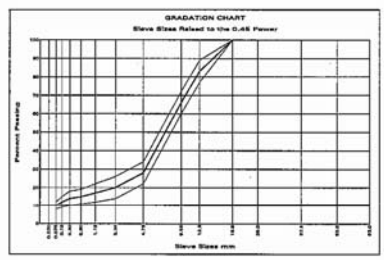
Sieve	% Pass		Specs
1"			
3/4"	100		100
1/2"	83		77-89
3/8"	66		60-72
#4	28		22-34
#8	20		14-26
#16	17		12-22
#30	15		11-19
#50	14		10-18
#100	12		9-15
#200	10.0		8-12
FA FM		2.21	
% Fracture			
Single Face		100	90 min
Double Face		100	70 min
All Face			
% Thin Elongated			
@ 3:1			
@ 5:1		2	10 max
PI		nv	4 max

Quality No.s

PROPERTIES @ OPTIMUM		Specs
Max. SpG. (AASHTO T209)	2.447	
Max. SpG Unit Wt,pcf	152.3	
Voids		
Filled	83	
Total Mix	3.0	2-4
In Mineral Aggregate	17.4	15.0+
In Coarse Aggregate		
Stability, lbs.	1250	1000+
Flow, 0.01 inches	10	8-16
Unit Weight, pcf	148.3	
Dust/Asphalt Ratio ...	1.5	
Rut Index		

ASPHALT
Brand & Type Mapco AC-5
Specific Gravity 1.012
Max. Mixing Temp. 290° F

ANTI-STRIP ADDITIVE
Brand & Type Pavebond Special
Minimum Required 0.25 %



Remarks: Optimum asphalt content may be adjusted based on results from test sections.

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[ ]

Signature
Newton J. Bingham, PE
Regional Materials Engineer

TRL THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

Figure 2.4: Mix Design Report for Anchorage SMA with AC-5 asphalt cement

Use of SMA as a more rut resistant mix began on projects in 1993 following construction of test sections on the Seward Highway in 1992. After premature rutting was found on a 1998 SMA project, polymer modified asphalt is used in SMA. Polymer modified asphalt SMA is considered separately. Photos 2.12-2.14 show examples of rutted SMA with AC-5 mixes.

Photo 2.12: 10.5 year old SMA with AC-5 overlay with 1-in ruts – Anchorage

Photo 2.13: 7.5 year old SMA with AC-5 with +0.75-in ruts - Anchorage

Photo 2.14: 7.5 year old SMA with AC-5 with +0.5-in ruts - Anchorage

2.1.8 Stone Mastic Asphalt with PG58-28 polymer modified asphalt – Anchorage

Stone Mastic Asphalt with PG58-28 is a slightly coarser mix of SMA as described in the previous section, using polymer modified asphalt binder. It has been the preferred rut resistant mix in the Anchorage area since 1998. Incremental changes have been made through time, such as increased fracture requirements, variations in the type of fines and its content, voids in the coarse aggregate (VCA) requirements, Nordic Abrasion test requirements and others. This makes it difficult to classify. Figure 2.5 shows a typical mix design

25-229B
5-98

STATE OF ALASKA
Department of Transportation & Public Facilities
Central Region Materials

5750 EAST TUDOR RD, ANCHORAGE AK 99507
Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

QUALITY

PROJECT NAME: C St: Inter'l Airport Rd.-Tudor Rd. PROJECT NO. STP-0527(13) / 52512

LABORATORY NO. 99A-0439

SAMPLE OF: SMA Mix Design w PG 58-28 ITEM/SPECIFICATION NO.: 407(1)
FIELD NO.: Q-SMA(58)-MD-1

SAMPLED FROM: Mfg's. Stock
DATE SAMPLED: / /

SOURCE/SUPPLIER: QAP QUANTITY REPRESENTED Source
DATE RECEIVED: 06/01/1999

LOCATION/ADDRESS: Anchorage SUBMITTED BY: QAP
DATE COMPLETED: 06/26/1999

EXAMINED FOR: Mix Design
DATE REPORTED: 06/26/1999

AGGREGATE

Blend Specific Gravity
Bulk 2.713
Effective 2.742
Blend Ratio: 10:67: :13:10:
CA:IA:NF:CF:MF:BS

ATM T-17
50 BLOW

AASHTO TP-53 Cf = 1.18 @ 538°C

OPTIMUM ASPHALT CONTENT	% Asphalt
@ Max. Unit Weight......	6.5
@ Max. Stability........	
@ 4.0% Voids Total Mix..	6.0
Average...............	6.3
Approved Optimum......	6.3
Specifications........	5.9-6.7

Sieve	% Pass		Specs
25.0			
19.0	100		100
12.5	86		80-92
9.5	60		54-66
4.75	26		20-32
2.36	20		14-26
1.18	17		12-22
.600	15		11-19
.300	13		9-17
.150	11		8-14
.075	7.0		5-9
FA FM		2.08	
% Fracture			
Single Face			
Double Face		97	90 min
% Thin Elongated			
@ 3:1		4	
@ 5:1		3	8 max
PI		NP	4 max

Quality No.s
99A-0443
99A-0441

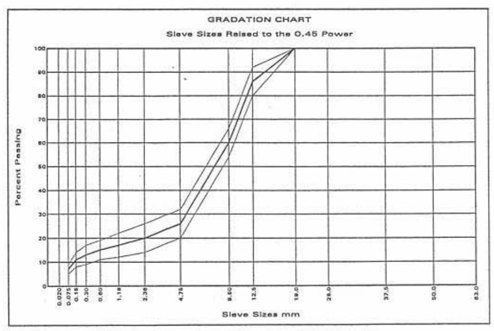
PROPERTIES @ OPTIMUM		Specs
Max. SpG. (AASHTO T209)	2.482	
Max.SpG U.Wt,kg/cu.m	2482	
Voids		
Filled	79	
Total Mix	3.6	2-4
In Mineral Aggregate	17.6	15.0+
Stability, N	7000	4450+
Flow, 0.25 mm	15	8-16
Unit Weight, kg/cu.m .	2389	
Dust/Asphalt Ratio ...	1.1	0.6-1.4
Rut Index	3.2	

ASPHALT

Brand & Type EP 58-28
Specific Gravity 1.009
Mixing Temp. Range 168-175° C

ANTI-STRIP ADDITIVE

Brand & Type PaveBond Special
Minimum Required 0.25 %



Remarks:

The Material as Submitted Conforms to Specifications
Yes[X] No[ ] NA[ ]

Signature
Robert F. Lewis, P.E.
CONSTRUCTION MATERIALS ENGINEER

D3 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

Figure 2.5: SMA with PG58-28 Mix Design, Anchorage

These mixes are still fairly new and have not gone to general rutting failure yet. However, they do go to approximately 0.3” rut depth alarmingly fast. Photos 2.15 and 2.16 show some poorer examples of these mixes.

Photo 2.15: SMA with PG58-28, 2-year old mix in Anchorage with +0.3-in ruts

Photo 2.16: SMA with PG58-28, 4-year old mix in Anchorage starting to rut/wear

2.1.9 Stone Mastic Asphalt with PG64-28 polymer modified asphalt – Anchorage

These mixes were basically test sections on SMA with PG58-28 projects. Thus they used the same materials as the project otherwise called for but substituted a mix design using PG64-28 for binder. Creating a PG58-28 from neat PG52-28 takes the addition of approximately 3% polymer. A PG64-28 takes about 6% polymer. The intent is to make the mix stiffer, yet elastic. Only two sections with PG64-28 bound SMA are monitored with this study, though more were constructed in late 2003 and in 2004. Figure 2.6 is an example mix design. Photos 2.17 and 2.18 show Anchorage SMA with PG64-28 asphalt cement wearing courses.

25-229B
5-98

STATE OF ALASKA
Department of Transportation & Public Facilities
Central Region Materials

5750 EAST TUDOR RD, ANCHORAGE AK 99507
Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

QUALITY

PROJECT NAME: C St: Inter'l Airport Rd.-Tudor Rd. PROJECT NO. STP-0527(13) / 52512

LABORATORY NO. 99A-0440

SAMPLE OF: SMA Mix Design w PG 64-28 ITEM/SPECIFICATION NO.: 407(1) FIELD NO.: Q-SMA(64)-MD-1
SAMPLED FROM: Mfg's. Stock DATE SAMPLED: / /
SOURCE/SUPPLIER: QAP QUANTITY REPRESENTED Source DATE RECEIVED: 06/01/199
LOCATION/ADDRESS: Anchorage SUBMITTED BY: QAP DATE COMPLETED: 06/26/199
EXAMINED FOR: Mix Design DATE REPORTED: 06/26/199

AGGREGATE
Blend Specific Gravity
Bulk 2.713
Effective 2.744
Blend Ratio: 10:67: :13:10:
CA:IA:NF:CF:MF:BS

ATM T-17
50 BLOW

AASHTO TP-53 Cf = 1.18 @ 538°C

OPTIMUM ASPHALT CONTENT	% Asphalt
@ Max. Unit Weight......	6.0
@ Max. Stability........	5.6
@ 4.0% Voids Total Mix..	6.1
Average...............	5.9
Approved Optimum......	6.3
Specifications........	5.9-6.7

Sieve	% Pass		Specs
25.0			
19.0	100		100
12.5	86		80-92
9.5	60		54-66
4.75	26		20-32
2.36	20		14-26
1.18	17		12-22
.600	15		11-19
.300	13		9-17
.150	11		8-14
.075	7.0		5-9

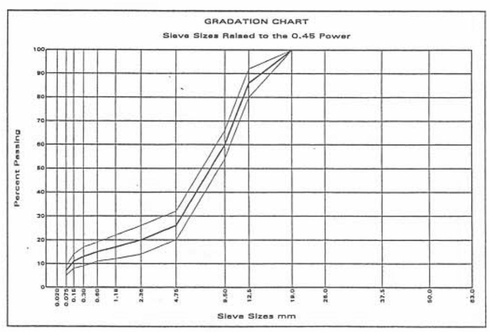
Quality No.s
99A-0443
99A-0442

FA FM	2.08	
% Fracture		
Single Face		
Double Face	97	90 min
% Thin Elongated		
@ 3:1	4	35 max
@ 5:1	3	8 max
PI	NP	4 max

PROPERTIES @ OPTIMUM		Specs
Max. SpG. (AASHTO T209)	2.480	
Max.SpG U.Wt,kg/cu.m	2480	
Voids		
Filled	78	
Total Mix	3.8	2-4
In Mineral Aggregate	17.6	15.0+
Stability, N	7100	4450+
Flow, 0.25 mm	16	8-16
Unit Weight, kg/cu.m .	2382	
Dust/Asphalt Ratio ...	1.1	0.6-1.4
Rut Index	2.9	

ASPHALT
Brand & Type EP 64-28
Specific Gravity 1.008
Mixing Temp. Range 168-175° C

ANTI-STRIP ADDITIVE
Brand & Type PaveBond Special
Minimum Required 0.25 %



Remarks:

The Material as Submitted Conforms to Specifications
Yes [X] No [ ] NA [ ]

Signature
Robert F. Lewis, P.E.
CONSTRUCTION MATERIALS ENGINEER

THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED

Figure 2.6: SMA with PG64-28 Mix Design, Anchorage

Photo 2.17: Anchorage SMA, PG-64-28, heavy truck traffic area, 4 years old, ~ 0.4-in rut

Photo 2.18: Anchorage intersection paving from background of photo 2.17

2.1.10 Stone Mastic Asphalt with AC-5 and hard aggregate – Anchorage

In 1998 a test section was constructed in the northbound lanes of the Seward Highway between 36th Avenue and Benson Boulevard using hard aggregates that were imported from the Cantwell area, approximately 210 miles north of Anchorage. These aggregates tested out superior in the Nordic Abrasion tester, therefore were tried as part of an SMA with AC-5 project. Unfortunately, this area was milled out and repaved in the summer of 2003. The adjacent areas had excessive rutting. However rut measurements through the spring of 2003 show this section had superior performance.

Rut measurements taken in these areas on May 21, 2003 showed an average rut depth of 0.26" in the hard aggregate test section. Average rut depth in the section between 36th Avenue and Benson Boulevard besides the hard aggregate section is 0.49". So in this small example, the hard aggregate section rutted at approximately ½ the rate of SMA made with standard specification aggregates.

2.1.11 Portland Cement Concrete

There is very little Portland Cement Concrete (PCC) surfacing in Alaska. The only PCC surfaced areas within this study are weight-in-motion (WIM) sites set up to electronically weight vehicle axles and classify them into groups. These WIM sites are approximately 300 ft in length.

The WIM slabs constructed in 1991on Tudor Road in Anchorage were rehabilitated in the summer of 2003. These slabs were constructed using standard finishing methods. Lane closures for this project gave the opportunity to take manual rut measurements on the 12-year old slabs. Whatever "rutting" was found on these slabs is certainly wear rather than any type of deformation.

Two new WIM sites were constructed in 2000 on Minnesota Drive. The first is on the Northbound Lanes between Dimond Boulevard and Strawberry Road. The second is in the southbound lanes, between Raspberry Road and Strawberry Road. Both of these sites (Photos 2.19 and 2.20) had the surface milled for smoothness, getting down to exposed aggregates for wearing. Due to this different construction technique these are considered separately in the analysis.

Comparing rut depths between the PCC WIM slabs and adjacent asphalt concrete placed with the same project, the Tudor Road WIM site had an average rut depth of 0.61" and the adjacent Type I Asphalt Concrete had and average rut depth of 0.86" in 2003. The PCC had 29% less rut depth than the asphalt concrete of the same age and traffic. Concrete does not deform under traffic loading, so its rutting is all due to wear. Thus approximately 29% of the rutting in the asphalt mix is due to plastic deformation.

Similar comparisons of the WIM slabs on Minnesota Drive shows the average rut depth on the PCC of 0.31" and the adjacent SMA with PG58-28 with an average rut depth of

0.50” in 3 years. Thus the PCC had 38% less rut depth than the SMA with the same age and traffic.

Photo 2.19: Upstream edge of Anchorage WIM slabs with adjoining SMA with PG58-28

Photo 2.20: Three-year old WIM slabs in Anchorage

2.1.12 Plus Ride Asphalt Rubber Mix

From 1981 to 1986 several projects were constructed using the Plus Ride system. These were asphalt pavements using approximately 2% crumb rubber by weight of mixture. The cost for these mixes was nominally twice that of the typical Type II, dense graded mixtures. Two projects constructed with Plus Ride failed during construction. Due to the high expense and possibility of failure the use of this mix was dropped. The Figure 2.7 is a copy of the 1985 Mix Design for A and C Streets in Anchorage.

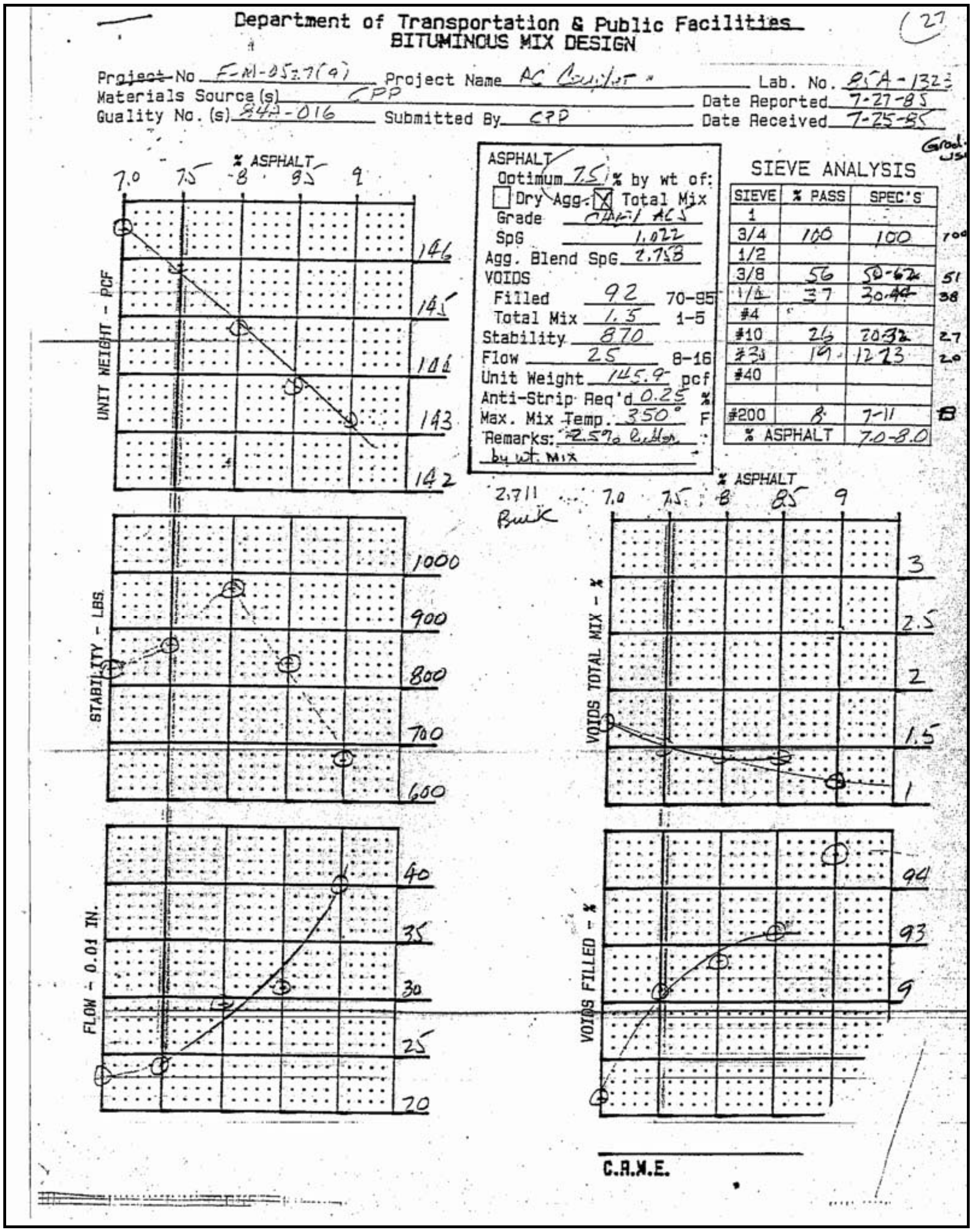


Figure 2.7: Plus Ride Mix Design for Anchorage

Now there are two pavement management sections remaining on A and C Streets in Anchorage. These are performing surprisingly well having been placed in 1985. The performance of these sections is causing the DOT&PF to look again at the possibility of using rubberized mixtures for wear resistance. Photos 2.21-2.23 show the Plus Ride mix in Anchorage.

Figure 2.7 presents a comparison of gradations for SMA and Plus Ride mixes used in Anchorage. Notice that these are very similar. However, the Plus Ride gradation contains more 3/8 inch (9.5 mm) and ½ inch (12.5 mm) sized particles and less sand-sized particles than SMA. The 2.5% crumb rubber fills the gap in the sand-sized range (0.6 mm to 4.75 mm).

Photo 2.21: Close up photo of Anchorage Plus Ride Mix – note ground rubber pieces

Photo 2.22: Anchorage Plus Ride mix placed in 1985 still performing well

Photo 2.23: Worn through areas in 1985 Anchorage Plus Ride mix

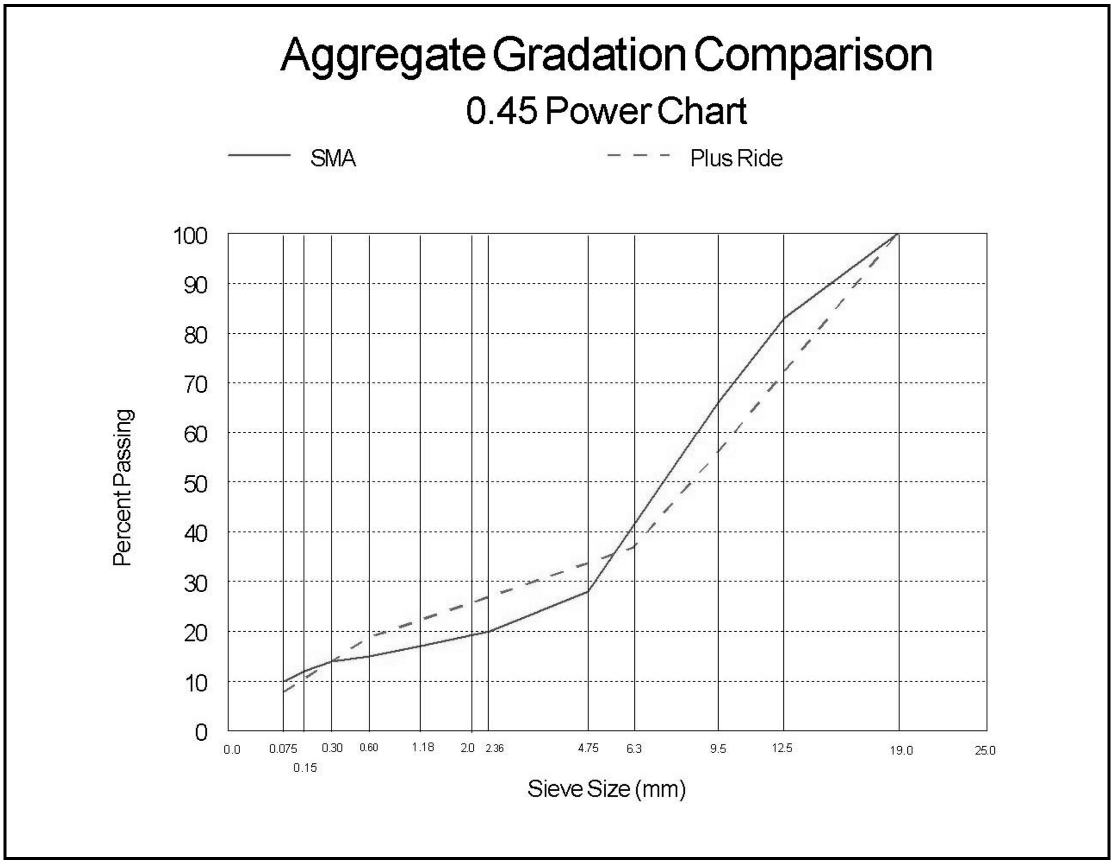


Figure 2.8: Anchorage SMA and PlusRide Gradations

3.0 Objectives and Scope of Work

The main objective of this study is to develop rutting models that can best predict this phenomenon in terms of Remaining Service Life of the pavement. The contribution of studded-tire wear to the overall rutting is examined. Studded-tire use and policy can be modified to minimize rut formation and consequently decrease maintenance spending. Prediction of rutting and pavement life would enable us to program pavement rehabilitation adequately. The model and curves will be used to put a plan for pavement rehabilitation; in other words, to determine which sections should be candidates for rehabilitation and when. Automated predictions of pavement rutting statewide would be a useful tool for pavement management and for improving materials engineering in Alaska.

Comparisons of mix performance under similar conditions will show which are more resistant to rutting and studded tire wear. This will save money in pointing Engineers towards longer lasting pavement.

This study utilizes condition, traffic, pavement type and age data from the State of Alaska Department of Transportation & Public Facilities highway pavement management database. The condition data is summarized rut measurements taken with a Dynatest laser profiler.

Simplicity in model development and application is a primary consideration. The Alaska DOT&PF has very limited personnel for pavement analysis/management work. Therefore ease of use and automation of applications is necessary.

Prall Abrasion Values are obtained from the Nordic Prall Test equipment. Results from testing are analyzed and related to field performance in this report.

Georgia Loaded Wheel Rut testing of mixes has been performed on various mixes in the Central Region since 1998. The data is summarized and presented below for comparison with field measurements.

The findings of this work are intended for immediate application. The findings must be rational, logical, accurate and easily understood by anyone interested.

4.0 Data Analysis Methods

The pavement management (PM) database has the State's paved road system divided into sections that are generally 1 mile or less in length. Each section contains the same type pavement of the same age. Each section contains similar traffic. The PM database contains Traffic data in terms of average annual daily traffic (AADT) (4,5,6 & 7) per lane for the years: 1996, 1998, 1999, 2000, 2001, 2003 and 2004. Pavement condition in terms of rut depth and ride quality is measured annually. Summary conditions are loaded into their corresponding section in the PM database.

Rut depth values in the database are the average of the maximum rut measurements within a given section. That is, average values for left and right wheel path measurements are computed and compared, using the highest value to represent the section. As mention previously, the PM database contains laser profiler rut data from 1999 to 2004.

Queries of the PM database bring together section information as follows:

Road Name
Section Description
Pavement Type
Construction Year
Condition Year, 1998 (or Construction Year) to 2004
Rut Depth - at Condition Year – Averaged from data collected in each Section
Traffic Year
Lane AADT

From this information the following data is computed:

Pavement Age in years
Equation 4.1: Age = Condition Year – Construction Year

Accumulated Traffic Passes (ATP), that is:
Equation 4.2: $ATP = \Sigma_I (AADT_I/L)*365$
Where; AADT = Average daily traffic from Regional Annual Traffic Volume Reports
I = construction year to condition year
L = number of lanes

Accumulated Traffic Passes at condition year in millions (ATP_{MI})
Equation 4.3: $ATP_{MI} = ATP/1,000,000$

Rutting Rates (inches per million accumulated traffic passes):
Equation 4.4: Traffic Rutting Rate (TR) = Rut Depth / ATP_{MI}

The Rutting Rate computation matches the B coefficient (slope) for the linear case of Equation 2.1. This value assumes that all pavement rutting is due to traffic passes independent of the type of vehicle, time of year and whether or not it has studded tires. It is therefore a simplification of a complex problem, but may be useful for estimation of mix related rutting problem development. This is the most simplistic model but is useful since standard deviation can be applied to it in order to determine confidence limits. Simply using the average of these values gives a 50% confidence (19). Adding a standard deviation to the averages would give an 84% confidence level (19). Though this seems better, it is probably too conservative to use higher confidence levels on a network basis.

Other rutting rate prediction models analyzed herein include curve-fitting methods to data placed in ATP_{MI} vs. Rut Depth charts. The Rutting Rate from Equation 4.4 simulates a linear prediction model with a zero Y-intercept. We also looked at allowing non-zero Y-intercepts and other functional models. The most practical of the other models considered is a power function. That is basically Equation 2.1 with a non-zero B coefficient.

The simplest model to apply is the average annual rutting rate with units of rut depth per year. This computation is shown in Equation 4.5 with units of inches per year.

Equation 4.5: Average Annual Rutting Rate (AR) = Rut Depth / Age

Statistics on AR can provide immediate information on how long particular mixes are lasting. Dividing into 0.50 inches (12.5 mm) into this rate gives the number of years a section is expected to last before rehabilitation project development is needed in general or on a particular section.

At the section level, Remaining Service Life (RSL) in years can easily be determined by subtracting the age from the number of years the section is expected to last. Equation 4.6 shows this computation for RSL.

Equation 4.6: RSL = (0.5/AR) – Age

For example, an 8-year old pavement with a 0.4-inch (10 mm) rut depth has an AR of 0.05 inches per year. As an example, the determination of RSL for a set of rut and age data is shown in Figure 4.1.

Similarly, a 10- year old pavement with a 0.7-inch (17.8 mm) rut depth has an AR of 0.07 inches per year. The RSL for this section is then:

RSL = (0.5/0.07) – 10 = <u>-3 years</u>

It should be noticed that Age is used twice above. If knowing the AR is not necessary, equations 4.5 and 4.6 can be combined to give:

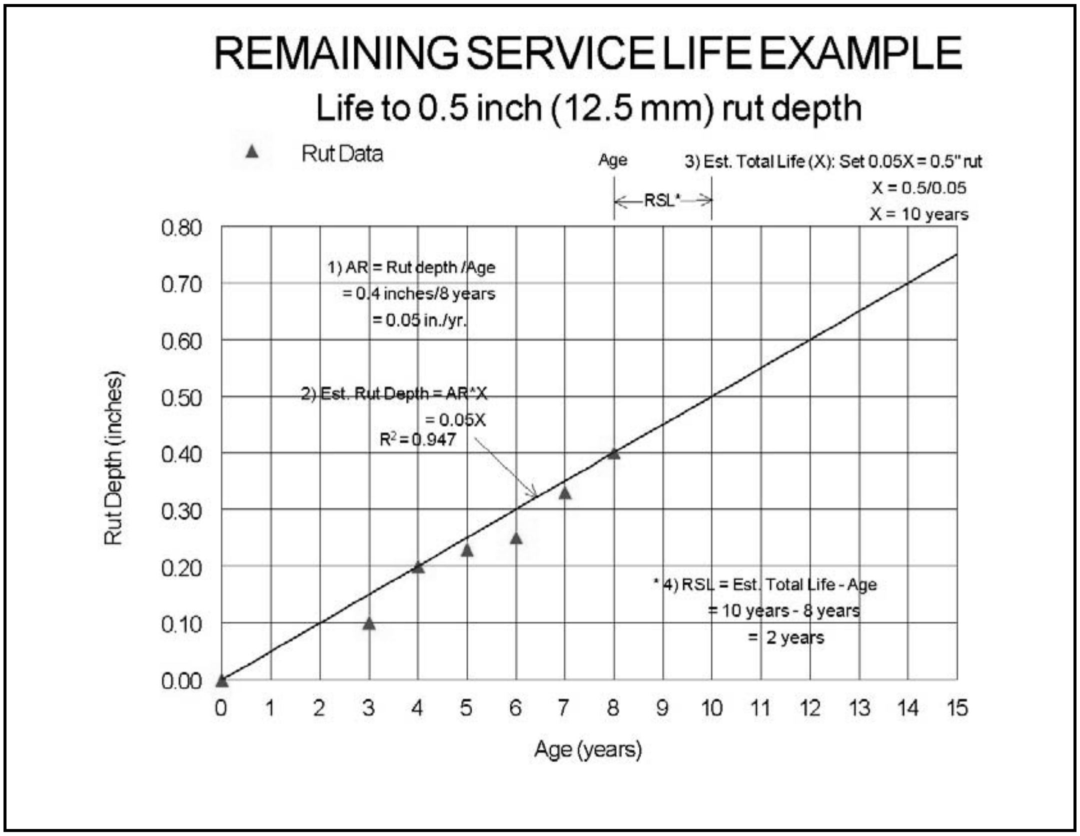


Figure 4. 1: Remaining Service Life Example

Equation 4.7: RSL = Age*((0.5/Rut Depth) – 1)

Since the section in the example above has a negative RSL, it is recommended for rehabilitation project development, if it has adjoining sections that, when combined, will make a reasonable project. If this is a single short section with a negative RSL and the adjoining sections have positive RSL values, it is recommended for maintenance patching.

The R^2 value for a given linear function in relation to a data set is determined by computing:

Equation 4.8: $R^2 = 1 - (SSE/SST)$

Where: $SSE = \Sigma(y_i - y_{pi})^2$ -This is called the Sum of the squares of the error (10).

$SST = \Sigma(y_i)^2 - \{[(\Sigma y_i)^2]/n\}$ = Sum of the squares of the mean (10).

y_i = Rut data of each year i

y_{pi} = Predicted rut depth using a function (model) for each year

n = number of years of rut data

Studded Tire Wear rate: Rut Depth per million-studded tired vehicle passes is computed as follows:

Equation 4.9: $STW = \text{Rut Depth} / (ATP_{MI} * P_{PV} * P_{ST} * PT_{STU})$

Where: P_{PV} = percent passenger vehicles (0.95 for this study)

P_{ST} = percent studded tire use (assumed at 0.25 for Fairbanks and 0.50 elsewhere)

PT_{STU} = percent time of year studded tire use (assumed at 0.5 or ½ the year)

Studded tired vehicle passes in computation of the Studded Tire Wear rate is done using the following assumptions: 5% Trucks; studded tire use for 6 months of the year; 50% stud use in the Southeast Region and Anchorage; 25% stud use in Fairbanks (25). Stud use percentages are approximate values obtained from parking lot counts done by AKDOT Regional Materials personnel (2). The computation for Studded Tire Wear rate is done as if *all* rutting on the section is a result of studded tire wear. Experience shows that this is not the case, so it is presented for information only.

Computing RSL for models using traffic as the independent variable is more difficult than those using age. Dividing the traffic-rutting rate (TR) into 0.5 inches gives the pavement life in terms of millions of traffic passes. If the result is greater than the accumulated traffic then its remaining service life is the excess amount. In order to get that result into something usable one has to predict the future average annual accumulated traffic for the section. One can simply divide the accumulated traffic by the age and thus get a value for the average annual accumulation of traffic over the historical life of the pavement. This does not account for traffic growth or decrease in the future.

Future traffic is unknown. In fact the accuracy of present traffic in a given lane is slightly questionable since the lane distribution may not be equal among the lanes. Recall that lane AADT estimates are simply obtained by dividing the total AADT by the number of lanes in a given section. However for research analysis, quite a lot of time is spent here trying to get correlations between rut depth and accumulated traffic. From a scientific point of view this is correct. For network level pavement analysis this may be too complicated and tending to errors.

4.1 Mix Data

The data for all Stone Mastic Asphalt, Plus Ride Asphalt and Superpave mixes were queried from the PM database and computations made as shown above. Data for dense graded Asphalt Concrete, Type II (3/4" max. size) was queried from the database for sections with at least 4000 lane AADT, sorted by Region and computations made. Data for dense grade Asphalt Concrete, Type I (1" max. size) for the Anchorage area was also obtained and analyzed.

Data for SMA with Hard Aggregates comes from a small test section that was constructed on the Seward Highway between 36th Avenue and Benson Boulevard in 1998. It was holding up fairly well, but unfortunately the pavement around it was failing and it was replaced in the summer of 2003.

The data for Portland Cement Concrete (PCC) is from rut measurement on a 12-year-old weigh-in-motion (WIM) slabs, two WIM slab sections on Minnesota Drive and the deck of Knick River Bridge #1, all near Anchorage. A rehabilitation project was constructed on the 12-year-old slabs in 2003 to update the data collection devices and manual rut measurements were taken at the time of lane closure for that project. Other PCC rut measurements are from the road surface profiler data.

All this information is presented in the Appendices.

5.0 Initial Models

The purpose of any rutting model presented herein is to predict the remaining service life of paved sections of roadway in Alaska. The remaining service life gives indication to managers as to how long a section of roadway will last until rehabilitation or reconstruction is required. It is very important that remaining service life estimates be as accurate as possible. Developing the most accurate and models for determining the remaining service life in terms of rutting is the intent of this section.

5.1 General Mix Comparisons

Table 5.1 presents summaries of computations shown in the Appendices regarding average rate of rutting and wearing. These models are determined by computing the rates of rutting for each section and then averaging them. The data is reported to three significant figures. That is the accuracy of the rut measurements. Note that these are all general estimates of rutting rates based on grouping of pavement types and areas. Further model analysis and development follows.

The average service life estimates in Table 5.2 are for information only and are not used in pavement management. These are computed from the rates shown in Table 5.1. Here the Service Life is that to reach 0.5-inch (12.5 mm) rut depth.

Table 5.1: Average Rutting and Wearing Rates for Various Mix Types and Locations			
MIX TYPE	**AVG. RATE OF RUTTING (inches/million vehicle passes)**	**AVG. RATE OF WEARING (inches per million studded tire vehicle passes)**	**AVG. ANNUAL RATE OF RUTTING (inches per year)**
Type I - Anchorage	0.033	0.139	0.071
Type II - Anchorage	0.038	0.160	0.080
Type II – Fairbanks	0.016	0.137	0.020
Type II – Southeast	0.034	0.113	0.048
Super Pave - Southeast (Egan Drive)	0.023	0.097	0.052
SMA with AC-5 - Arterials	0.032	0.135	0.072
SMA with AC-5 - Freeways	0.030	0.125	0.090
SMA with PG 58-28 Polymer Modified Asphalt - Arterials	0.047	0.197	0.088
SMA with PG 58-28 Polymer Modified Asphalt - Freeways	0.049	0.205	0.133
SMA with PG 64-28 Polymer Modified Asphalt - Arterials	0.035	0.148	0.070
SMA with AC-5 and hard aggregate[1]	0.018	0.074	0.061
Portland Cement Concrete[2]	0.021	0.088	0.050
Plus Ride[3]	0.018	0.074	0.034

Notes: 1-Only one test location
2-Includes three weigh-in-motion (WIM) sites and one bridge near Anchorage
3-Low number of samples and if you add for two projects that failed during construction, this has the smallest rate

Table 5.2: Average Rutting and Wearing Service Lives for Various Mix Types and Locations			
MIX TYPE	**AVG. RUTTING LIFE (millions of vehicle passes)**	**AVG. WEARING LIFE (millions of studded tire vehicle passes)**	**AVG. RUTTING LIFE (Years)**
Type I - Anchorage	15	4	7
Type II - Anchorage	13	3	6
Type II – Fairbanks	31	4	25
Type II – Southeast	15	4	10
Super Pave – Southeast (Egan Drive)[1]	22	5	10
SMA with AC-5 - Arterials	16	4	7
SMA with AC-5 - Freeways	17	4	6
SMA with PG 58-28 Polymer Modified Asphalt - Arterials	11	3	6
SMA with PG 58-28 Polymer Modified Asphalt - Freeways	10	2	4
SMA with PG 64-28 Polymer Modified Asphalt - Arterials	14	3	7
SMA with AC-5 and hard aggregate[1]	28	7	8
Portland Cement Concrete[2]	24	6	10
Plus Ride[3]	28	7	15

Notes: 1-Only one test location
2-Includes three weigh-in-motion (WIM) sites and one bridge near Anchorage
3-Low number of samples and if you add for two projects that failed during construction, this has the smallest rate

5.2 Section Analysis Examples

In this subsection we look at examples of ways that rutting models may be applied within a pavement management section. Actual rutting data is used to test the models.

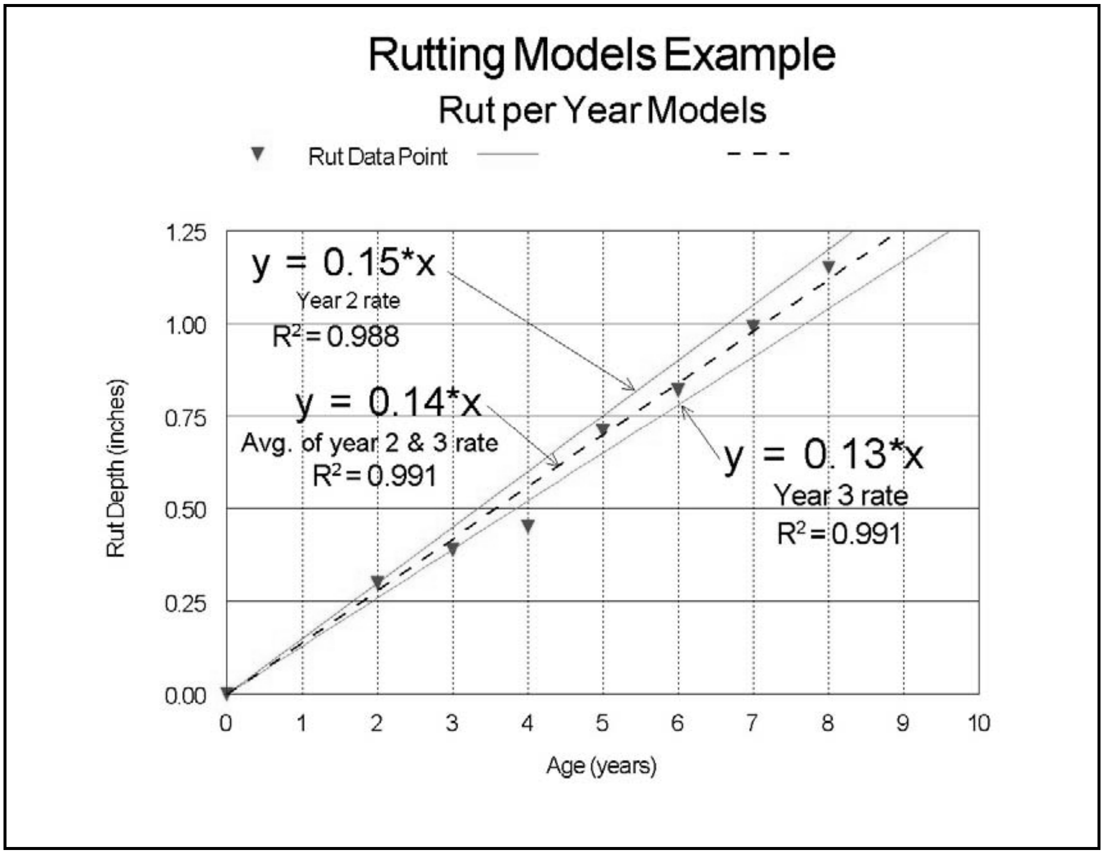


Figure 5. 2. 1: "Rut Depth vs. Mix Age" Example

Figure 5.2.1 shows examples of models to predict pavement failure based on actual data. Here we have to pretend that we are trying to predict failure before it happens, so we only have two or three years of data to work with. By simple linear interpolation of this data we find that the pavement reached 0.5-inch rut depth in approximately 4.2 years. Similarly, it reached the critical failure rut depth of 0.75 inches at approximately 5.4 years. All of these models predict the year of 0.75-inch rut and still predict year 4 for the 0.5 inch rut time. The running average of year's 2 and 3 rates (0.14 inches per year) is excellent here.

Using the same data, Figure 5.2.2 shows the rut depths as a function of accumulated traffic passes. The data shows that the 0.5-inch rut depth is at 15.3 million traffic passes and 0.75-inch rut depth is after approximately 20.7 million traffic passes. An accurate prediction model for 0.75 inches of rut here is 0.036 inches per million traffic passes. The models based on two and three years of data predict failure too soon. From this, it can be seen that using a running average, like in Figure 5.2.1, would still underestimate the allowable traffic. If the fourth year data point is used, one would decide that the pavement will last about 20 million more traffic passes before it has a 0.75 inch rut. However, the data shows it actually only survived for approximately 5 million more passes. Note that a road with 10,000 ADT will have 3.65 million passes in a year. Being 5 million passes off in life prediction would be off over a year in that case.

Adding another level of complication - lets look at using linear models with y-intercepts. Note that it is not practical to use interpolation models for each section of roadway. Simple rate models are much easier to automate and do not require curve-fitting programs. Figure 5.2.3 shows the same example data with linear models as a function of traffic. These models generally do better than the simple rate models in Figure 5.2.2. However, since we are missing rut data for year 1, a two-year interpolation function would just be that same as in Figure 5.2.2. Thus this model does not get very accurate until the 4th year - that in this case is only 0.2 years from the 0.5-inch rut.

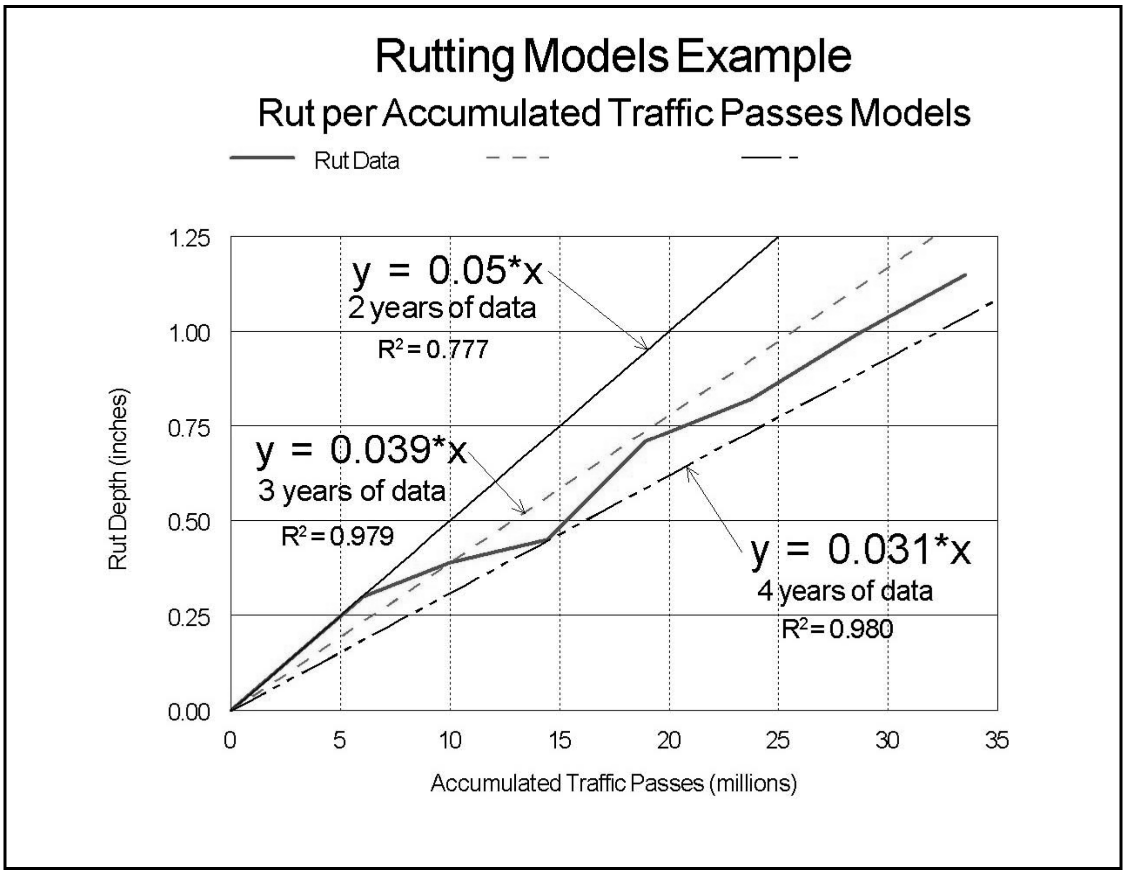


Figure 5. 2. 2: "Rut Depth vs. Accumulated Traffic Passes" Exmaple

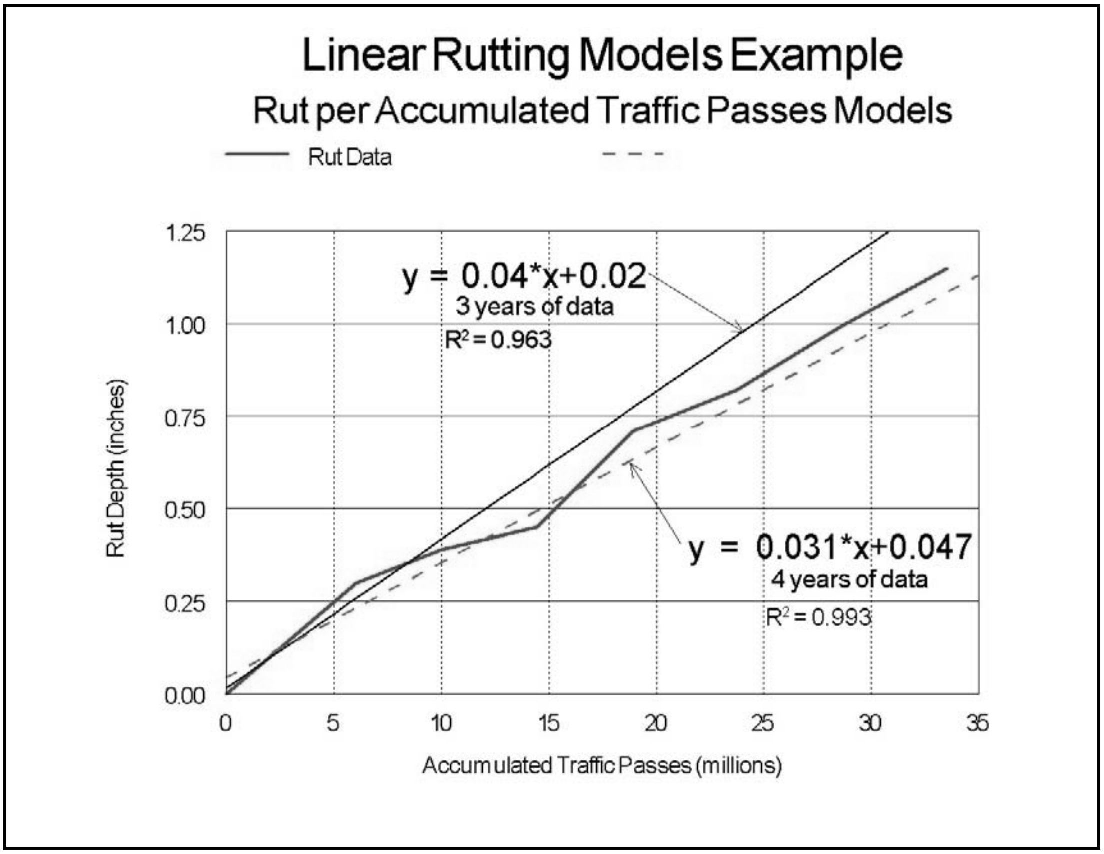


Figure 5.2.3: Linear Rutting Models

We could also use power functions as in the PERS pavement management system program. This type of function is also impractical for use on a section basis. Figure 5.2.4 shows the same data as in Figures 5.2.2 and 5.2.3 with power functions used as prediction models. Here we need at least three points to define the curves, so have only 3 and 4-year models to look at prior to failure of the section. Here the 3-year model does a better job of predicting the point of 0.75-inch rut.

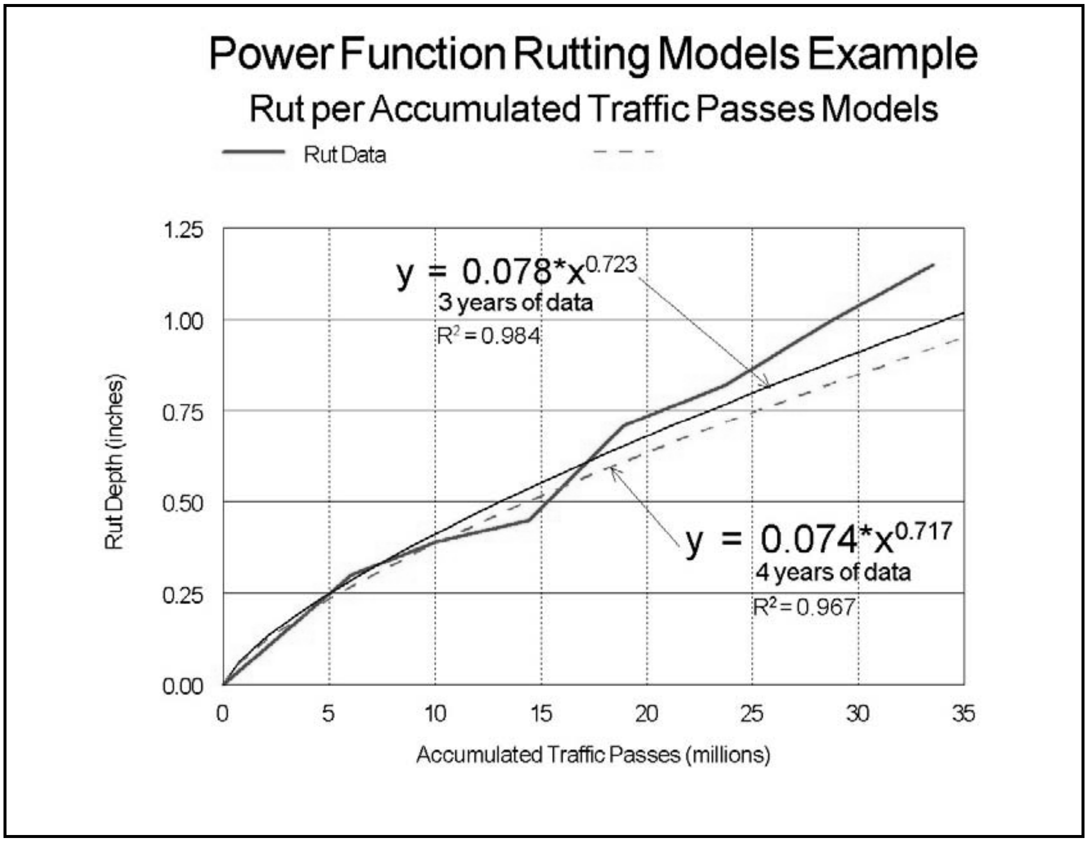


Figure 5.2.4: Power Function Rutting Models

Using traffic data for prediction modeling also requires manual look up and data entry of the traffic data. Annual Traffic Volume Reports are published in hard copy or available on-line, therefore traffic data entry into the pavement management database is not automated. The average annual daily traffic (AADT) data presented in the Annual Traffic Volume Reports is often generated by data collected for a limited time, i.e., much less than the full year. This data is for both directions and all traffic on the roadway at the particular point of collection. The traffic level we have to look at for prediction model analysis is in the lane we collected rut data. Thus for a 4-lane roadway, we divide the AADT by 4 to get an estimate of the average daily traffic in that lane. Therefore, using traffic is sometimes impractical and inaccurate.

6.0 Curve Fitting Models

The sections below present models developed by linear interpolation of the rut depth data as a function of accumulated traffic level estimates. That is, accumulated traffic data is plotted on an X- axis with measured rut depths on the Y-axis. Then 3 different model types are fitted and analyzed. The models considered herein are: 1) linear with zero intercept; 2) linear with a Y-intercept and; 3) power function models.

To compare suitability of the models, the correlation values (R^2), mean absolute values of the error and standard deviations (10,19) of the absolute values of the errors are computed. The R^2 values give an indication of the degree of relationship between the X and Y values in the data, with a unity value being ideal (10, 19). In this work, a model with an R^2 value less than 0.70 is considered unacceptable. In fact it is shown that even that level of correlation is not as excellent as we would like.

Errors in the models are analyzed by computing the mean of the absolute error. That is:

Equation 6.1 Mean of Absolute Error = $\Sigma_I|Y-Y_I|/N$

Where: Y = model predicted rut depth for a given section and time, I

Y_I = measured rut depth for model

|| = Absolute Value operation, making a positive number

N = number of sections and points analyzed

The standard deviation of the absolute error is a measure of the variance of the error. It is determined by taking the standard deviation (19) of the set of absolute values of the error ($|Y-Y_I|$). A range of values between zero and approximately 0.75 inches (19 mm) is sought. It is suggested that if either of these values (Mean of Absolute Error and Standard Deviation of the Absolute Error) are over 0.075 inches (1.9 mm) then the model has questionable accuracy.

It should be mentioned here that rutting might be due to different causes. Components of this rutting might include: studded tire wear, deformation of the paving mix (except for Portland Cement Concrete), and deformation of the supporting layers.

6.1 AC Type I – Anchorage

Use of Type I mix is discontinued and the few remaining are mostly on arterial routes. Thus the model will not be split between Freeways and Arterial. Table 6.1 presents results from analysis of data given in Appendix A. There are 41 sections and 205 data points analyzed here, including ones that have previously failed. Rut depths had to be estimated for prematurely failed sections.

Table 6.1: Anhorage Area Type I Mix Rutting Model Comparison					
MODEL TYPE	**Models** X = traffic passes in millions Y = rut depth in inches	**R^2 value**	**MEAN OF ABSOLUTE ERROR (IN.)**	**STD DEV. OF THE ABSOLUT E ERROR (IN.)**	**NOTE**
Linear	Y = 0.027X	0.492	0.16	0.14	not good
Linear with intercept	Y = 0.021X + 0.12	0.561	0.13	0.13	not good
Power Function	$Y = 0.109X^{0.519}$	0.314	0.13	0.12	not good

The mean of the absolute error tells you that using a particular model on the average you will be off by that amount. It is the 50% confidence level. The standard deviation of the absolute error tells you that for 84% confidence you will be off the measured rut by the sum of the mean and the standard deviation. That is, for example, with the linear model you will have to add or subtract 0.3 inches (0.16 + 0.14) to whatever you compute using the model to get your confidence in the result to 84%.

None of the models are acceptable for general rut predictions. Figure 6.1.1 shows the data plotted along with these models. Though the rut depth is most dependent on traffic levels, there are many variables involved here that are difficult, if not impossible to quantify. For example, to broadly name a few: quality of construction practices, quality of inspection and acceptance, quality of materials us in pavement, traffic pattern variations and transverse wandering, traffic volume variations, annual seasonal changes, quality of traffic data quality, quality of profiler driving along the exact same line year after year and properly chosen pavement management sections. However, other means of rut prediction are considered in subsequent sections. The data used in model development is in Appendix A.

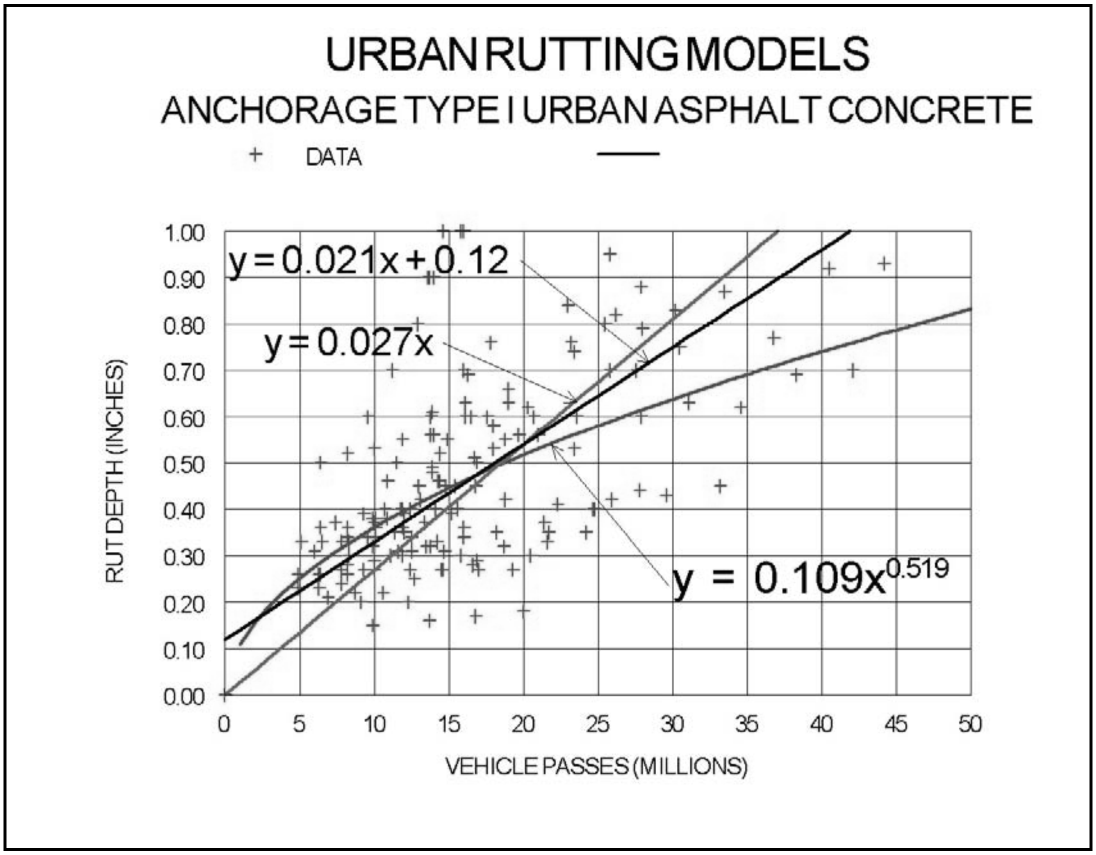


Figure 6.1.1: Models for Type I AC - Anchorage

Figure 6.1.1 may make one think the data is inaccurate due to the apparent scatter. However, the reader must keep in mind that each of these data points is from a unique section at a particular stage in its life.

Figure 6.1.2 shows the same data as Figure 6.1.1 with several of the section's data linked by lines. This shows the rutting progression for those individual sections as examples. Each section has its own set of conditions that contribute to its performance. The point here is that if any kind of accuracy is desired, prediction models cannot be generalized to even a certain mix type. They must be developed for individual sections with similar characteristics.

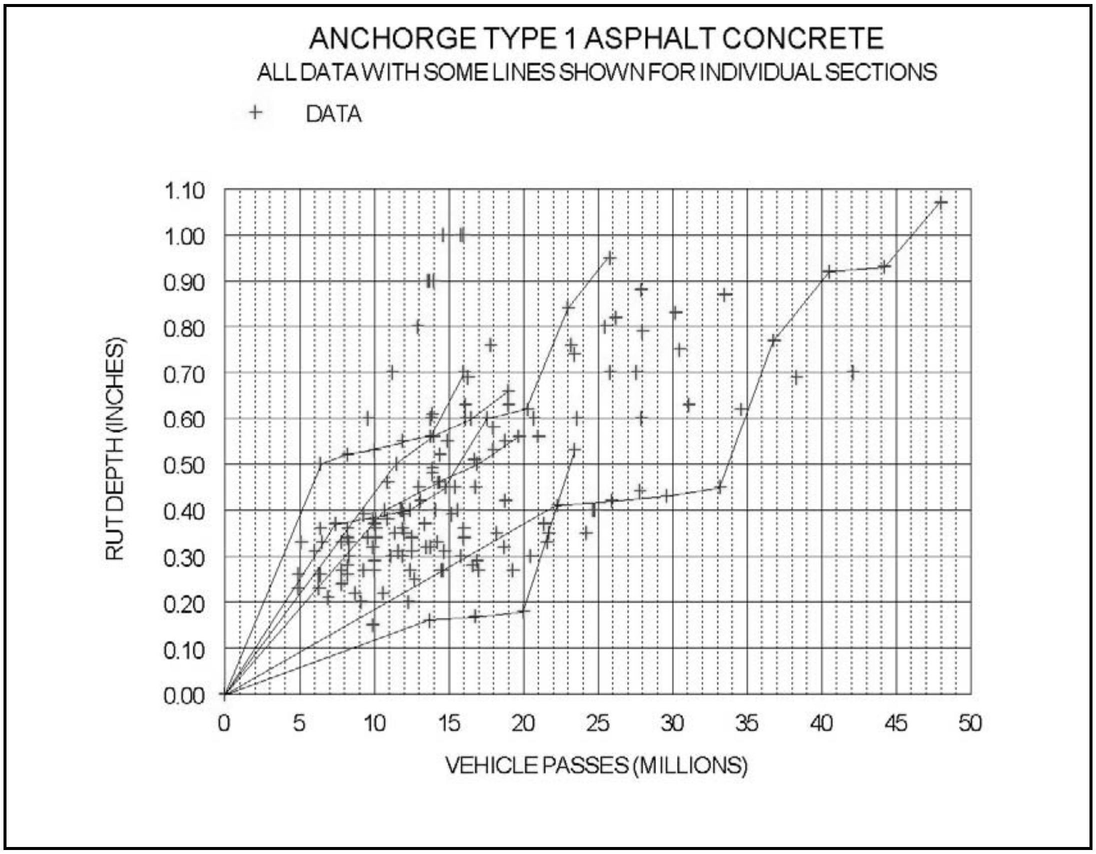


Figure 6.1.2: Type I AC – Anchorage Mixes

6.2 AC Type II – Anchorage

As with Type I, Type II mix is not either currently used on high traffic urban areas in the Central Region. Many of the areas formerly paved with Type II mixes are rehabilitated with SMA. Therefore some of the data used to analyze rutting rates for this mix is from historically failed sections. Some rut depths were estimated from failed sections, though traffic data is available for the time frames. Very little Type II mix remains on high speed areas. Therefore, separation into freeway and arterial use is not necessary. Table 6.2 presents development and comparisons of proposed rut prediction models based on 128 points in 79 sections with rut data.

Figure 6.2.1 shows the data along with the various models. Here the average rate model is overly conservative and apparently inaccurate at higher traffic levels. The power function is unconservative and especially inaccurate at low traffic levels. The linear model with the y-intercept has the best R^2 value. Similar comments as for Section 6.1 apply here. Appendix B contains backup information and data.

Table 6.2: Anhorage Area Type II Mix Rutting Model Comparison					
MODEL TYPE	**<u>Models</u> X = traffic passes in millions Y = rut depth in inches**	**R^2**	**MEAN OF ABS ERROR (IN.)**	**STD. DEV. OF THE ABSOLUTE ERROR (IN.)**	**NOTE**
Linear	Y = 0.028X	0.596	0.28	0.23	Not good
Linear with intercept	Y = 0.023X + 0.143	0.646	0.24	0.20	Not good
Power Function	$Y = 0.408X^{0.205}$	0.079	0.21	0.14	Not good

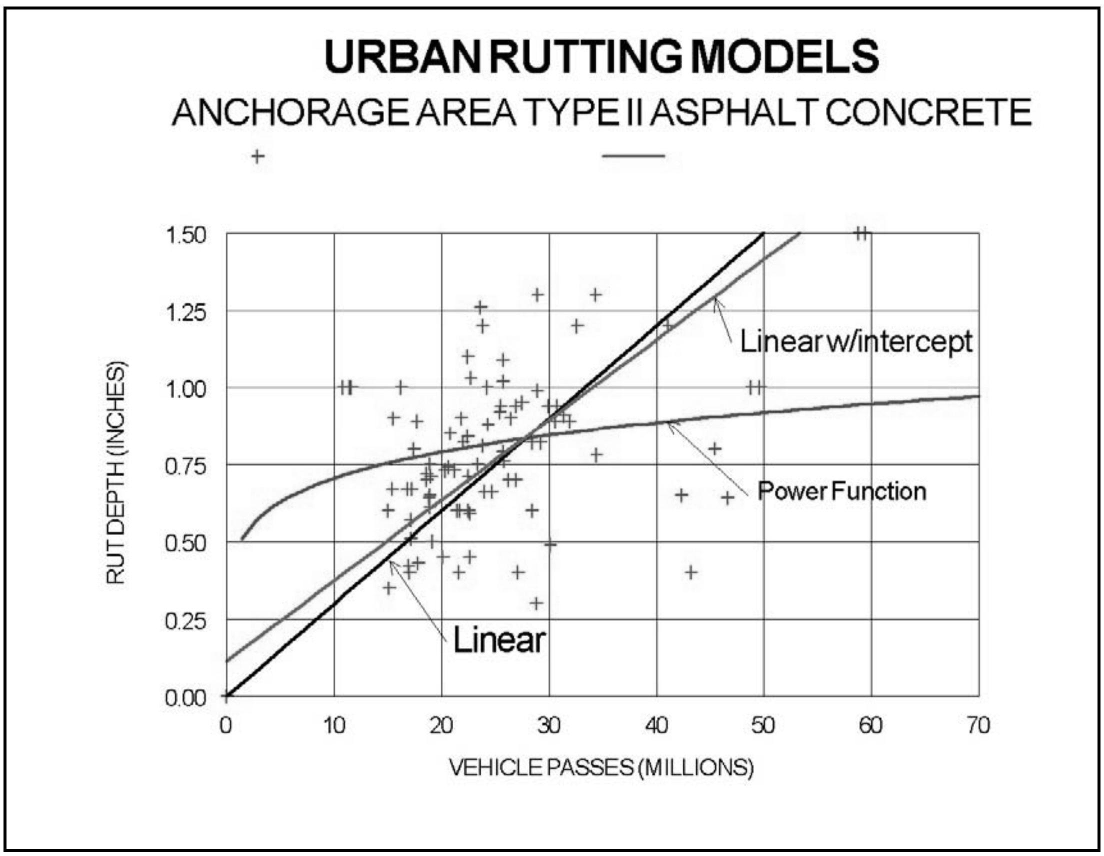


Figure 6.2.1: Models for Type II AC – Anchorage Mixes

6.3 AC Type II – Fairbanks

In the Northern Region of Alaska, traffic levels meeting the minimum criteria of 4000 AADT (5) per lane are only found in Fairbanks. The highest recorded lane AADT (5)in the Fairbanks area is slightly over 8,500. Dense graded mixes used in the area are typically ¾" maximum size mixes and thus termed Type II here.

Table 6.3 presents comparisons between models to predict rutting in this area. A total of 234 points in 64 pavement sections are analyzed. The maximum AADT for a 12-year life is greater than the maximum-recorded lane AADT. Premature failure due to rutting and wear is not a major problem in urban areas of the Northern Region.

Table 6.3: Fairbanks Area Type II Mix Rutting Model Comparison

MODEL TYPE	Models X = traffic passes in millions Y = rut depth in inches	R^2 value	MEAN OF ABS ERROR (IN.)	STD.DEV. OF THE ABSOLUTE ERROR (IN.)	NOTE
Linear	Y = 0.011X	0.233	0.12	0.134	No good
Linear with intercept	Y = 0.008X + 0.097	0.298	0.12	0.118	No good
Power Function	$Y = 0.141X^{0.223}$	0.045	0.10	0.123	No good

Figure 6.3 shows the plotted traffic and rut data (from appendix C) along with the prediction models. It can be seen that the data is scattered and the prediction models widely varied between the Linear and the Power Function models. Based on reasonableness none of the models will fit this data..

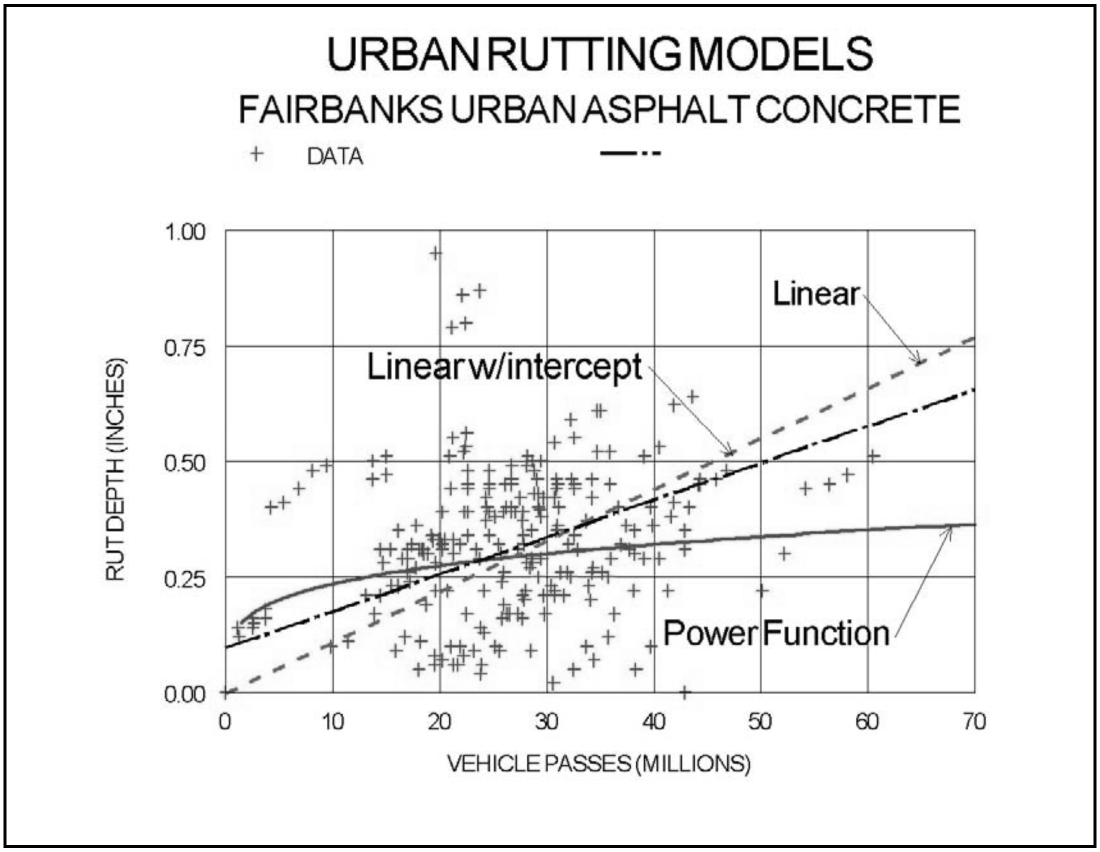


Figure 6.3: Models for Type II AC – Fairbanks Mixes

One might be tempted to conclude that Fairbanks has better aggregates than elsewhere in Alaska. However, this is not the case. The aggregates around Fairbanks typically have L.A. Wear values in the 15-25 range and Nordic Abrasion Values in the13-15 range (18). Aggregates in the Anchorage area typically have L.A. Wear values in the 12-15 range and Nordic Abrasion Values in the 10 to 12 range (18). Thus, aggregates in the Anchorage area are at least as high of a quality as the Fairbanks aggregate, yet the wear rates are much higher in Anchorage.

Fairbanks has about ½ the studded tire use of Anchorage. Fairbanks has much lower traffic levels than Anchorage. Anchorage has a warmer and wetter climate than Fairbanks. Winter thaws are few in Fairbanks, but Anchorage will have many thaws, leaving bare and/or wet road surfaces that seem to let studded tire wear occur at faster rates. When Fairbanks drivers are running on snow and ice pack, the Anchorage drivers are running on bare pavement much of the winter.

The Southeast Region roads also sustain higher percentages of studded tire traffic and have more wet/bare situations in winter. There, the aggregates are typically of even lower quality. Thus at even lower traffic levels, the Southeast Region can sustain relatively high rates of rutting.

6.4 AC Type II – Southeast

In the Southeast Region, traffic levels meeting the minimum criteria of 4000 AADT per lane are only found in Juneau, Ketchikan and Sitka. The highest recorded lane AADT (7) in the Southeast Region is 9,747. Dense graded mixes used in the area are typically ¾" maximum size mixes and thus termed Type II here. Table 6.4 presents the various models for Southeast Type II mixes. There are 115 rut measurements and traffic data points in 60 pavement sections (Appendix D).

No profiler rut data was collected in the Southeast Region in 2004. Therefore this presentation includes data for the years 1999 to 2003.

Table 6.4: Southeast Region Type II Mix Rutting Model Comparison

MODEL TYPE	Models X = traffic passes in millions Y = rut depth in inches	R^2 value	MEAN OF ABS ERROR (IN.)	STD.DEV. OF THE ABSOLUTE ERROR (IN.)	NOTE
Linear	Y = 0.024X	0.276	0.15	0.182	Not good
Linear with intercept	Y = 0.018X + 0.128	0.369	0.16	0.145	Not good
Power Function	$Y = 0.062X^{0.661}$	0.289	0.14	0.162	Not good

Here, as before, other means must be developed to predict rutting. Figure 6.4 shows that many Southeast Type II sections fail after little over 10 million vehicle passes yet all the models show it would remain much longer.

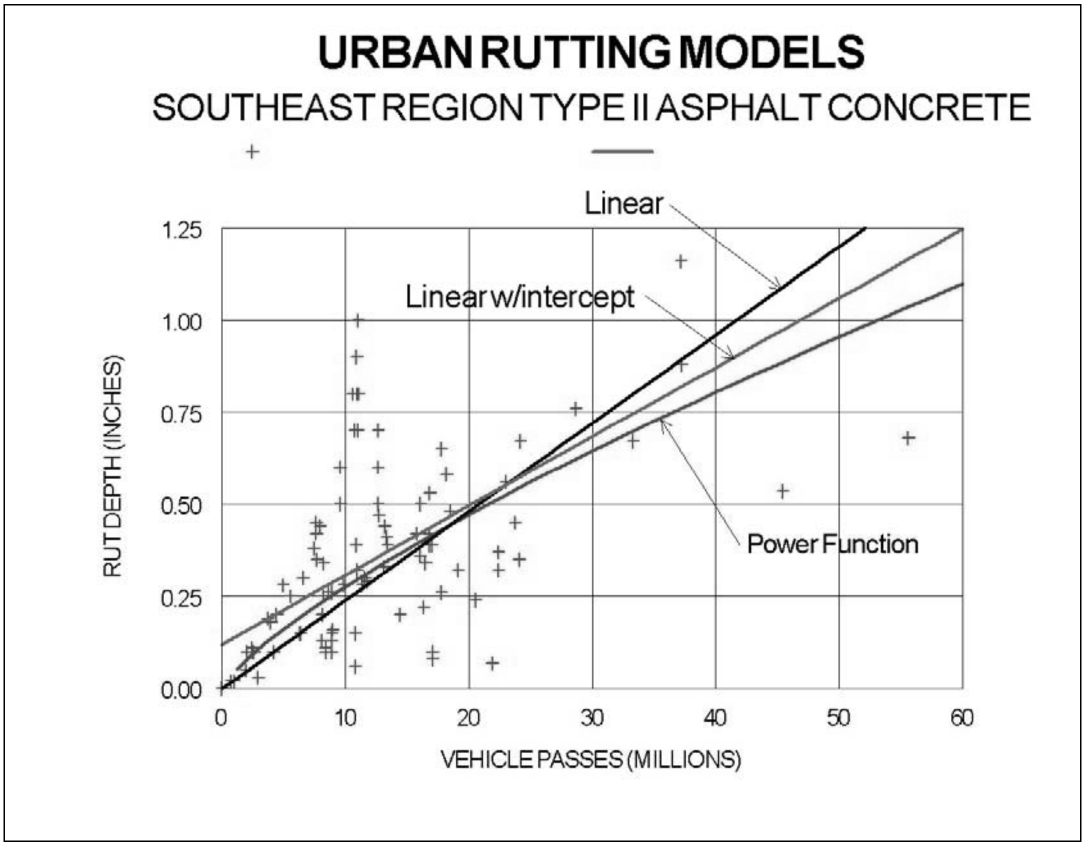


Figure 6.4: Models for Type II AC – Southeast Mixes

6.5 Superpave AC - Southeast

This section presents the analysis for Egan Drive and Lemon Road Superpave mixes. Egan Drive is a divided four-lane highway with some stoplights. Lemon Road is a two-lane road with a stop light at its junction with Egan Drive – called Vanderbilt. Traffic levels in these twenty pavement management sections range from approximately 4400 to 7500 vehicles per day per lane (6, 7).

Superpave mixes are used in the Southeast Region since 1999. In 2000, Juneau's Egan Drive was paved with a Superpave mix. It was one of the most problematic sections of road in the Southeast Region in terms of rutting and wearing. Several different mixes have been tried on Egan Drive through the years, with none lasting more than about 5 years. Lemon Road, another relatively high traffic urban road in Juneau was paved with Superpave mix in 2001. At present the Superpave mix with imported hard aggregates and polymer modified asphalt (PG64-28) seems to have cured the problem of premature failure.

Table 6.5 shows the analysis results for various prediction models. Most show that the Superpave mix will not fail prior to the desired minimum design life of 12 years.

This analysis contains 20 data points for 20 sections that have Superpave wearing course at least two years in age. The data only goes to 2003 since profiling was not done in the Southeast Region in 2004.

Table 6.5: Southeast Region Super Pave Mix Rutting Model Comparison					
MODEL TYPE	**Models** **X = traffic passes in millions** **Y = rut depth in inches**	**R^2 value**	**MEAN OF ABSOLUTE ERROR (IN.)**	**STD. DEV. OF THE ABSOLUTE ERROR (IN.)**	**NOTE**
Linear	Y = 0.023X	0.875	0.03	0.022	Good
Linear with intercept	Y = 0.025X - 0.008	0.875	0.03	0.023	Good
Power Function	$Y = 0.013X^{1.292}$	0.449	0.03	0.023	Not Good

None of these sections have failed and the data is a maximum of 3 years old (Appendix E), thus our confidence in the accuracy of these models is not high. The failure point is a distant extrapolation of the models. Figure 6.5 show the models plotted with the data. The linear models appear as the most reasonable at this time.

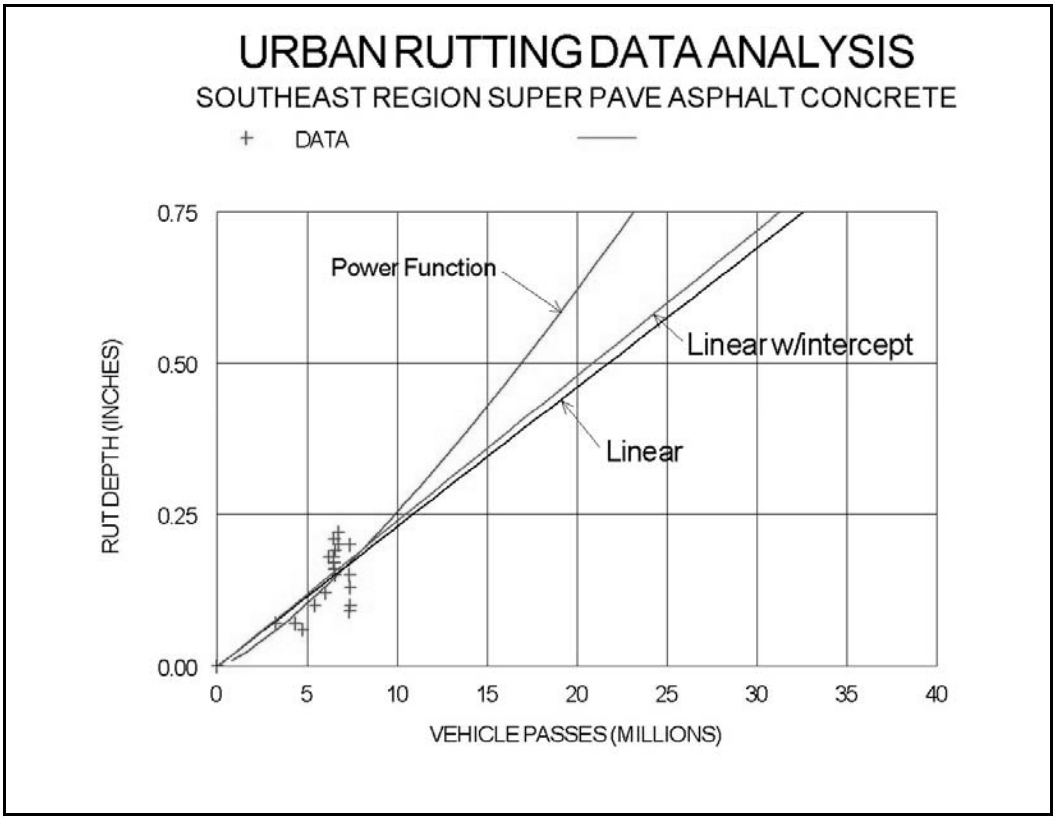


Figure 6.5: Models for Superpave AC – Southeast Mixes

6.6 SMA for Arterials and Freeways - Anchorage

Rutting and studded tire wear rates are generally dependent on traffic speeds. This fact should be taken into consideration in order to refine the prediction models. In the following analysis, Stone Mastic Asphalt (SMA) sections in Anchorage were divided into Arterial and Freeway SMA. The Arterial sections are in areas of stop and go traffic and average speeds less than 55 mph. The Freeway sections have average vehicular speed of 55 mph or greater.

6.6.1 Anchorage Arterial and Freeway Rutting of SMA with AC-5 Asphalt

Data on SMA with AC-5 asphalt cement are presented in appendix F. Table 6.6.1 presents analysis results from three different model types, comparing data from Arterials, Freeways and all data for SMA with AC-5 (PG52-28) sections. This includes data up to 2004. The first models are linear with zero y-intercepts determined using MS Excel Charts. The second types are linear models with y-intercepts. The third are power function models. The R-squared and average absolute error values are shown for comparison too.

To create Table 6.6.1, a total of 77 sections area were analyzed. That includes 38 on Arterials and 39 on Freeway sections. For the years considered, there are 233 data points for arterials and 168 data points for freeways with SMA and neat asphalt. Table 6.6.1 shows that average absolute errors (which may be considered a measure of accuracy of the models) are not superior. As before, none of these generalized models work very well.

These models do not show a great difference in performance between freeways and arterials. The SMA on arterials are found to rut at a slightly higher rate than freeways but the expected life to a 0.5-inch rut depth is still within 1.5 million traffic passes. That is less that one-year's traffic for any sections with lane AADT greater than 4100.

Table 6.6.1: Anchorage SMA with PG52-28 – High vs Low Speed Model Comparison

Traffic	**<u>Models</u>** **X = traffic passes in millions** **Y = rut depth in inches**	**R^2 value**	**MEAN OF ABSOLUTE ERROR (IN.)**	**STANDARD DEVIATION OF THE ABSOLUTE ERROR (IN.)**	**NOTES**
Arterials	Y = 0.03X	0.661	0.09	0.101	Errors high
Freeway	Y = 0.025X	0.640	0.10	0.103	Errors high
Arterials	Y = 0.026X + 0.053	0.669	0.10	0.092	Errors high
Freeway	Y = 0.023X + 0.037	0.648	0.10	0.097	Errors high
Arterials	$Y = 0.05X^{0.803}$	0.602	0.09	0.097	Errors high
Freeway	$Y = 0.052X^{0.729}$	0.487	0.09	0.105	Errors high

Figures 6.6.1 and 6.6.2 show the SMA data and the prediction models for arterial and freeway sections, respectively.

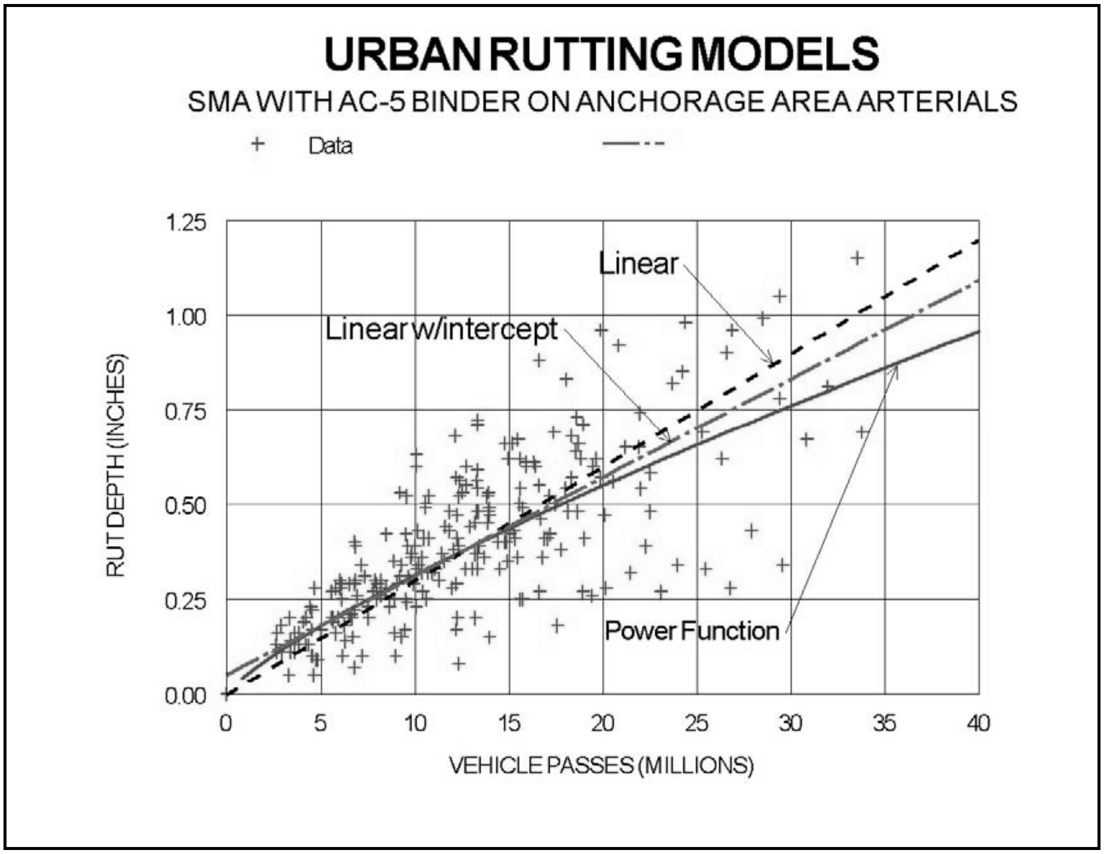


Figure 6.6.1: Models for SMA with AC-5 Binder – Anchorage Arterial Mixes

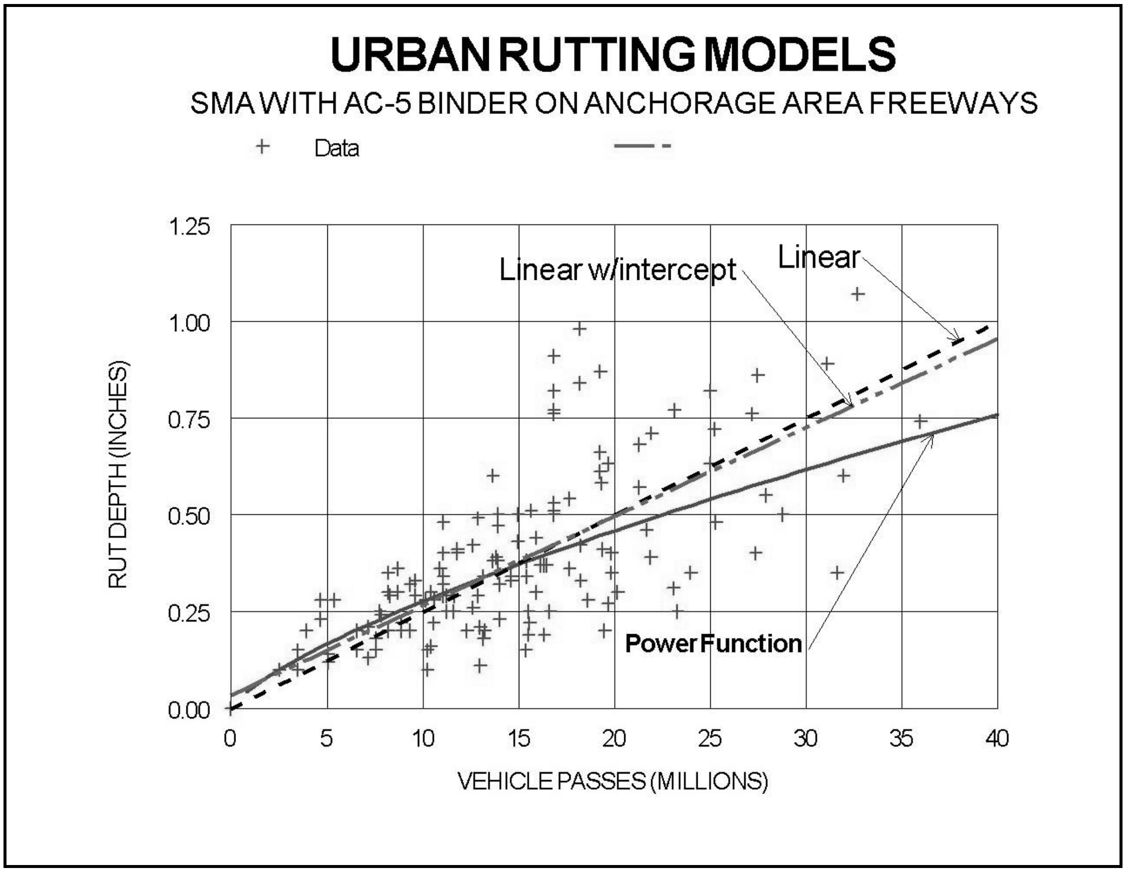


Figure 6.6.2: Models for SMA with AC-5 Binder – Anchorage Freeway Mixes

An application of these prediction models might be to keep the point data and use the models for prediction ahead from the data point. That is, the predicted ruts will not especially follow the prediction model curves shown on the charts but will follow the slope of the model curves ahead from each data point as a function of predicted future traffic.

6.6.2 Anchorage Arterial and Freeway Rutting of SMA with PG58-28 PMA

Appendix G includes data on Anchorage SMA with polymer modified asphalt cement (PMA). Table 6.6.2 presents prediction models for polymer modified SMA pavement sections using PG58-28 PMAs. The data analyzed include 95 data points in 29 sections on Arterials, and 175 data points in 55 sections on Freeways.

Table 6.6.2: Anchorage SMA with PG58-28 PMA - High vs Low Speed Model Comparison					
Traffic	**Models** **X = traffic passes in millions** **Y = rut depth in inches**	**R^2 value**	**MEAN OF ABSOLUTE ERROR (IN.)**	**STANDARD DEVIATION OF THE ABSOLUTE ERROR (IN.)**	**NOTES**
Arterials	Y = 0.041X	0.746	0.05	0.059	OK
Freeway	Y = 0.044X	0.749	0.05	0.073	OK
Arterials	Y = 0.037X + 0.027	0.759	0.06	0.050	OK
Freeway	Y = 0.041X + 0.029	0.796	0.06	0.064	OK
Arterials	$Y = 0.089X^{0.585}$	0.400	0.05	0.054	Not good
Freeway	$Y = 0.099X^{0.617}$	0.369	0.05	0.063	Not good

Figures 6.6.3 and 6.6.4 show the models and data plotted for arterials and freeways, respectively.

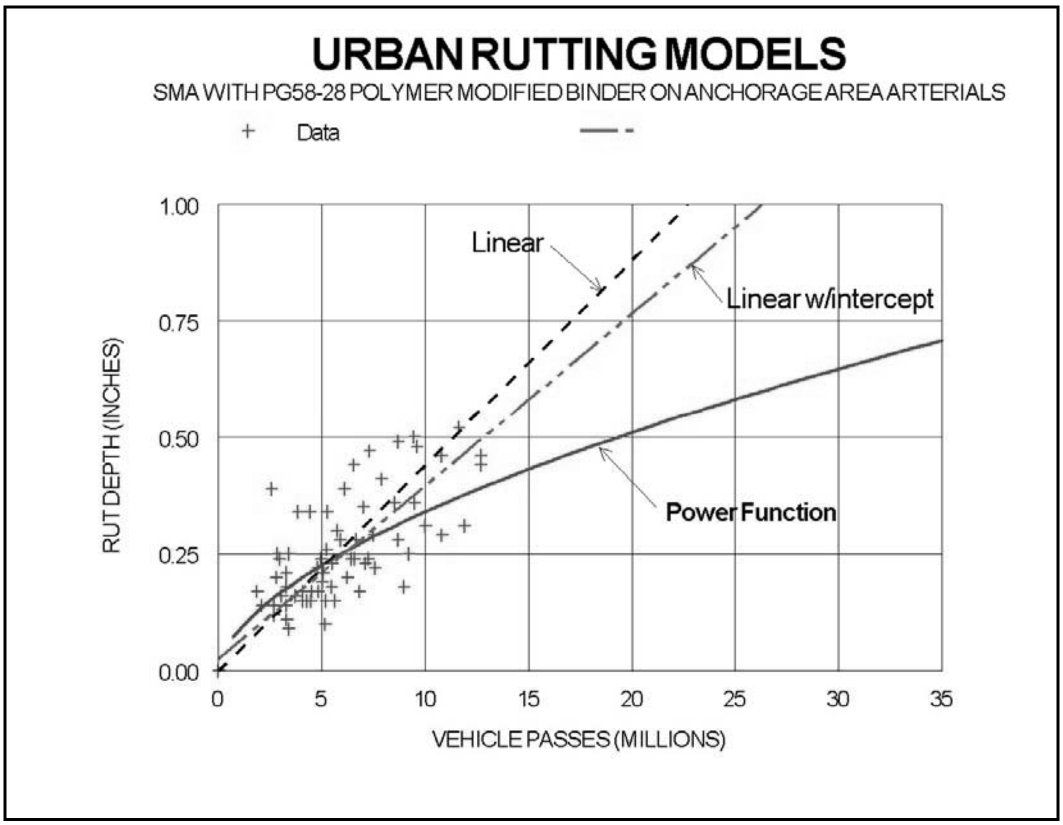


Figure 6.6.3: Models for SMA with PG58-28 PMA – Anchorage Arterial Mixes

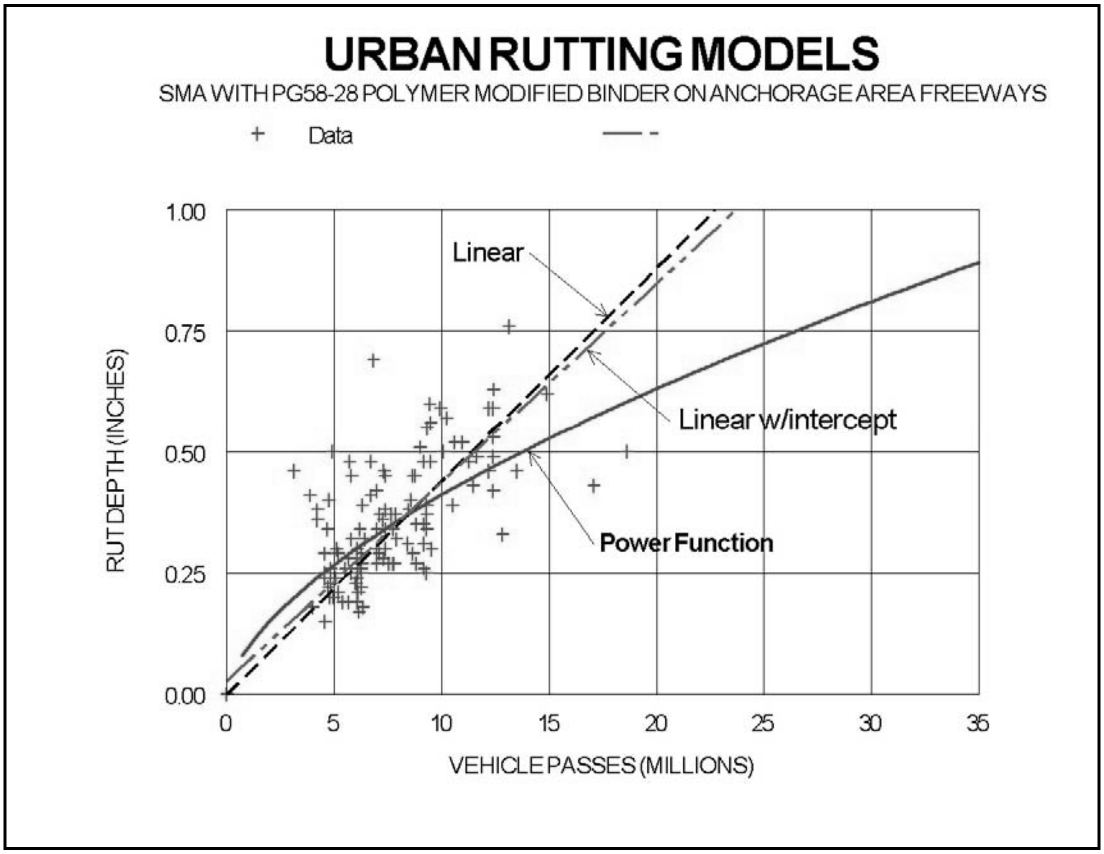


Figure 6.6.4: Models for SMA with PG58-28 PMA – Anchorage Freeway Mixes

6.6.3 Anchorage Arterial Rutting of SMA with PG64-28 PMA

A limited number of sections were recently constructed in Anchorage using SMA with PG64-28 PMA, which contains higher levels of polymer than PG58-28, making it stiffer at higher temperatures. Two areas, constructed in 1999 and 2000, are pavement management sections that are profiled annually for rut measurements and ride quality. Table 6.6.3 shows the results of analysis of 14 data points on these three sections that are both on arterial routes.

Figure 6.6.5 shows the data and models plotted together. Despite the limited data, it should be noticed that the SMA with PG64-28 binder has improved rutting rates over the SMA with PG58-28 asphalt. Again linear methods of interpolation are superior to the power function. The data used in this analysis are found in Appendix H.

Figure 6.6.5 shows two distinct apparent groups of data, which the models attempt to interpolate. The group of data closer to the bottom is for two sections on C Street in Anchorage. The higher group is from a section on Minnesota Drive, constructed a year later with a different project. The data shows the variation in performance of the same type of mix depending on its location and perhaps the particular trafficking, construction materials and methods used.

Table 6.6.3: SMA with Polymer Modified PG64-28 Asphalt - Anchorage					
Traffic	**<u>Models</u> X = traffic passes in millions Y = rut depth in inches**	**R^2 value**	**MEAN OF ABSOLUTE ERROR (IN.)**	**STANDARD DEVIATION OF THE ABSOLUTE ERROR (IN.)**	**NOTES**
Arterials	Y = 0.033X	0.666	0.05	0.050	Fair
Arterials	Y = 0.031X + 0.014	0.670	0.05	0.046	Fair
Arterials	$Y = 0.062X^{0.656}$	0.315	0.05	0.050	R^2 low

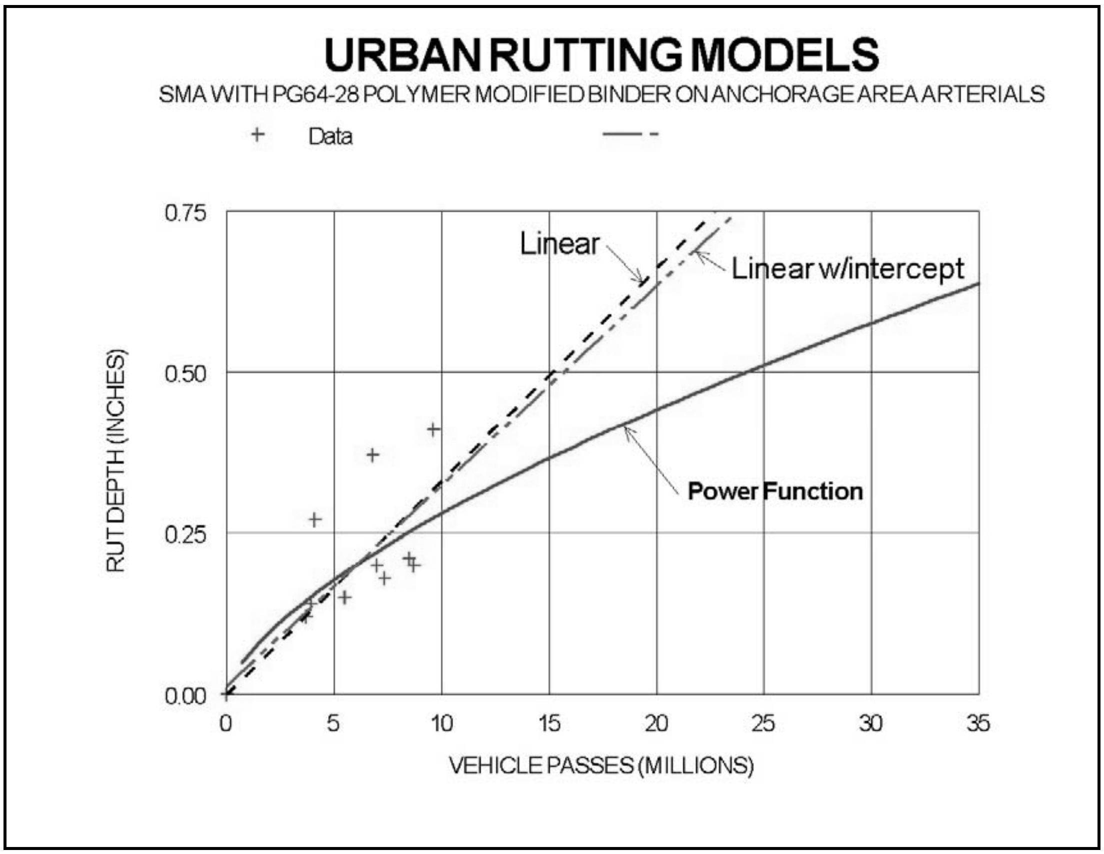


Figure 6.6.5: Models for SMA with PG64-28 PMA – Anchorage Arterial Mixes

6.6.4 Anchorage Rutting of SMA with Hard Aggregate

A test section was constructed in 1998 with hard aggregate SMA in the northbound lanes of the Seward Highway between 36th Avenue and Benson Boulevard in Anchorage. The aggregates for the test were imported from Cantwell, approximately 200 miles north of Anchorage. This test section was approximately 500 feet in length, covering all three traffic lanes. Neat AC-5 viscosity graded binder was used in the mix. Adjoining sections were constructed using the same basic gradation and asphalt cement with aggregates available in the Anchorage area.

This section of road has some of the highest traffic volumes in Alaska, sometimes reaching over 10,000 AADT per lane (4). By 2003, the adjoining pavement had failed in rutting and was replaced with SMA with polymer-modified asphalt cement. Rut measurements were taken on the test section in the fall of 2000, 2001, 2002 and in May of 2003. These rut measurements were taken incidentally to Contract profiling except for May 2003, when they were done by the Dynatest RSP owned and operated by the Alaska DOT&PF Central Region.

Table 6.6.4 shows analysis results of the limited data from this test section. Good correlations were obtained, as indicated by the R^2 values being close to one. This looks fairly promising. However, it is noticed that even the most unconservative models do not predict that this mix will last the design life of 12 years at the traffic levels found in this section.

The final average rut measurement in this section was only 0.26 inches (6.6 mm). Adjacent SMA paving was failed with ruts of over 0.75 inches (19 mm).

Figure 6.6.6 presents the models plotted along with the data. The linear models appear to be slightly better fits, though all are good. Unfortunately, this section was removed. The data at this point in time shows that further investigation is needed. More use of hard aggregate SMA may be the answer to premature rutting failures in urban Alaska.

Table 6.6.4: Anchorage Hard Aggregate SMA Rutting Model Comparison

MODEL TYPE	**Models** **X = traffic passes in millions** **Y = rut depth in inches**	**R^2 value**	**MEAN OF ABSOLUTE ERROR (IN.)**	**STD. DEV. OF THE ABSOLUTE ERROR (IN.)**	**NOTES**
Linear	Y = 0.018X	0.993	0.01	0.008	Good
Linear with intercept	Y = 0.018X - 0.005	0.993	0.01	0.004	Good
Power Function	$Y = 0.011X^{1.19}$	0.986	0.01	0.006	Good

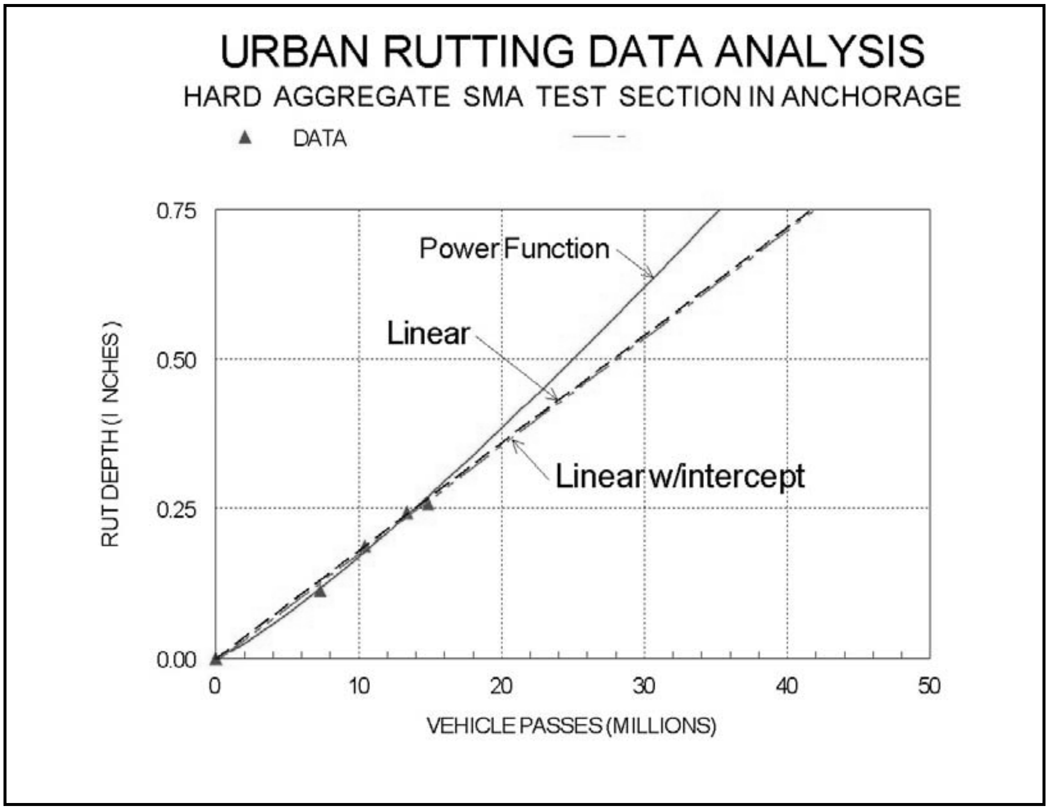


Figure 6.6.6: Models for SMA with Hard aggregate – Anchorage Mixes

An important thing to be aware of here is that when we are dealing with one section, we are able to get very good model correlations with the data. The more sections we try to use, the more variability there is in the models. Data for Hard Aggregate SMA is in Appendix I.

6.6.5 Anchorage SMA Rutting Model Summary

Table 6.6.5 shows predicted traffic lives for the various linear models presented in Tables 6.6.1 through 6.6.4. The right hand column shows a calculated AADT, assuming a 12-year design life (typical for urban high traffic roadways), and the linear life prediction model (with a y-intercept): that is, AADT = traffic passes / 12 / 365.

Table 6.6.5 shows that:

- On average, the polymer-modified asphalt is not increasing the rutting resistance of SMA.
- Performance differences between Arterial and Freeway trafficking is not significant.
- Use of hard aggregates has the greatest positive effect on rutting life of SMA in Anchorage.
- On average, use of lightly polymer-modified asphalt cement (PG58-28) does not increase the rutting life of SMA. However, increasing the polymer concentration with PG64-28 does seem to improve performance.

Table 6.6.5: Summary of SMA Life Predictions Models - Anchorage				
TRAFFIC	**MIX**	**LINEAR MODEL LIFE TO 0.75" RUT (MILLIONS OF TRAFFIC PASSES)**	**LINEAR W/INTERCEPT MODEL LIFE TO 0.75" RUT (MILLIONS OF TRAFFIC**	**MAX. AADT FOR 12 YEAR LIFE USING LINEAR W/INTERCEPT MODEL**
Arterials	SMA with AC-5	26	27	6,100
Arterial	SMA with AC-5 and Hard Aggregates	42	42	9,500
Arterials	SMA with PG58-28	18	20	4,400
Arterials	SMA with PG64-28	23	24	5,400
Freeway	SMA with AC-5	28	29	6,600
Freeway	SMA with PG58-28	17	18	4,000

The following observations can also be drawn from Table 6.6.5:

- Hard aggregates are found to extend SMA pavement life by about 56%.
- Using standard aggregates and PG58-28 seems to decrease the SMA pavement life by approximately 28% compared to the same with neat AC-5.
- Use of PG64-28 seems to improve SMA rutting life by about 23% compared to SMA with PG58-28. However, the three sections with PG64-28 are found, on average, to have expected pavement lives approximately 11% less than SMA with AC-5.

It should be emphasized that asphalt grade and aggregate quality are not the only variables influencing these results. They just happen to be the only variables one can easily identify within the scope of this study. Other variables, such as structural design, mix design, construction and local traffic may separately or in combination have greater effects on rutting performance. The statistical comparison of different population sizes could also be brought into question. Here we just show averages of available data collected in the same manner.

6.7 Portland Cement Concrete WIM Sections - Anchorage

Due to high initial costs, high rehabilitation costs, its tendencies to crack with frost action and lower skid resistance, PCC pavements are not often used as road pavements in Alaska. However, there are several slab-on-grade PCC weigh-in-motion (WIM) sites in the Anchorage area. There is also one high-traffic PCC bridge deck over the Knik River, approximately 28 miles north of Anchorage that is considered here. Appendix J includes the data used in this analysis.

One twelve-year old WIM site on Tudor Road was rehabilitated in the summer of 2003. The traffic levels at this site ranged from approximately 5,100 to 6,100 vehicles passes per day over the life of the site. Forty-four rut measurements were taken on the slabs in both eastbound lanes just prior to the rehabilitation. The highest average rut depth measured was 0.61 inches (15.5 mm) in the left wheel path of the left lane. The highest individual measurement was a 0.86-inch (21.8 mm) rut depth at one point in the right wheel path of the left lane.

Two other WIM sites were constructed in 2000 on Minnesota Drive in Anchorage. Minnesota Drive is a divided five-lane highway in the area of the WIM slabs (three lanes in the southbound direction and two lanes northbound). Rut measurements were taken specifically on these PCC slabs with the road profiler in the fall of 2003. The southbound slabs showed an average maximum rut of 0.26 inches (6.6 mm) and the northbound WIM slabs had an average maximum rut of 0.35 inches (8.9 mm). The average traffic levels on the individual lanes are in the 6,000 to 10,000 per day range.

The Knik River bridge deck was constructed in 1993, and used Class A Concrete (8). Original (1993) and present (2004) lane AADT on this deck are 4,100 and 5,500, respectively. This concrete is performing very well with an average rut depth of only 0.246 inches (6.2 mm) in 2004, after 11 years of service.

Rut and traffic data for the Tudor Road WIM site, both Minnesota Drive WIM sites and the Knik River Bridge were combined for analysis. Table 6.7 presents results of 11 data points in these 3 sections. It is interesting to note that the "rutting" rates on the PCC slabs are slightly higher than the better asphalt mixes. Rutting of asphalt-surfaced highways in Anchorage may have components of plastic deformation, studded tire wear and deformation of the supporting materials. Rutting on the PCC slabs could only be due to wear.

Figure 6.7.1 shows the plots of the models with the data. The linear prediction models are almost exact and run through the data average. The Power function would indicate long pavement life, but it has poor correlation with the data.

Table 6.7: Anchorage WIM PCC Slab Rutting Model Comparison					
MODEL TYPE	**Models** X = traffic passes in millions Y = rut depth in inches	**R^2 value**	**MEAN OF ABSOLUTE ERROR (IN.)**	**STD. DEV. OF THE ABSOLUTE ERROR (IN.)**	**NOTES**
Linear	Y = 0.020X	0.742	0.07	0.070	Good
Linear with intercept	Y = 0.019X + 0.019	0.746	0.07	0.062	Good
Power Function	$Y = 0.138X^{0.293}$	0.072	0.10	0.079	Poor R^2

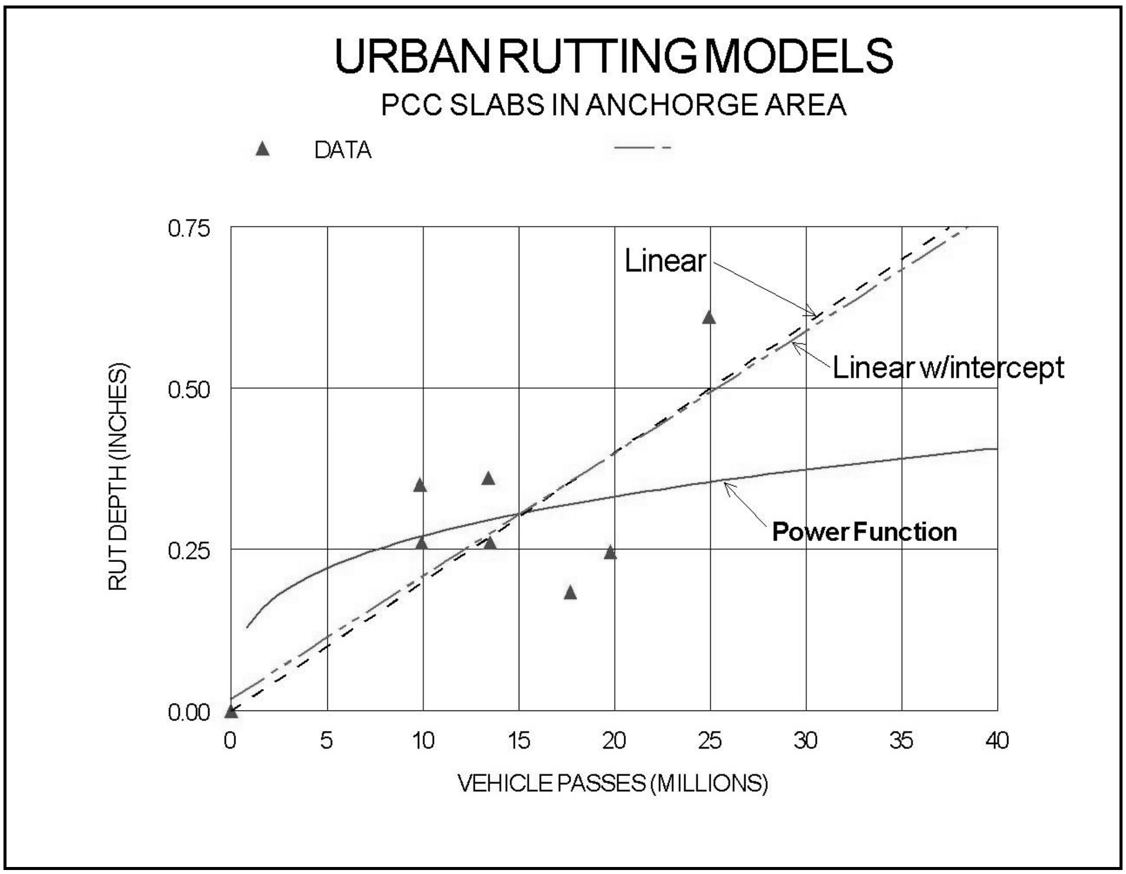


Figure 6.7.1: Models for Anchorage PCC WIM Slabs

6.8 Plus Ride – Dry Process Crumb Rubber Asphalt Mixes - Anchorage

Several projects were constructed in the 1980s using the then new Plus Ride technology. On high traffic urban areas, 4 sections survived into the 1990s. In this century, so far, two remain. There were two catastrophic failures of Plus Ride on projects in the 1980s. Those failures, the high cost (about double that of Type II mixes) and royalty payment to the patent holder, lead to the demise of its use in Alaska.

The two sections, constructed in 1985, that remain of Plus Ride mix have performed amazingly well. These are basically the only high traffic urban sections that have survived 18 years as of the time of the last rut measurements. The sections are on A and C Streets in Anchorage. The A Street section runs from Fireweed Lane to 13th Avenue, three lanes, northbound, 0.78 miles in length. The C Street section is three lanes, northbound, from 15th Avenue to Fireweed lane, 0.65 miles in length.

Plus Ride rubberized asphalt is gap-graded as is SMA. The gap in the grading for Plus Ride is to make room for the crumb rubber modifier. The gap grading in SMA is to provide for stone-on-stone contact and is partially filled with the mastic that is a combination of fines, asphalt and stabilizing additive. Figure 6.8.1 is a gradation chart comparing Plus Ride mix design gradation used on A and C Streets in Anchorage from Figure 2.7 and the SMA gradation from Figure 2.5. The gradations are similar, but the Plus Ride gradation has more plus ½" (12.5 mm) sized material and more sand-sized material.

The initial AADT counts on the A and C Street sections were approximately 3,600 per lane. Lately the lane AADT values are in the 5,500 to 6,500 ranges. These are truck routes. Table 6.8 presents analysis results considering the two sections that failed in the 1990s as well as the remaining Plus Ride sections on A and C Streets.

Figure 6.10 shows the data and the prediction models. These are 20 data points for the four sections. None of the models do a great job of predicting the failures shown on the 0.75-inch line of the Y-axis. These points are assumed rut depths for sections that were removed prior to the start of this study. Appendix K includes data for the Plus Ride sections.

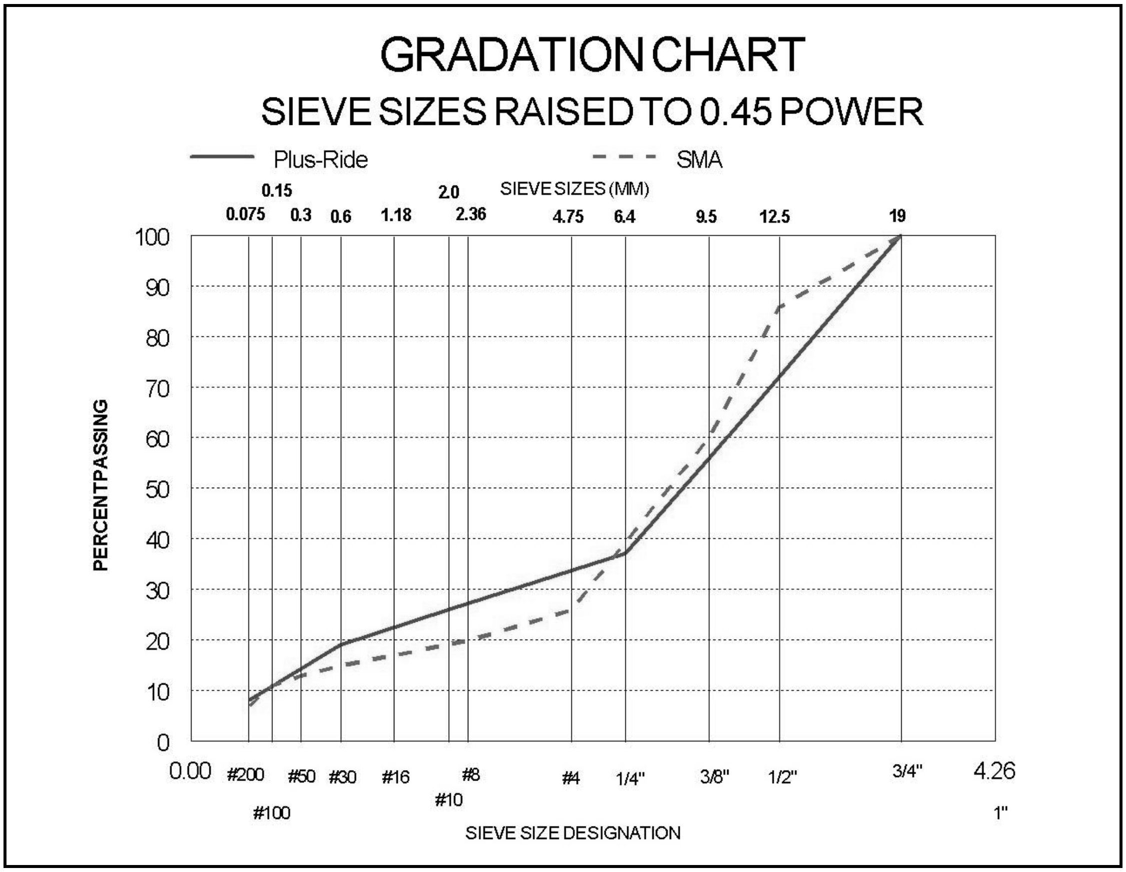


Figure 6.8.1: PlusRide and SMA Aggregate Gradation Comparison

Table 6.8: Anchorage Plus Ride Rutting Model Comparison

MODEL TYPE	Models X = traffic passes in millions Y = rut depth in inches	R^2 value	MEAN OF ABSOLUTE ERROR (IN.)	STD.DEV. OF THE ABSOLUTE ERROR (IN.)	NOTES
Linear	Y = 0.018X	0.719	0.11	0.089	Errors high
Linear with intercept	Y = 0.018X - 0.015	0.720	0.11	0.091	Errors high, almost same as Linear
Power Function	$Y = 0.003X^{1.485}$	0.399	0.10	0.119	Poor R^2 and high errors

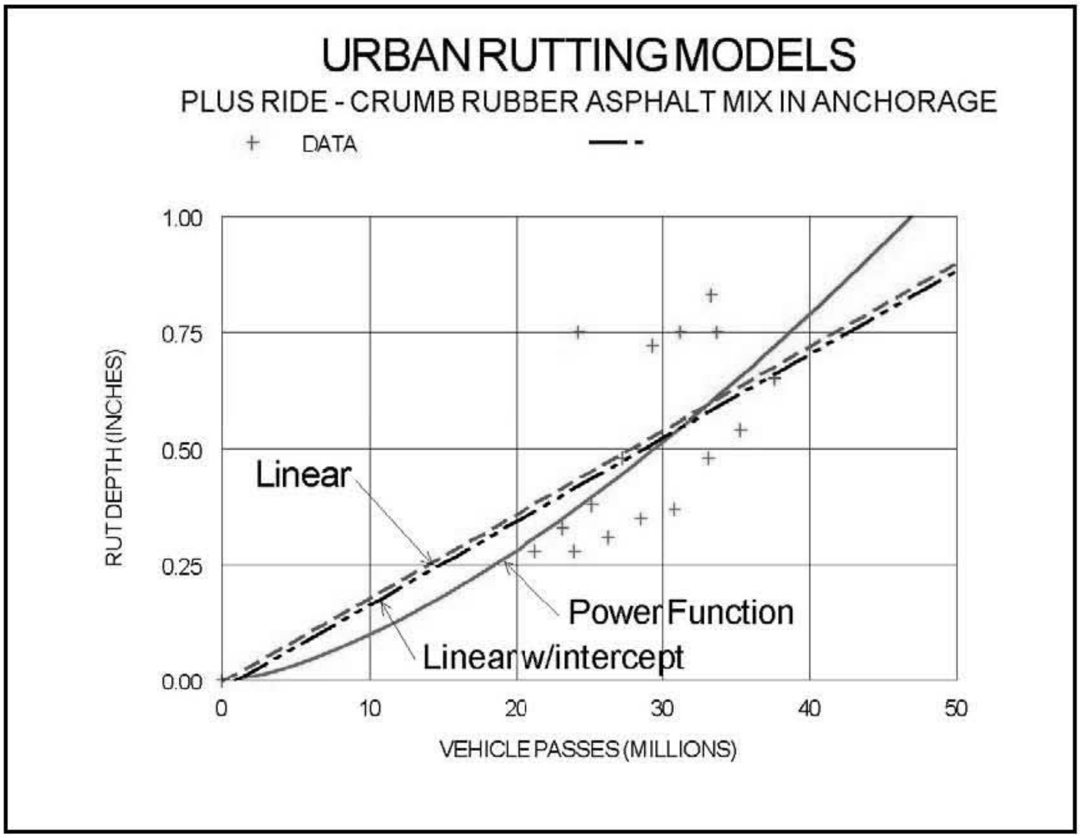


Figure 6.8.2: Models for Anchorage PlusRide Mix

7.0 Curve Fit Rutting Model Summary

This section presents a summary of the rutting models developed in previous sections. The best fitting models are determined herein. In order to optimize the Models, it is desirable to maximize the R^2 values while minimizing the Mean of the Absolute Error and Standard Deviation of the Error Values. Table 7.1 lists the Models with the highest R^2 and least errors. The least error model is the lowest number determined by adding the mean and standard deviation of the absolute value of the error in each prediction model. These models all compute rut depth (Y) as a function of accumulated traffic passes since construction in millions (X). The SMA models all pertain to Anchorage area use.

Table 7.1: Models with Highest R^2 Values for Each Mix

Mix	Highest R^2 Value	Highest R^2 Model	Least Error Model	Number of Sections
AC Type I Anchorage	0.561	$Y = 0.021X + 0.12$	$Y = 0.109X^{0.519}$	41
AC Type II Anchorage	0.646	$Y = 0.023X + 0.143$	$Y = 0.408X^{0.205}$	79
AC Type II Fairbanks	0.298	$Y = 0.008X + 0.097$	$Y = 0.141X^{0.223}$	64
AC Type II Southeast	0.369	$Y = 0.018X + 0.128$	$Y = 0.062X^{0.661}$	60
Superpave Juneau	0.875	$Y = 0.023X$	Same	20
SMA w/AC-5 Arterials	0.708	$Y = 0.026X + 0.049$	Same	38
SMA w/AC-5 Freeways	0.612	$Y = 0.024X + 0.048$	$Y = 0.058X^{0.703}$	39
SMA w/PG58-28 Arterials	0.759	$Y = 0.037X + 0.027$	$Y = 0.089X^{0.585}$	29
SMA w/PG58-28 Freeways	0.796	$Y = 0.041X + 0.029$	$Y = 0.099X^{0.617}$	55
SMA w/PG64-28 Arterials	0.670	$Y = 0.031X + 0.014$	Same	3
SMA w/AC-5 and Hard Aggregate on Arterial	0.993	$Y = 0.018X – 0.005$	Same	1
PCC in Anchorage Area	0.746	$Y = 0.019X + 0.019$	Same	4
Plus Ride in Anchorage	0.720	$Y = 0.018X – 0.015$	$Y = 0.018X$	4

From Table 7.1, the following can be observed:

The best curve fit is the one having only one section (SMA w/AC-5 and Hard Aggregates). More data for more sections does not seem to give better curve fit properties. "Linear with Y-intercept" models dominate in the highest R^2 category while the Power Functions are dominant in terms of least error. However, it was seen in the data plots with the predictive models that most of the power function curves do not fit the data well. The power functions seem particularly problematic with extrapolation. It is hard to tell what they will predict beyond the collected data.

The lower correlation in terms of R^2 for the AC Type II in Fairbanks is likely created due to the large time span of pavements we are looking at. This includes old pavements back to the 1960s. Thus there is a large variation in materials used.

Similarly, the rather low R^2 value for AC Type II in the Southeast Region is created by looking at a combination of pavements from three different islands, separated by hundreds of miles and different ages. Here one can expect fairly large variation in materials, subgrades and even climate within the group.

In retrospect, it might have been more useful to fit one function for each of the sections studied.

Table 7.2 lists predictions of traffic lives in millions and maximum AADT for a 12-year rutting life for all mixes shown in table 7.1. Results from Table 7.2 show the advantage of using hard aggregates in SMA mixes.

Table 7.2: Models with Highest R^2 Values for Each Mix				
Mix	**Highest R^2 Model-Pavement Life in millions of traffic passes**	**Highest R^2 Model-Maximum AADT for a 12-year pavement life**	**Least Error Model-Pavement Life in millions of traffic passes**	**Least Error Model-Maximum AADT for a 12-year pavement life**
AC Type I Anchorage	18	4131	19	4297
AC Type II Anchorage	16	3544	3	616
AC Type II Fairbanks	50	11501	292	66646
AC Type II Southeast	21	4718	24	5371
Superpave Juneau	22	4963	22	4963
SMA w/AC-5 Arterials	17	3960	17	3960
SMA w/AC-5 Freeways	19	4300	21	4890
SMA w/PG58-28 Arterials	13	2919	19	4364
SMA w/PG58-28 Freeways	11	2623	14	3151
SMA w/PG64-28 Arterials	16	3579	16	3579
SMA w/AC-5 and Hard Aggregate on Arterial	28	6405	28	6405
PCC in Anchorage Area	25	5780	25	5780
Plus Ride in Anchorage	29	6532	28	6342

8.0 Prall Testing of Mixes

The Southeast Region Materials Section purchased Swedish Prall test equipment in 2003. The Prall test subjects asphalt core samples to wear under the influence of water pressure and circulating steel ball bearings (32). The volume loss from the testing gives a performance index (Abrasion Value) for studded tire wear of the mix. Three tests are run on each mix type and the average is used as an index.

The Nordic countries classify mixes and rate wear resistance to Prall Abrasion Values. These ratings are shown in Table 8.1.

Table 8.1: Nordic Classes and Rating for Prall Tests

Prall Abrasion Value (cm^3)	Class	Wear Resistance Rating
<20	1	Very Good
20-29	2	Good
30-39	3	Satisfactory
40-50	4	Less Satisfactory
>50	5	Poor

Table 8.2 shows Prall testing results for four Alaskan mixes. An attempt is made to correlate Prall test results to model predicted wear rates (rutting rates obtained from models described previously).

Table 8.2: Prall Values and Rutting Rates

Mix	Prall Abrasion Value(10)	Linear Rutting Model (in./million traffic passes)	Rutting Rate - Average (in/year)
1985 A St. Plus Ride Anchorage	15	0.020	0.044
2000, 2001 Juneau Superpave	20	0.024	0.052
1996 Seward Hwy. SMA - Anchorage	46	0.028	0.115
1993 Muldoon Rd. SMA - Anchorage	50	0.031	0.077

Figure 8.1 shows plots of the Prall Abrasion Values versus the rutting rate obtained from the linear rutting models. An R^2 value of 0.933 indicates a good fit. More Prall Abrasion Values from other mixes is needed to substantiate this result.

Figure 8.2 shows the Prall Abrasion Values versus the rutting rate obtained from the average rutting models. The R^2 value of 0.682 is lower than that in Figure 8.1. This suggests that the Prall Abrasion values relate better to traffic-related rutting rate (in/mil. Traffic passes) than to yearly rutting rate (in/yr).

The estimates for studded tire passes are computed the same for the Central and Southeast Regions whose mixes are shown here. Thus, the curve fit accuracy (R^2) will be the same if studded tire wear rates were used. However, the vertical axis and interpolation function would be different.

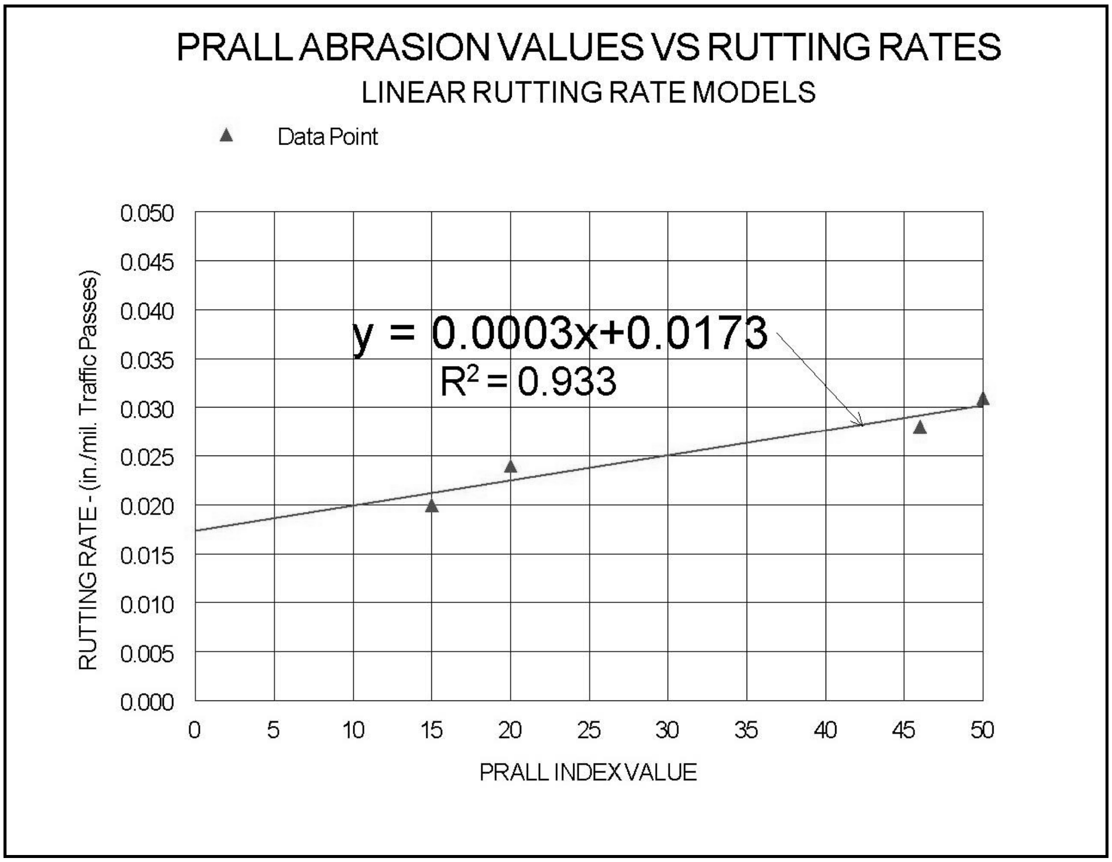


Figure 8.1: Rutting Rate Variation with Prall Index Value

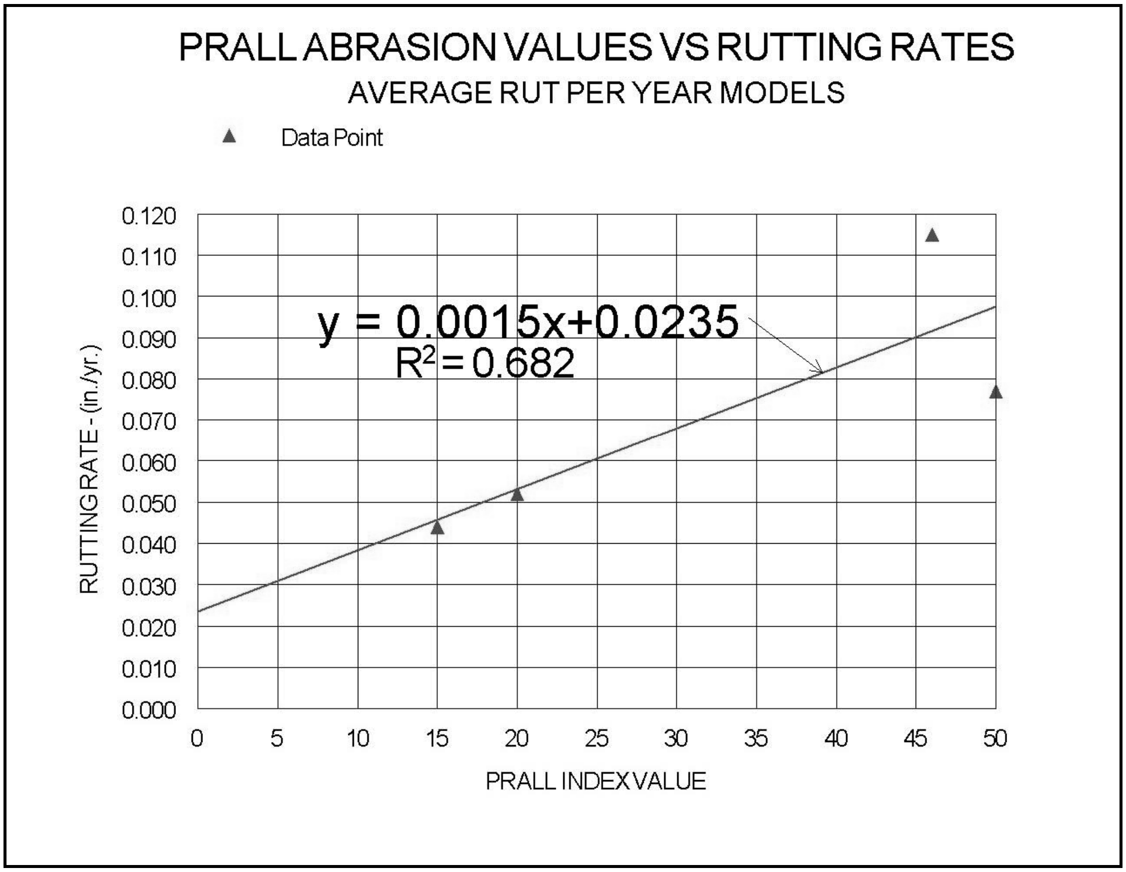


Figure 8.2: Yearly Rutting Rate Variation with Prall Index Value

Based on this data, it appears that laboratory determined Prall Abrasion Values can be used to estimate rates of rutting, using linear models. For a given mix to be used at a certain project area, if the following is known:

- "Traffic passes in millions versus rut depths" data or prediction model, and
- AADT of the project area and the design life,

then one can determine the maximum Prall Abrasion Value needed for the wearing course in the area in question.

For example, the curve fit equation from Figure 8.1 can be solved for the Prall Abrasion Value, in terms of the Rutting Rate. That is:
Prall Abrasion Value = PAV = (Rutting Rate – 0.0173)/0.0003, then assuming a Design Project with:
Current lane AADT = 7000, annual growth rate = 1%, and a Design Life = 12 years, and Allowable average rut depth for rehabilitation = 0.75 inches.

Referring to Engineering Economy Tables (26) for a Future/Annual factor at i=1% and n=12 years we find a factor of 12.683. Then the total traffic in millions (TT) on the project design lanes is:
TT = $(365*7000*12.683)/10^6$ = 32.4 million traffic passes

Then the allowable average rutting rate is: Rutting Rate = 0.75 inches/32.4M = 0.0231 inches/million
So, from the PAV equation above, the maximum allowable Prall Abrasion Value is PAV_{max} = (0.0231-0.0173)/0.0003 = 19

This means that the average Prall Abrasion Value of the wearing course of the project in question must be 19 or less, in order for the pavement to last for a design life of 12 years. It should be noticed that, according to Table 8.1, a Prall Abrasion Value of 19 is a Nordic Class 1, with a Wear Resistance Rating of "very good".

One may further notice that, even with a Prall Abrasion Value of zero (0.0), it is expected to have a wear rate of 0.0173 inches per million traffic passes. Using the function in Figure 8.1, one can also get estimates of maximum allowable lane AADT for different wear rates. Table 8.3 shows these values for the various Nordic Classes shown in Table 8.1.

Table 8.3: Alaskan Maximum Lane AADT from Prall Tests shown in Figure 8.1

Nordic Class	Prall Abrasion Value	Max. Lane AADT for 0.5" (12.5 mm) rut in 12 years	Max. Lane AADT for 0.75" (19 mm) rut in 12 years
1	<20	5000-6600	7400-9900
2	20-29	4400-4900	6600-7300
3	30-39	3900-4300	5900-6500
4	40-50	3500-3900	5300-5800
5	>50	<3500	<5300

Since there are currently several road sections in Alaska with lane AADT greater than those shown in Table 8.3, it can be concluded that these sections will reach the allowable rut depth in less than 12 years, under the assumptions used to generate the values shown in this table.

9.0 Georgia Loaded Wheel Tester Results

A Georgia Loaded Wheel Tester (LWT), also called an Asphalt Pavement Analyzer (APA), is used in the ADOT&PF Central Region for mix acceptance and general testing of mixes. Alaska Test Method 419 describes the test (9). The purpose of the test is to identify and avoid use of mixes that may tend to exhibit plastic deformation in warm weather due to traffic loading. The device used for this study is Model LWT II, manufactured by Pavetech Eng Tech, Inc. of Norcross, Georgia.

The LWT uses six 3-inch high and 6-in diameter specimens prepared using a Gyratory Compactor to a target air voids of 6% to 8% in order to simulate a field compacted mix. These specimens are cured at room temperature for 24 hours. The LWT equipment has an environmental chamber that is heated to 104^{o}F (40^{o}C) and the samples are brought to that temperature prior to testing. These cylindrical specimens are placed in containers that confine the sides then placed in the LWT beneath air-pressurized hoses (100 psi). Grooved steel wheels, loaded to 100 pounds, are rolled back and forth on the hoses 8,000 times on each sample. The average rut depth in millimeters measured on the six samples is called the Rut Index (9).

Past test results using the LWT have shown dramatically improved performance for mixes containing polymer-modified asphalt cement (22). Older, standard references (11, 24) tended to downplay the effects of stiffer asphalt in creating more rut resistant pavement.

The Central Region ADOT&PF Materials Laboratory used their LWT to obtain Rut Index values for several Alaskan mixes. Table 9.1 summarizes these values, along with the Linear Model Field Rutting Rates. It is seen that even the newer Superpave mix design methods discourage reliance on increased asphalt high temperature grade to improve permanent deformation rutting. Therefore, rutting resistance is said be greatly influenced by the aggregate properties (13). Superpave asphalt grade selection methods would generally recommend high temperature grades for rutting resistance in the 40^{o}C to 46^{o}C range in Anchorage or Southeast Alaska (20). Apparently there is no problem in choosing a too soft of a grade of asphalt in Alaska.

Using data from Table 9.1, a relationship is developed between Rut Index and Rutting Rate, as shown in Figure 9.1. A negative slope is obtained, which is contrary to the expectation that an increase in the Rut Index of a mix yields an increase in its field rutting rate. It was not expected that the best rut-resistant mix, SMA with AC-5 and hard aggregates, had the highest Rut Index. This result might mean that the LWT used a lab-produced mix which was different from the field-placed mix.

The correlation in Figure 9.1 indicates general uselessness of LWT test results (as currently performed) to predict performance. Perhaps LWT testing of field cores would improve these results.

Table 9.1: Georgia Loaded Wheel Test Results

Mix	Avg. Rut Index (mm)	Number of Lab Samples	Comment	Field Rutting Rate*
Type IA	8.3	1	Work Card Example	0.027
Type IIA	8.0	59	Anchorage	0.028
SMA w/ AC-5 (PG52-28)	11.5	3	Arterials	0.030
SMA w/PG58-28	4.2	28	Arterials	0.041
SMA w/PG58-28	4.7	22	Freeways	0.044
SMA w/PG64-28	3.6	2	Arterials	0.033
SMA w/ AC-5	13.9	1	Hard Aggregate	0.018

* Inches per million vehicle passes from tables in Section 6.

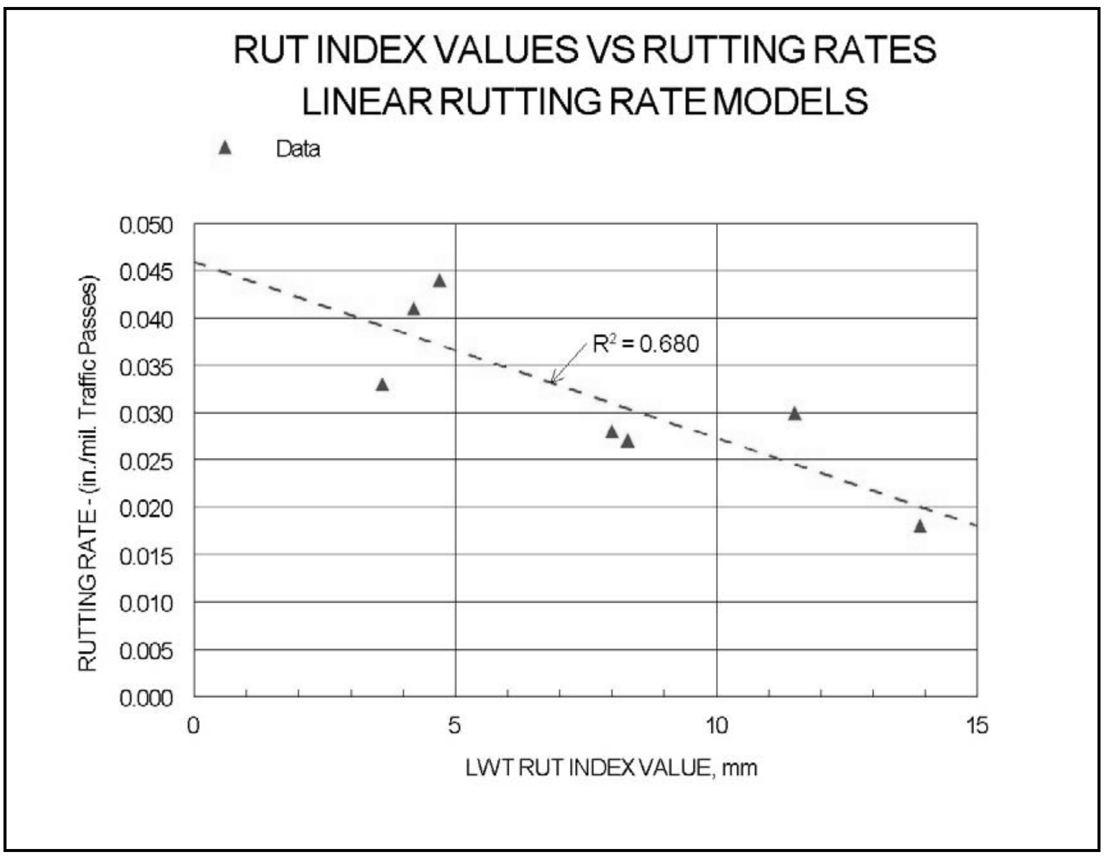


Figure 9.1: Rutting Rate Variation with LWT Rut Index Value

10.0 Remaining Service Life Validation

In this section, a brief investigation is carried out to compute the remaining service life (RSL), in years, in terms of rutting and wearing of urban pavement sections in Alaska. To determine accuracy, failed sections are chosen so that an actual RSL is found and compared to computed RSL values.

If one considers time (rather than traffic) and rut depth measurements with equal age and types of structural sections (a mile or less in length), inaccurate traffic estimates would be eliminated. One can also minimize errors in comparing mixes constructed on different structural sections by different contractors with different aggregates, asphalt cement and mix properties.

The accuracy of any model is dependent on the accuracy and behavior of the data to which it is applied. Annual rut data from the laser Road Surface Profiler is generally accurate. If there is maintenance work or utility work within a road section, the data may not behave in a way that is predictable. The point here is that blind application of any model may not be satisfactory.

10.1 Example 1

Consider a paved section in Anchorage constructed in 1996. Its rut measurements from 1998 to 2004 are shown in Figure 10.1. Using this data, the computed service life to a 0.5-inch rut is 5.7 years.

Recall Equation 4.7: RSL = Age*((0.5/Rut Depth) – 1)

Equation 4.7 is used to predict RSL at any point in time of the life of a section (i.e. age), knowing the measured rut depth at that point in time. Applying Equation 4.7 to the data in Figure 10.1, as well as computing the actual RSL, one finds the values shown in Table 10.1. Note that this equation does not apply to sections with zero average rut depth. The average Error between the computed RSL and the actual RSL is 0.0 for this set of data. Thus this is a good prediction model.

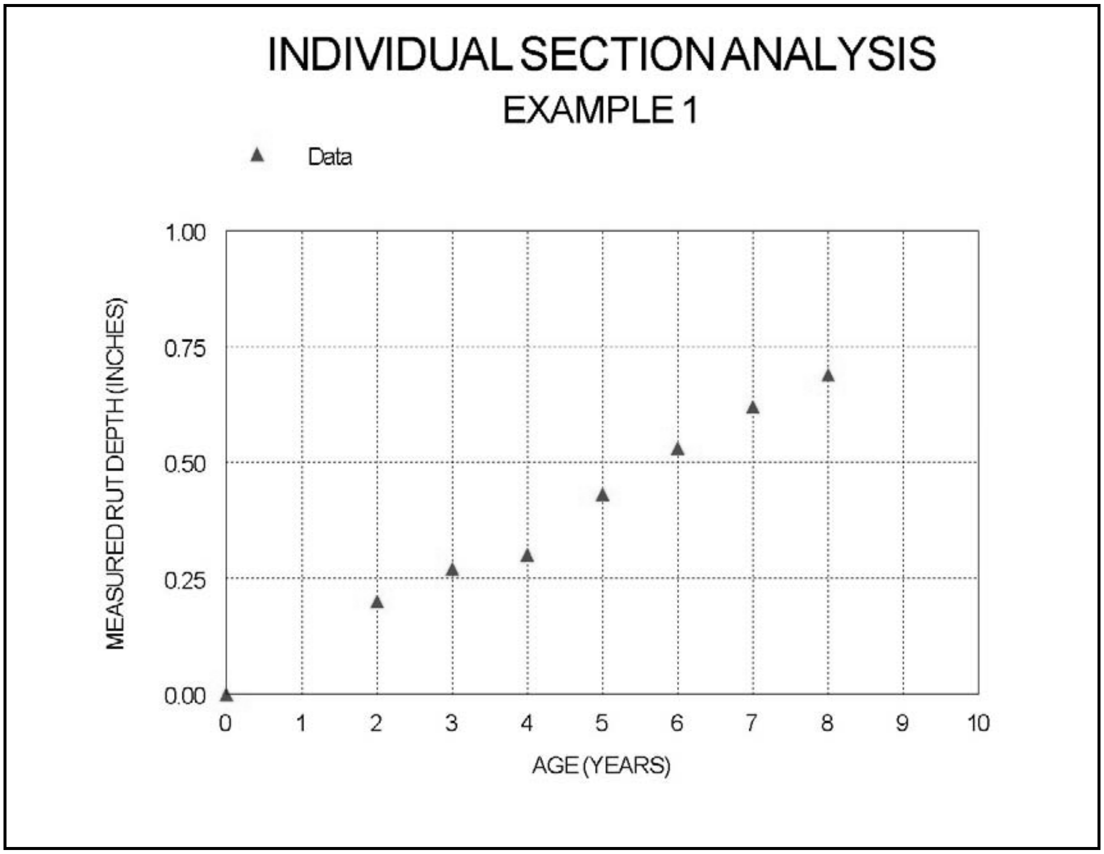


Figure 10.1: Example 1 Data - Anchorage

Table 10.1: RSL Comparison for Example 1

Age (years)	Average Rut Depth (in.)	Eq. 4.7 RSL	Actual RSL (5.7 – age)	Error
0	0	n/a	5.7	n/a
2	0.2	3.0	3.7	0.7
3	0.27	2.6	2.7	0.1
4	0.3	2.7	1.7	-1.0
5	0.43	0.8	0.7	-0.1
6	0.53	-0.3	-0.3	0.0
7	0.62	-1.4	-1.3	0.1
8	0.69	-2.2	-2.3	-0.1

10.2 Example 2

Consider another paved section in Anchorage, constructed 5 years ago. Rut measurements from 1999 (set at 0.0) to 2004 are shown in Figure 10.2. From this data, the service life (to a 0.5-inch rut) is 5 years. Thus its actual RSL is simply 5 years minus its age.

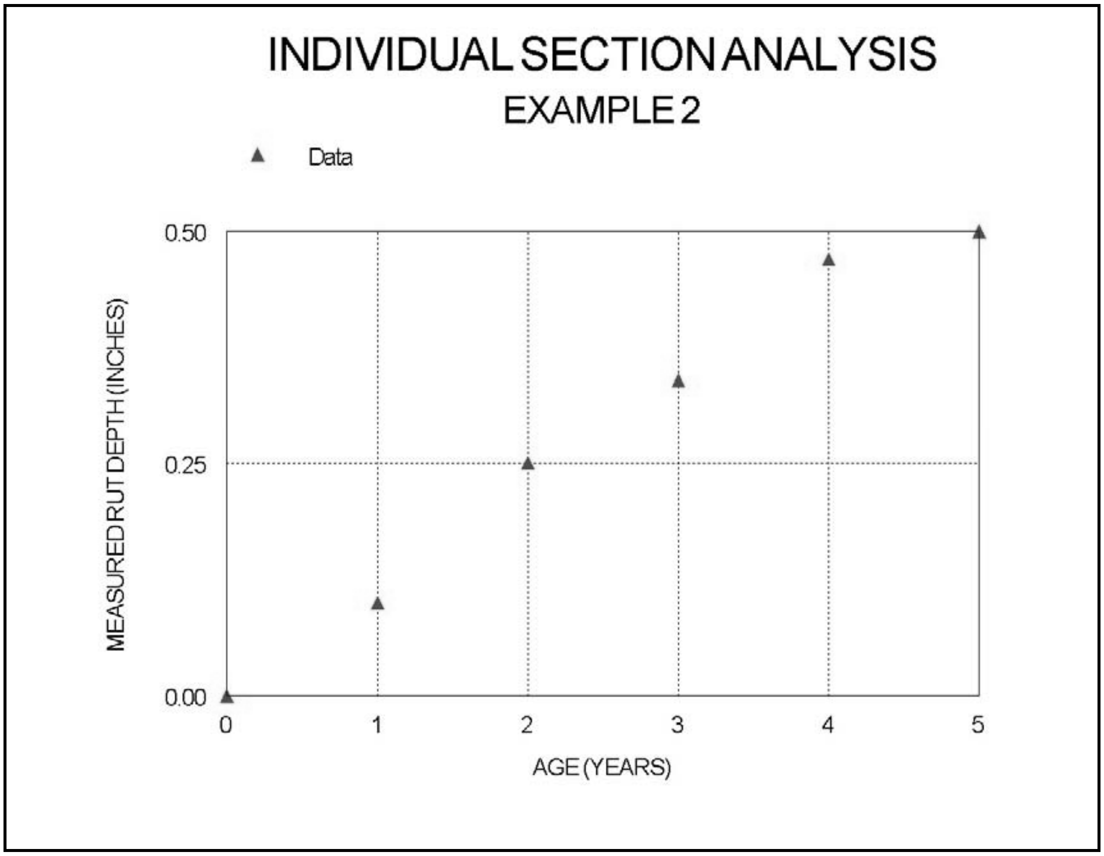


Figure 10.2: Example 2 Data - Anchorage

Applying Equation 4.7 to this data as well as computing the actual RSL we find the values shown in Table 10.2.1. The average Error between the computed RSL and the actual RSL is less than a half a year for this set of data. Thus this again is good prediction model.

Table 10.2.1: RSL Comparison for Example 2

Age (years)	Average Rut Depth (in.)	Eq. 4.7 RSL	Actual RSL	Error
0	0	n/a	5	n/a
1	0.1	4.0	4	0.0
2	0.25	2.0	3	1.0
3	0.34	1.4	2	0.6
4	0.47	0.3	1	0.7
5	0.5	0.0	0	0.0

10.3 Example 3

Looking at a more difficult situation, consider at a paved section in Fairbanks that was paved 29 years ago. The data shows it just crossed the 0.5-inch rut level. Figure 10.3.1 shows 6-years worth of rut measurements, from 1998 to 2004. Note that the rate of rutting accelerated in these last few years. This makes it particularly difficult to predict the RSL. No records are available for work done on this section previous to 1998.

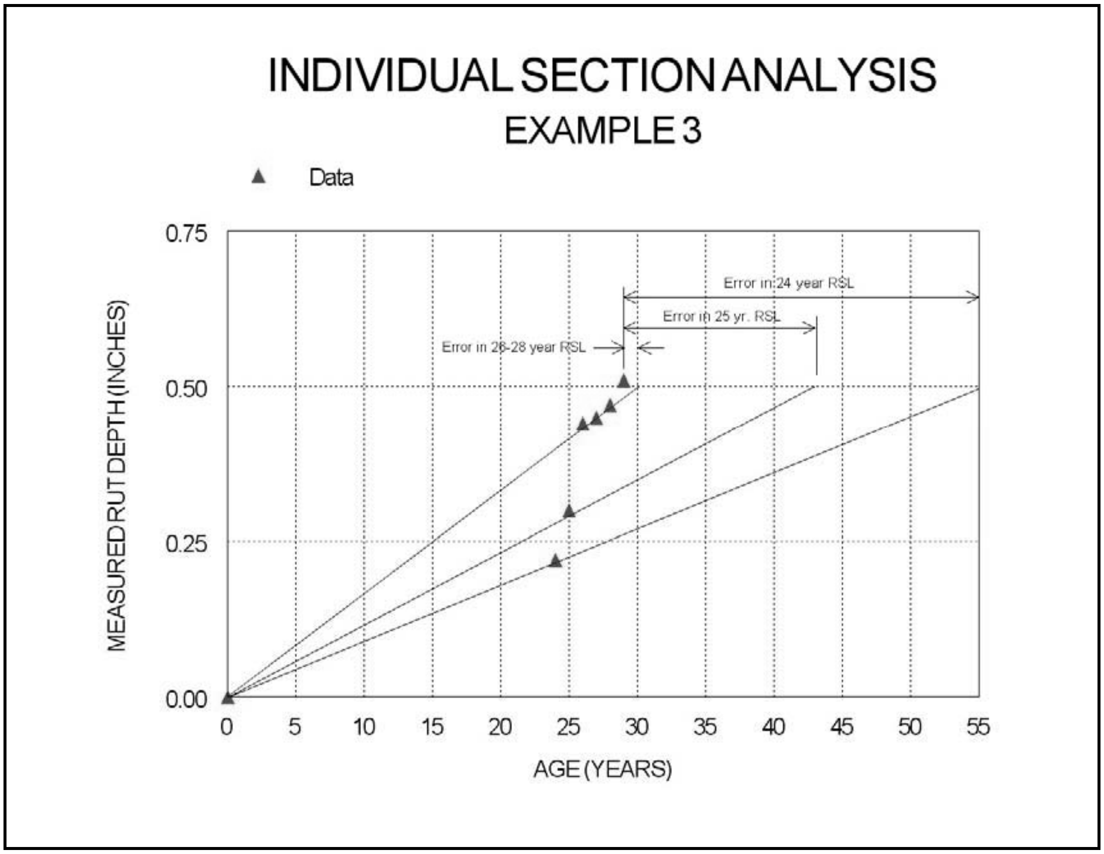


Figure 10.3.1: Example 3 Data - Fairbanks 1

The lines on Figure 10.3.1 show how the RSL computations from Equation 4.7 work. From this data, we determine the service life to a 0.5-inch rut is 28.8 years. Thus its actual RSL is simply 28.8 years minus its age.

Table 10.3.1 shows the values obtained by applying Equation 4.7 to the data in Figure 10.3.1. Actual RSL are also shown as (28.8 years –age). It is seen that the Error in RSL is large for the 24 and 25-year rut measurements then it tapers off. However, these errors are not particularly problematic since a pavement of this age is bound to fail in another mode anyway (such as roughness or structural).

Table 10.3.1: RSL Comparison 1 - Fairbanks				
Age (years)	**Average Rut Depth ("AR" - in.)**	**Eq. 4.6 RSL**	**Actual RSL**	**Error**
0	0	n/a	28.8	n/a
24	0.22	30.5	4.8	-25.7
25	0.3	16.7	3.8	-12.9
26	0.44	3.5	2.8	-0.7
27	0.45	3.0	1.8	-1.2
28	0.47	1.8	0.8	-1.0
29	0.51	-0.6	-0.2	0.4

One might want to look at older pavement sections in another way to predict the RSL in rutting. One can use the previous annual rate of rutting to predict the future rate of rutting. That is using

Equation 10.1 $Y_{i+1} = Y_i + (X_{i+1} - X_i)*(Y_i - Y_{i-1})/(X_i - X_{i-1})$

Where:
Y values are rut depths
X values are ages
i indicates the current year
i-1 indicates a previous year increment
i+1 indicates the next year increment

This equation can be applied to predict the RSL by setting the left-hand term equal to 0.5 inches and solving for the $(X_{i+1} - X_i)$ term in general as: $X - X_i$. This new $X - X_i$ term is the RSL where "X" is the total pavement rutting life in years that has the current year subtracted from it. The solution for RSL is shown in Equation 10.2.

Equation 10.2 $RSL = (0.5 - Y_i)* (X_i - X_{i-1})/(Y_i - Y_{i-1})$

Figure 10.3.2 shows the data with predicted rutting per Equation 10.1 and the errors in the predictions of the RSL. With only the first year of rut and age data, the prediction is the same; but later years show improvements in the prediction compared to the previous model. Table 10.3.2 presents the data and results for this analysis. Now the average Error is 4.3 years. Thus this method is an improvement over the previous for this situation.

Table 10.3.2: RSL Comparison 2 - Fairbanks				
Age (years)	**Average Rut Depth (in.)**	**Eq. 10.2 RSL**	**Actual RSL**	**Error**
0	0	n/a	28.8	n/a
24	0.22	30.5	4.8	-25.7
25	0.3	2.5	3.8	1.3
26	0.44	0.4	2.8	2.4
27	0.45	5.0	1.8	-3.2
28	0.47	1.5	0.8	-0.7
29	0.51	-0.3	-0.2	0.1

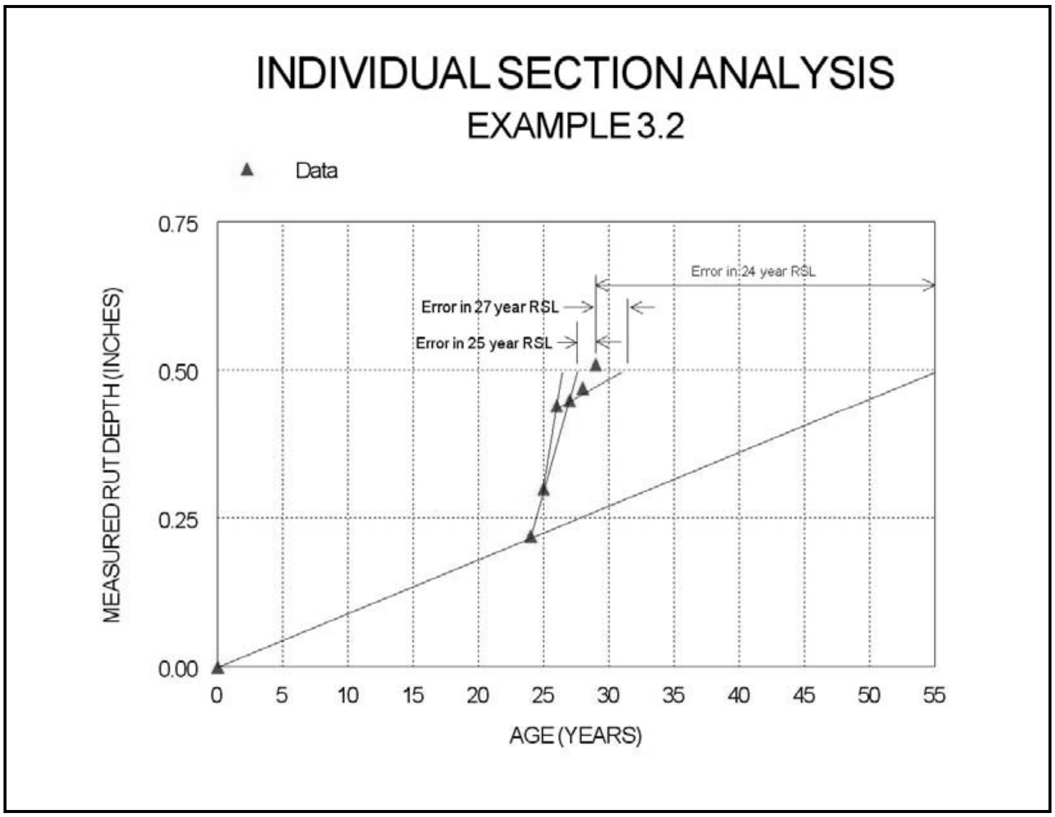


Figure 10.3.2: Example 3 Data - Fairbanks 2

10.4 Example 4

This example looks at some data for an urban area with AC Type II on South Tongass Highway in Ketchikan, Southeast Alaska. Figure 10.4 shows the data and the two models discussed previously applied to part of the data. Interpolation shows that the actual service life of this section is approximately 8.1 years.

Table 10.4.1 shows the data available along with predicted RSL by Equation 4.7, compared to the actual RSL. Notice the negative RSL values when the measured average rut depth exceeds 0.5 inches. The overall average error here is 1 year. However, considering only the data for years prior to exceeding a 0.5 inch rut depth, it is seen that the average error is near zero.

Table 10.4.1: RSL Comparison 1 - Ketchikan

Age (years)	Average Rut Depth (in.)	Eq. 4.7 RSL	Actual RSL	Error
0	0.0	n/a	8.1	**n/a**
6	0.37	2.1	2.1	0.0
7	0.45	0.8	1.1	0.3
8	0.47	0.5	0.1	-0.4
9	0.7	-2.6	-0.9	1.7
10	0.86	-4.2	-1.9	2.3
11	0.88	-4.8	-2.9	1.9

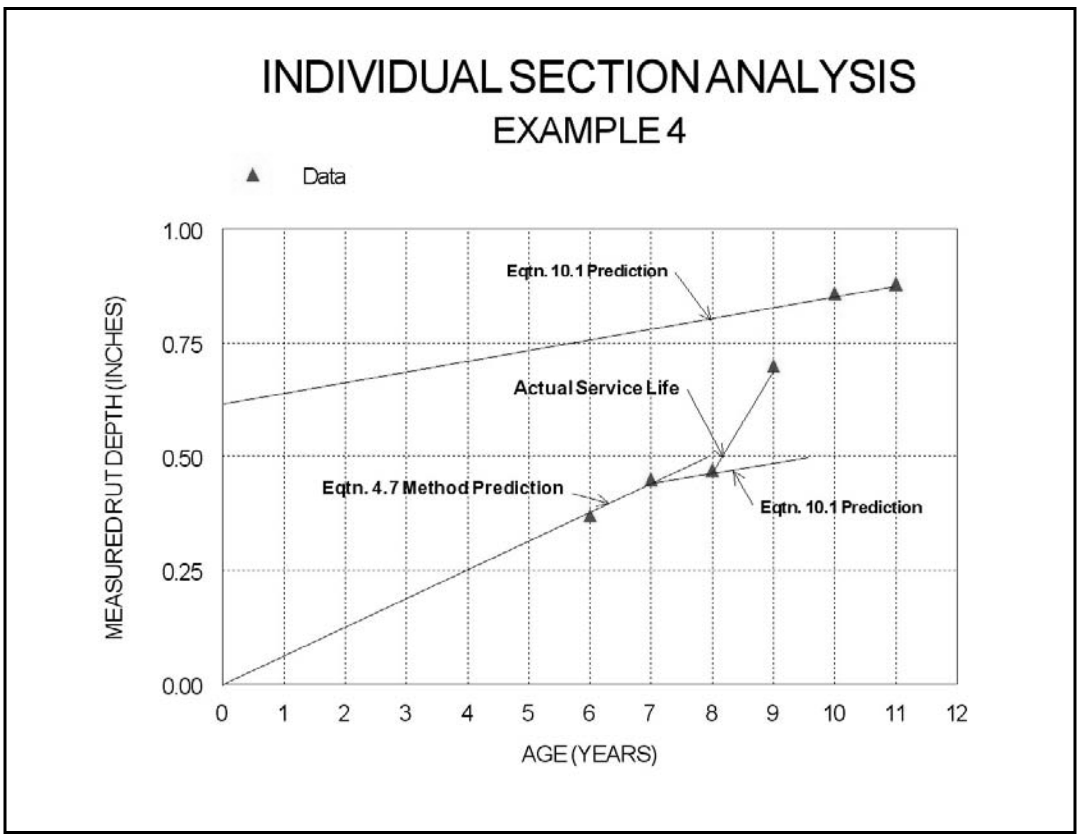


Figure 10.4: Example 4 Data - Ketchikan

Table 10.4.2 shows the same data analyzed using Equation 10.2 for the RSL prediction. It does a fair job in some situations but falls down in the 11th year. Notice the data for years 11 and 12 flatten out somewhat and so the extrapolation of the slope back to the 0.5-inch rut level places its RSL at a time before it was actually even paved.

It should be emphasized that the "slope-extension" method of Equation 10.2 must be used carefully. In fact any method one uses must be used carefully and with awareness of the actual road conditions in relation to the data. Certainly the slope-extension method is more complicated to apply, so its use must be for a reason indicated by field conditions and/or the data.

Table 10.4.2: RSL Comparison 2 - Ketchikan				
Age (years)	**Average Rut Depth (in.)**	**Eq. 10.2 RSL**	**Actual RSL**	**Error**
0	0.0	n/a	8.1	**n/a**
6	0.37	2.1	2.1	0.0
7	0.45	0.6	1.1	0.5
8	0.47	1.5	0.1	-1.4
9	0.7	-0.9	-0.9	0.0
10	0.86	-2.3	-1.9	0.3
11	0.88	-19.0	-2.9	16.1

10.5 Example 5

An example in Juneau Alaska is on the Mendenhall Loop Road near Juneau Alaska. It is an AC Type II section last paved in 1995. Interpolation of the rutting and age data indicates that this section reached an average 0.5 in rut depth after 6.7 years of service. The data for this section is shown in Figure 10.5.

Data and analysis results for application of Equation 4.7 methods are in Table 10.5.1. The average error for this data set is less than a quarter of a year. This method works well here.

Data and analysis results for application of Equation 10.2 methods are in Table 10.5.2. The relatively flat slope of the data in years 3 to 5 make the slope-extension method less accurate in this case. The average error for this data set is approximately 1.3 years.

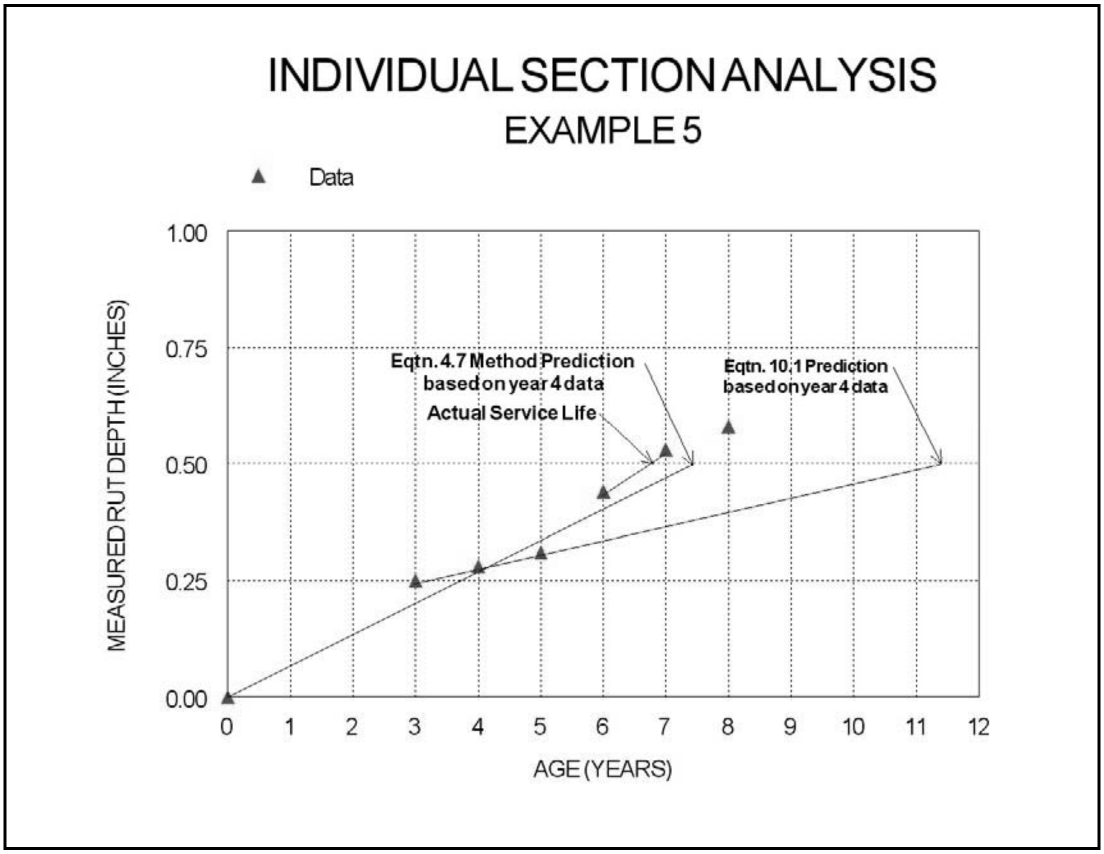


Figure 10.5: Example 5 Data - Juneau

Table 10.5.1: RSL Comparison 1 - Juneau

Age (years)	Average Rut Depth (in.)	Eq. 4.7 RSL	Actual RSL	Error
0	0	n/a	6.7	n/a
3	0.25	3.0	3.7	0.7
4	0.28	3.1	2.7	-0.4
5	0.31	3.1	1.7	-1.4
6	0.44	0.8	0.7	-0.1
7	0.53	-0.4	-0.3	0.1
8	0.58	-1.1	-1.3	-0.2

Table 10.5.2: RSL Comparison 2 - Juneau				
Age (years)	Average Rut Depth (in.)	Eq. 10.2 RSL	Actual RSL	Error
0	0	n/a	6.7	n/a
3	0.25	3.0	3.7	0.7
4	0.28	7.3	2.7	-4.6
5	0.31	6.3	1.7	-4.6
6	0.44	0.5	0.7	0.2
7	0.53	-0.3	-0.3	0.0
8	0.58	-1.6	-1.3	0.3

10.6 Example 6

Now consider an example where there was work done within the section during its service life that affected the rut data. Figure 10.6 shows rut data for a section on Tudor Road in Anchorage. The intersection at Lake Otis Parkway (a terminus of this section) was worked on in the 4th year of its service. Here it can be seen that, based on the 3rd year of data, the slope-extension method predicts the end of service life (4.3 years) almost exactly.

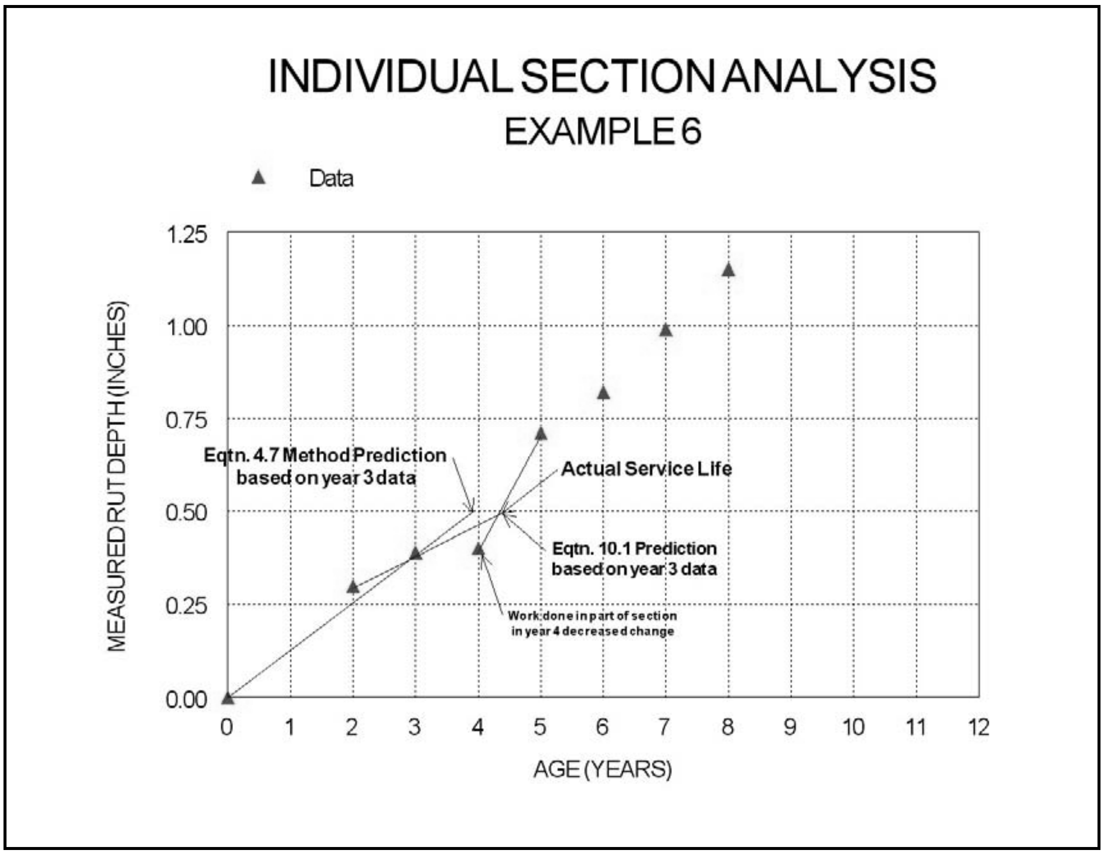


Figure 10.6: Example 6 Data - Tudor Road - Anchorage

At the time of the 4th year's data, the slope-extension method would greatly overpredict the service life. Meanwhile the simple Equation 4.7 methods stay close to the actual service life.

Tables 10.6.1 and 10.6.2 present data and analysis results for the two methods. The average error found for Table 10.6.1 is approximately one half of a year. The average error found for Table 10.6.2 is approximately 1 year, the increase created primarily by the "fooling" of the system by the work done in the section. This again emphasizes the importance of the person applying prediction models to know what is going on in each section.

Table 10.6.1: RSL Comparison 1 - Tudor Road

Age (years)	Average Rut Depth (in.)	Eq. 4.7 RSL	Actual RSL	Error
0	0	n/a	4.3	n/a
2	0.3	1.3	2.3	1.0
3	0.39	0.8	1.3	0.5
4	0.4	1.0	0.3	-0.7
5	0.71	-1.5	-0.7	0.8
6	0.82	-2.3	-1.7	0.6
7	0.99	-3.5	-2.7	0.8
8	1.15	-4.5	-3.7	0.8

Table 10.6.2: RSL Comparison 2 - Tudor Road

Age (years)	Average Rut Depth (in.)	Eq. 10.2 RSL	Actual RSL	Error
0	0	n/a	4.3	n/a
2	0.3	1.3	2.3	1.0
3	0.39	1.2	1.3	0.1
4	0.4	10.0	0.3	-9.7
5	0.71	-0.7	-0.7	0.0
6	0.82	-2.9	-1.7	1.2
7	0.99	-2.9	-2.7	0.2
8	1.15	-4.1	-3.7	0.4

10.7 Example 7

Now consider a section that has inconsistent data in terms of the rut depth measurements. Some reasons for these inconsistencies include: work done that is not recorded; the RSP driver did not follow the same line as in a previous year or; the data was not properly loaded into the database, i.e., the data set is off the section.

When inconsistent data is encountered, the person doing analysis must first check for these problems. Call local Maintenance personnel and check to see if patching or utility work was done in the questionable section. Check the raw data to see that the data was loaded properly. If nothing was done on the section that would affect the rut measurements and the data was loaded properly, then you likely have a driving error and the data is adjusted to become more realistic.

Figure 10.7 shows an example where the pavement in Fairbanks failed in the 13th year and was patched in the 14th year. Any jump in pavement rutting, as shown in year 13 of Figure 10.7 needs investigation prior to making decisions. Here the data was found correct and the recommendations are shown as indicated by the measured conditions. Note that the RSL of -5.9 years in the 13th year is not correct since the pavement actually failed in that year. However, that computed RSL highlights a poor situation that needs immediate attention. Therefore, although the RSL is technically incorrect, it is considered proper for pavement management purposes.

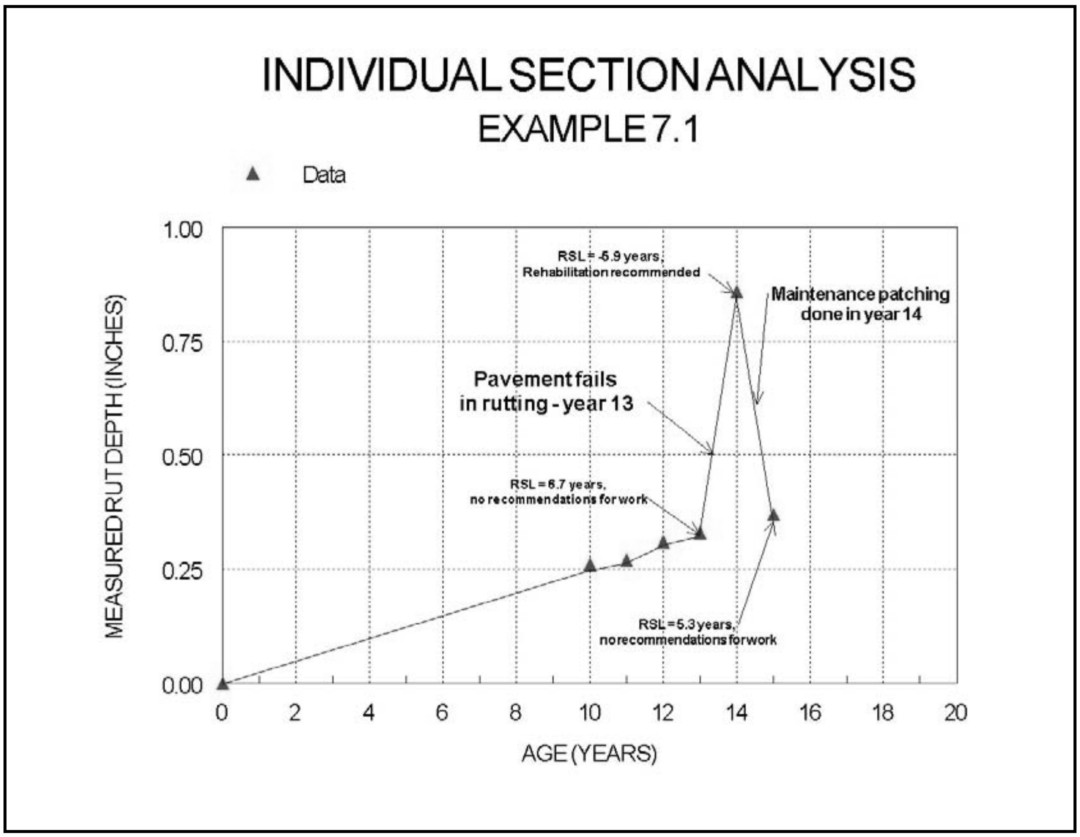


Figure 10.7: Example 7 Data - Fairbanks

11.0 General Application of Remaining Service Life (RSL) Model

The main use of these rutting models is to predict the point in time at which rehabilitation is needed or *due*. With accurate predictions of this timing, projects may be designed slightly ahead of time so that construction timing is appropriate.

Considering that a pavement segment is due for construction when the average rut depth is 0.75 inches, it is wise to start rehabilitation design when the average rut depth reaches 0.5 inches. The Washington DOT stipulates that projects are due for rehabilitation design when the average rut depth is 0.4 inches (30). Thus the 0.5-in level is not conservative in comparison.

Pavement rehabilitation design is recommended at the point where the RSL is zero years. If these are in localized segments of a roadway where adjacent sections have RSL greater than 1, the recommendation is for pavement maintenance patching or overlay.

Project due dates (RSL) may be negative, if the average rut depth exceeds that chosen for design to commence. The linear annual rutting rates may be easily used to predict the time in the future or past that design projects are due. The negative due dates or *past due* dates are the most interesting. They may be used to prioritize projects. With limited funding available, the farthest past due sections need to get to design before the later due dates sections.

It should be kept in mind that urban rutting problems are just one piece of the puzzle in determining pavement rehabilitation and maintenance needs. Ride quality is a primary indicator for all pavement needs. It is found that pavement rutting and roughness, in general, do not progress at similar rates. Maintenance personnel input, structural problems and old age also give indications for pavement maintenance and rehabilitation needs. The overall RSL for each segment is developed considering all these factors.

The sections with due dates in the future are relatively uninteresting. More rut measurements are planned in the future and their respective model is refined to fit the data.

For the purpose of this study, the average age and average RSL for each pavement type and location are considered. The average service life is calculated by adding the values for average age and average RSL. These computations are shown in Table 11.1. The data is sorted with the longest average service life at the top and on down. This is a direct application of Equation 4.7 for RSL, therefore it is not finely tuned for individual sections.

Table 11.1 shows that rutting and wearing is not a problem in Fairbanks. During winter, roads in Fairbanks are often covered with snow and ice. This is unlike the maritime climates in Southeast Alaska and Anchorage that generally go through freeze and thaw cycles continuously throughout the winter. It is hypothesized by some that snow and ice cover protects the pavement from studded tire wear. Traffic levels in Fairbanks are generally much lower than in Anchorage, which helps decrease its deformation rutting rates too.

Portland Cement Concrete comes up next on the list in Table 11.1. Based on its relatively superior service life one might think that more of its use is warranted. However, the cost of rehabilitation may be prohibitive.

The Plus Ride and Superpave mixes are the next on the list. It must be remembered that Plus Ride mix technology is not currently used anywhere and the availability of crumb rubber for it is unknown. Also, it should be remembered that approximately half of the Plus Ride mixes constructed in the 1980s in Alaska failed immediately, requiring removal and replacement. The Plus Ride mixes cost roughly double standard dense graded mixes in the 1980s. Thus, new construction of Plus Ride type mixes is an expensive gamble. If it is done correctly, it may work.

The Superpave mix in Southeast Alaska considered here was made from imported harder aggregates and stiffer asphalt cement. This mix are relatively new, therefore the RSL computations are extrapolations from the data. None have failed yet, so the service life is just an estimate now. However, initial results look promising for mixes with harder aggregates and stiffer asphalt.

Note that the best two mixes in Anchorage are “SMA with PG64-28” and “SMA with AC-5 and hard aggregate”. It is expected that the combination of using stiff PG64-28 asphalt cement and hard aggregates will improve the performance of SMA.

Table 11.1: Average Age, RSL and Rutting Service Life For Urban Alaskan Pavements			
MIX TYPE AND AREA OF USE	**AVG. PAVEMENT AGE in 2004 or end of Service**	**AVG. RSL IN 2004 OR AT END OF SERVICE LIFE (YEARS)**	**AVG. SERVICE LIFE: Age plus RSL (years)**
Type II – Fairbanks	18	6	24
Portland Cement Concrete – Anchorage	8	4	12
Super Pave - Southeast	3	8	11
Plus Ride - Anchorage	16	-5	11
SMA with PG 64-28 Polymer Modified Asphalt – Arterials in Anchorage	5	5	10
SMA with AC-5 and hard aggregate -Anchorage	5	4	9
Type II – Southeast	8	1	9
Type II - Anchorage	13	-5	8
SMA with AC-5 – Arterials - Anchorage	7.5	-0.6	7
SMA with PG 58-28 Polymer Modified Asphalt – Arterials - Anchorage	3	3	6
Type I - Anchorage	8	-2	6
SMA with AC-5 – Freeways - Anchorage	7	-1	6
SMA with PG 58-28 Polymer Modified Asphalt – Freeways - Anchorage	3	1	4

12.0 Summary and Conclusions

In Urban Alaska, analyzing individual pavement sections with the same age, wearing course type, traffic and supporting materials is the only way to reasonably and accurately predict rut rates with models. Once pavement sections are created with this commonality, the only reasonable independent variable is age.

The best models are created using several years of rutting data. Using only rutting data from one year after construction will, most of the time, give conservative predictions of pavement life in terms of this distress. Data from the second year and higher appears to give better approximations of pavement life.

From this study, the best overall model for estimating pavement life is found as:

Remaining Service Life in years = RSL

$$RSL = Age\left(\frac{0.5''}{\text{Rut Depth}} - 1\right)$$

where: *Age* is in years for a particular pavement segment

Rut Depth is the average rut depth (inches) in a particular section of roadway, typically one mile or less in length, with the same type and age of wearing course and a consistent traffic pattern (29).

Development of this equation is shown in Section 4 with validation presented in Section 10. Here the point when the average rut depth reaches 0.5 inches (12.7 mm) is considered the "zero remaining life" point. At this rut depth, pavement rehabilitation design is recommended so that repaving is done before the average rut depth becomes a safety issue for road users.

This equation is based on data collected by Dynatest laser road surface profilers. Its accurate application is dependent on a linear rut progression with time. If there are large changes in the average rut depth in a section, e.g., a 0.5-inch (12.7 mm) increase or decrease, this situation and the data must be investigated for practical application.

When large changes in average rut depth are recorded from one year to the next within a pavement section, this indicates further investigation is needed. The person working with the data needs to find out:

(1) was maintenance work done on the section that effected the measurements?;
(2) was the rutting data computed and loaded properly onto the section?; and/or
(3) are there errors in the data caused by driving or equipment problems?. If the rate of rutting is truly changing rapidly, the user might apply the slope extension method shown in Equation 10.3 for predicting the Remaining Service Life within the section.

In cases where the pavement is already failed in rutting, i.e., average rut depth over 0.5 inches, the RSL becomes negative. Pavements failing in rutting tend to have increasing average rut depths. For example, a pavement that has been rutting at a rate of 0.05-0.1 inches (1.3-2.5 mm) per year may finally go from a 0.4-inch (10 mm) rut depth to 0.6

(15.2 mm) in one year. Failed pavements may show an RSL greater than 1 year in this situation. This may be corrected by checking the data, but it is felt that it gives reasonable gravity to the situation for prioritization of projects.

There are too many variables in pavement design and construction to allow creation of accurate rut prediction models in two dimensions – traffic and rut depth for general classes of paving mixtures. Section 6 of this report goes into exhaustive analysis along these lines. It is felt that variations in mix properties, thicknesses, material sources, traffic levels, traffic patterns, traffic data accuracy, studded tire use, seasons, supporting materials, and subgrades, to name a few, can create variations in performance too many to predict.

There appears to be a fair correlation between Prall testing results and annual rates of rutting (Figure 8.1). This may be useful in design for determining the maximum Abrasion Value required providing a proper rutting or wearing life of the pavement. However more testing is needed.

Results of the Georgia loaded wheel rut tester on laboratory prepared mixtures is not found to correlate with field performance in general. Here, in fact, we found that mixtures with better values of rut index sometimes tended to perform worse in the field than those with poorer values (Figure 9.1).

Dense graded mixes in Fairbanks are found to perform better than any surfacing in urban Alaska (Table 11.1). This might indicate that the paving mixes in Fairbanks are superior. However, Fairbanks has a much different climate than Anchorage or Southeast Alaska. Fairbanks has a Continental climate that is dry and cold in the winter. It is thought that, most of the winter, snow and ice-cover protect the roads from the ravages of studded tire wear. Also studded tire usage in Fairbanks is about half that in the other regions. Hardness testing of Fairbanks aggregates finds them no better than in the other regions. It is interesting that Fairbanks pavement rutting life due to studded tire wear is similar to that of the other regions. This is shown in Table 5.2.

In the Fairbanks area, at this point in time, studded tire wear and rutting do not appear to be a major distress effecting pavement life. This conclusion is based on current climatic and traffic levels there. The climate is not likely to change, but the traffic levels and patterns probably will. A few older roadways in Fairbanks are showing up with rutting problems. Thus monitoring of rutting in Fairbanks must continue.

Superpave mixes in the Southeast Region, using hard aggregates appear to be a solution for the rutting and wear rate problems in that area. These are constructed with imported hard aggregates that add to the cost of the mixture, but the performance is improved to give projected service life equivalent to or better than the best performing asphalt mixtures in the Anchorage area.

The Portland Cement Concrete used on WIM sites and on bridge decks wear at an average rate that is not far superior to some of the better asphalt mixes. It is a given that “rutting” in PCC is all from wear and not plastic deformation. Based on rut measurements on PCC and adjacent SMA mixes, it is estimated that approximately 70% of the rutting in “SMA with AC-5 asphalt” is from wear. Similarly, about 50% of the rutting in “SMA with PG58-28 asphalt cement” is from wear. This is interesting since we apparently see a reduction in studded tire wear rate with the stiffer PG58-28 asphalt cement in SMA.

If constructed properly, Plus-Ride, crumb rubber asphalt mix works very well. Its double cost compared to dense graded mixes is not really an obstacle for its use. However, the 50% failure rate experienced in Alaska is still an obstacle that needs to be addressed before further consideration of using this wearing course.

Hard aggregates, based on Nordic Abrasion Values, seem to provide better rutting and wear resistance. This is demonstrated by one test section of SMA constructed with aggregates having an average Nordic Abrasion Value of 8.0 that had one of the lowest rutting rates in the state. Nordic countries require Abrasion Values for aggregates of less than or equal to 7 for the higher trafficked roadways.

The best performing mixtures in the Anchorage area are the SMA pavements using stiffer PG64-28, followed by SMA with hard aggregates and AC-5 binder. Obviously, construction of SMA with stiff asphalt *and* hard aggregates would enhance its performance.

Accurate and reasonable prediction of rutting performance is one piece of the puzzle in pavement management. A good prediction method for rutting development of various mixes and locations helps manage pavement for proper rehabilitation project timing. Proper timing of rehabilitation projects is found to save agency money and improve user’s safety (1,17,27,31).

In this study, rut prediction methods that are accurate, reasonable and easy to understand, were developed and validated. These methods are currently applied in pavement management in Alaska. These methods can also be used to compare mix performance so that we can improve the selection process for rutting and studded tire wear resistant mixes used on urban roadways in Alaska.

13.0 Recommendations for Continued Research

1. Perform further testing and correlations with Prall Abrasion Values and relate it to field performance.
2. Currently only the Southeast Region has the Prall test equipment. It is recommended that one be obtained and used in the Central Region.
3. Continue Managing Pavement Rutting on an individual section basis to refine prediction models.
4. Import hard aggregates for rut resistant pavement and study it further.

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APPENDICES

APPENDIX A

DATA FOR ANCHORAGE TYPE I HOT-MIX ASPHALT PAVEMENT

ANCHORAGE AREA ASPHALT CONCRETE, TYPE 1 (1" minus, dense graded) TRAFFIC, AGE AND RUT MEASUREMENT DATA

Const. Year	RoadID	Road Name	Section Description	Condition Year	Rut Depth (in.)	Age at Condition Year (years)	Cummulative Traffic	Traffic Year	AADT	Growth Rate	Lanes	Lane ADT	Cumulative Traffic/10^6	Rut per Million Traffic Passes (in.)	Rut/year (in.)	Avg. Rut/year (in.)	Studded Tire Wear/10^6 Passes (in.)
1993	97	Benson Blvd.	002. Minnesota Drive to C Street	1993	0	0	0	1993				5625	0.0				
1993	97	Benson Blvd.	002. Minnesota Drive to C Street	1998	0.4	5	11768969	1996				6611	11.8	0.034	0.080		0.143
1993	97	Benson Blvd.	002. Minnesota Drive to C Street	1999	0.46	6	14326068	1998				6948	14.3	0.032	0.077		0.135
1993	97	Benson Blvd.	002. Minnesota Drive to C Street	2000	0.5	7	16921126	1999				7025	16.9	0.030	0.071		0.124
1993	97	Benson Blvd.	002. Minnesota Drive to C Street	2001	0.56	8	19656765	2000				7138	19.7	0.028	0.070	0.075	0.120
1993	97	Benson Blvd.	003. C Street to New Seward Highway	1993	0	0	0	1993				5725	0.0				
1993	97	Benson Blvd.	003. C Street to New Seward Highway	1998	0.5	5	11514838	1996				6344	11.5	0.043	0.100		0.183
1993	97	Benson Blvd.	003. C Street to New Seward Highway	1999	0.56	6	14034706	1998				6825	14.0	0.040	0.093		0.168
1993	97	Benson Blvd.	003. C Street to New Seward Highway	2000	0.6	7	16482853	1999				6930	16.5	0.036	0.086		0.153
1993	97	Benson Blvd.	003. C Street to New Seward Highway	2001	0.66	8	19024950	2000				6633	19.0	0.035	0.083	0.090	0.146
1993	97	Benson Blvd.	004. New Seward Highway to Jct. N. Lts. Blvd.	1993	0	0	0	1993				3925	0.0				
1993	97	Benson Blvd.	004. New Seward Highway to Jct. N. Lts. Blvd.	1998	0.2	5	9083481	1996				5238	9.1	0.022	0.040		0.093
1993	97	Benson Blvd.	004. New Seward Highway to Jct. N. Lts. Blvd.	1999	0.3	6	11117170	1998				5508	11.1	0.027	0.050		0.114
1993	97	Benson Blvd.	004. New Seward Highway to Jct. N. Lts. Blvd.	2000	0.45	7	12999840	1999				5593	13.0	0.035	0.064		0.146
1993	97	Benson Blvd.	004. New Seward Highway to Jct. N. Lts. Blvd.	2001	0.55	8	14921072	2000				5013	14.9	0.037	0.069	0.056	0.155
1993	61	Glenn Highway	059. Knik R. Bridge #1 to Knik R. Bridge #2	1993	0	0	0	1993				4108	0.0				
1993	61	Glenn Highway	059. Knik R. Bridge #1 to Knik R. Bridge #2	1997	0.33	4	6477153	1996				4525	6.5	0.051	0.083		0.215
1993	61	Glenn Highway	059. Knik R. Bridge #1 to Knik R. Bridge #2	1998	0.33	5	8270900	1998				4970	8.3	0.040	0.066		0.168
1993	61	Glenn Highway	059. Knik R. Bridge #1 to Knik R. Bridge #2	1999	0.34	6	10064693	1999				4896	10.1	0.034	0.057		0.142
1993	61	Glenn Highway	059. Knik R. Bridge #1 to Knik R. Bridge #2	2000	0.36	7	11901008	2000				5076	11.9	0.030	0.051		0.127
1993	61	Glenn Highway	059. Knik R. Bridge #1 to Knik R. Bridge #2	2001	0.48	8	13898014	2001				5603	13.9	0.035	0.060	0.059	0.145
1993	61	Glenn Highway	060. Knik R. Bridge #2 to Bridge #3	1993	0	0	0	1993				4108	0.0				
1993	61	Glenn Highway	060. Knik R. Bridge #2 to Bridge #3	1998	0.3	5	8270900	1996				4525	8.3	0.036	0.060		0.153
1993	61	Glenn Highway	060. Knik R. Bridge #2 to Bridge #3	1999	0.38	6	10064693	1998				4970	10.1	0.038	0.063		0.159
1993	61	Glenn Highway	060. Knik R. Bridge #2 to Bridge #3	2000	0.4	7	11901008	1999				4896	11.9	0.034	0.057		0.142
1993	61	Glenn Highway	060. Knik R. Bridge #2 to Bridge #3	2001	0.49	8	13898014	2000				5076	13.9	0.035	0.061	0.060	0.148
1993	61	Glenn Highway	060. Knik R. Bridge #2 to Bridge #3	2002	0.28	9	0	2001				5603	0.0		0.031		
1993	61	Glenn Highway	062. Bridge #3 to mile 32	1993	0	0	0	1993				4108	0.0				
1993	61	Glenn Highway	062. Bridge #3 to mile 32	1998	0.3	5	8270900	1996				4525	8.3	0.036	0.060		0.153
1993	61	Glenn Highway	062. Bridge #3 to mile 32	1999	0.36	6	10064693	1998				4970	10.1	0.036	0.060		0.151
1993	61	Glenn Highway	062. Bridge #3 to mile 32	2000	0.4	7	11901008	1999				4896	11.9	0.034	0.057		0.142
1993	61	Glenn Highway	062. Bridge #3 to mile 32	2001	0.61	8	13898014	2000				5076	13.9	0.044	0.076	0.063	0.185
1993	61	Glenn Highway	062. Bridge #3 to mile 32	2002	0.09	9	0	2001				5603	0.0		0.010		
1993	61	Glenn Highway	062.5. Mile 32 to Rabbit Slough/Nelson exit	1993	0	0	0	1993				4000	0.0				
1993	61	Glenn Highway	062.5. Mile 32 to Rabbit Slough/Nelson exit	1997	0.36	4	6427878	1996				4525	6.4	0.056	0.090		0.236
1993	61	Glenn Highway	062.5. Mile 32 to Rabbit Slough/Nelson exit	1998	0.36	5	8221625	1998				4970	8.2	0.044	0.072		0.184
1993	61	Glenn Highway	062.5. Mile 32 to Rabbit Slough/Nelson exit	1999	0.37	6	10015418	1999				4896	10.0	0.037	0.062		0.156
1993	61	Glenn Highway	062.5. Mile 32 to Rabbit Slough/Nelson exit	2000	0.4	7	11851733	2000				5076	11.9	0.034	0.057		0.142
1993	61	Glenn Highway	062.5. Mile 32 to Rabbit Slough/Nelson exit	2001	0.6	8	13848739	2001				5603	13.8	0.043	0.075	0.066	0.182
1993	61	Glenn Highway	062.5. Mile 32 to Rabbit Slough/Nelson exit	2002	0.14	9	0	2001				5603	0.0		0.016		
1993	61	Glenn Highway	063. Rabbit Slough/Nelson exit to jct. Parks Highway	1993	0	0	0	1993				4000	0.0				
1993	61	Glenn Highway	063. Rabbit Slough/Nelson exit to jct. Parks Highway	1997	0.26	4	6427878	1996				4525	6.4	0.040	0.065		0.170
1993	61	Glenn Highway	063. Rabbit Slough/Nelson exit to jct. Parks Highway	1998	0.26	5	8221625	1998				4970	8.2	0.032	0.052		0.133
1993	61	Glenn Highway	063. Rabbit Slough/Nelson exit to jct. Parks Highway	1999	0.27	6	10015418	1999				4896	10.0	0.027	0.045		0.114
1993	61	Glenn Highway	063. Rabbit Slough/Nelson exit to jct. Parks Highway	2000	0.3	7	11851733	2000				5076	11.9	0.025	0.043		0.107
1993	61	Glenn Highway	063. Rabbit Slough/Nelson exit to jct. Parks Highway	2001	0.32	8	13848739	2001				5603	13.8	0.023	0.040		0.097
1993	61	Glenn Highway	063. Rabbit Slough/Nelson exit to jct. Parks Highway	2002	0.34	9	15996089	2001				5603	16.0	0.021	0.038	0.047	0.089
1993	61	Glenn Highway	065. jct Parks Hwy. To MP 37	2002	0.36	9	15996089	2001				2179	16.0	0.023	0.040		0.095
1993	61	Glenn Highway	065. EOP Interchange To MP 37	2004	0.76	11	17753199	2003				2407	17.8	0.043	0.069	0.055	0.180
1993	61	Glenn Highway	067. MP 37 to MP 38	1993	0	0	0	1993	5756		2	2878	0.0				
1993	61	Glenn Highway	067. MP 37 to MP 38	1997	0.26	4	4882651	1996	6978	0.071	2	3489	4.9	0.053	0.065		0.224
1993	61	Glenn Highway	067. MP 37 to MP 38	1998	0.26	5	6313588	1998	7964	0.071	2	3982	6.3	0.041	0.052		0.173
1993	61	Glenn Highway	067. MP 37 to MP 38	1999	0.27	6	7791381	1999	8142	0.022	2	4071	7.8	0.035	0.045		0.146
1993	61	Glenn Highway	067. MP 37 to MP 38	2000	0.39	7	9287425	2000	8216	0.009	2	4108	9.3	0.042	0.056		0.177
1993	61	Glenn Highway	067. MP 37 to MP 38	2001	0.46	8	10855146	2001	8715	0.061	2	4358	10.9	0.042	0.058		0.178
1993	61	Glenn Highway	067. MP 37 to MP 38	2002	0.34	9	12522009	2002	9273	0.064	2	4637	12.5	0.027	0.038		0.114
1993	61	Glenn Highway	067. MP 37 to MP 38	2003	0.52	10	14386385	2003	9732.971	0.050	2	4866	14.4	0.036	0.052		0.152
1993	61	Glenn Highway	067. MP 37 to MP 38	2004	0.63	11	16143495	2003	9628		2	4814	16.1	0.039	0.057	0.053	0.164
1993	61	Glenn Highway	069. MP 38 to MP 39	1993	0	0	0	1993	5756		2	2878	0.0				
1993	61	Glenn Highway	069. MP 38 to MP 39	1997	0.23	4	4882651	1996	6978	0.071	2	3489	4.9	0.047	0.058		0.198
1993	61	Glenn Highway	069. MP 38 to MP 39	1998	0.23	5	6313588	1998	7964	0.071	2	3982	6.3	0.036	0.046		0.153
1993	61	Glenn Highway	069. MP 38 to MP 39	1999	0.24	6	7791381	1999	8142	0.022	2	4071	7.8	0.031	0.040		0.130
1993	61	Glenn Highway	069. MP 38 to MP 39	2000	0.27	7	9287425	2000	8216	0.009	2	4108	9.3	0.029	0.039		0.122

ANCHORAGE AREA ASPHALT CONCRETE, TYPE 1 (1" minus, dense graded) TRAFFIC, AGE AND RUT MEASUREMENT DATA

Const. Year	RoadID	Road Name	Section Description	Condition Year	Rut Depth (in.)	Age at Condition Year (years)	Cummulative Traffic	Traffic Year	AADT	Growth Rate	Lanes	Lane ADT	Cumulative Traffic/10^6	Rut per Million Traffic Passes (in.)	Rut/year (in.)	Avg. Rut/year (in.)	Studded Tire Wear/10^6 Passes (in.)
1993	61	Glenn Highway	069. MP 38 to MP 39	2001	0.38	8	10855146	2001	8715	0.061	2	4358	10.9	0.035	0.048		0.147
1993	61	Glenn Highway	069. MP 38 to MP 39	2002	0.31	9	12522009	2002	9273	0.064	2	4637	12.5	0.025	0.034		0.104
1993	61	Glenn Highway	069. MP 38 to MP 39	2003	0.46	10	14386385	2003	9732.971	0.050	2	4866	14.4	0.032	0.046		0.135
1993	61	Glenn Highway	069. MP 38 to MP 39	2004	0.6	11	16143495	2003	9628		2	4814	16.1	0.037	0.055	0.046	0.156
1993	61	Glenn Highway	071. MP 39 to MP 40	1993	0	0	0	1993	6500		2	3250	0.0				
1993	61	Glenn Highway	071. MP 39 to MP 40	1997	0.33	4	5112920	1996	7142	0.033	2	3571	5.1	0.065	0.083		0.272
1993	61	Glenn Highway	071. MP 39 to MP 40	1998	0.33	5	6523006	1998	7810	0.047	2	3905	6.5	0.051	0.066		0.213
1993	61	Glenn Highway	071. MP 39 to MP 40	1999	0.34	6	8247403	1999	9995	0.280	2	4998	8.2	0.041	0.057		0.174
1993	61	Glenn Highway	071. MP 39 to MP 40	2000	0.38	7	10121450	2000	10360	0.037	2	5180	10.1	0.038	0.054		0.158
1993	61	Glenn Highway	071. MP 39 to MP 40	2001	0.39	8	12040894	2001	10570	0.020	2	5285	12.0	0.032	0.049		0.136
1993	61	Glenn Highway	071. MP 39 to MP 40	2002	0.33	9	14150594	2002	11890	0.125	2	5945	14.2	0.023	0.037		0.098
1993	61	Glenn Highway	071. MP 39 to MP 40	2003	0.51	10	16729571	2003	12962.34	0.090	2	6481	16.7	0.030	0.051		0.128
1993	61	Glenn Highway	071. MP 39 to MP 40	2004	0.63	11	18983446	2003	12350		2	6175	19.0	0.033	0.057	0.057	0.140
1993	61	Glenn Highway	073. MP 40 to Palmer-Wasilla Hwy.	1993	0	0	0	1993	8000		2	4000	0.0				
1993	61	Glenn Highway	073. MP 40 to Palmer-Wasilla Hwy.	1997	0.21	4	6862548	1996	9996	0.083	2	4998	6.9	0.031	0.053		0.129
1993	61	Glenn Highway	073. MP 40 to Palmer-Wasilla Hwy.	1998	0.22	5	8735363	1998	10300	0.015	2	5150	8.7	0.025	0.044		0.106
1993	61	Glenn Highway	073. MP 40 to Palmer-Wasilla Hwy.	1999	0.22	6	10640434	1999	10485	0.018	2	5243	10.6	0.021	0.037		0.087
1993	61	Glenn Highway	073. MP 40 to Palmer-Wasilla Hwy.	2000	0.25	7	12690138	2000	11480	0.095	2	5740	12.7	0.020	0.036		0.083
1993	61	Glenn Highway	073. MP 40 to Palmer-Wasilla Hwy.	2001	0.31	8	14654933	2001	10528	-0.083	2	5264	14.7	0.021	0.039		0.089
1993	61	Glenn Highway	073. MP 40 to MP 41	2003	0.45	10	16809020	2003	11220	0.026	2	5610	16.8	0.027	0.045		0.113
1993	61	Glenn Highway	073. MP 40 to MP 41	2004	0.55	11	18824915	2003	11046		2	5523	18.8	0.029	0.050	0.043	0.123
1993	104	Glenn Highway SB	002. jct Parks Hwy. To Rabbit Slough/Nelson exit	1993	0	0	0	1993				4000	0.0				
1993	104	Glenn Highway SB	002. jct Parks Hwy. To Rabbit Slough/Nelson exit	1997	0.26	4	6427878	1996				4525	6.4	0.040	0.065		0.170
1993	104	Glenn Highway SB	002. jct Parks Hwy. To Rabbit Slough/Nelson exit	1998	0.28	5	8221625	1998				4970	8.2	0.034	0.056		0.143
1993	104	Glenn Highway SB	002. jct Parks Hwy. To Rabbit Slough/Nelson exit	1999	0.29	6	10015418	1999				4896	10.0	0.029	0.048		0.122
1993	104	Glenn Highway SB	002. jct Parks Hwy. To Rabbit Slough/Nelson exit	2000	0.31	7	11573876	2000				4061	11.6	0.027	0.044		0.113
1993	104	Glenn Highway SB	002. jct Parks Hwy. To Rabbit Slough/Nelson exit	2001	0.32	8	13478264	2001				5603	13.5	0.024	0.040		0.100
1993	104	Glenn Highway SB	002. jct Parks Hwy. To Rabbit Slough/Nelson exit	2002	0.4	9	15625614	2001				5603	15.6	0.026	0.044	0.050	0.108
1993	104	Glenn Highway SB	004. Rabbit Slough/Nelson exit to Bridge #3	1993	0	0	0	1993				4000	0.0				
1993	104	Glenn Highway SB	004. Rabbit Slough/Nelson exit to Bridge #3	1997	0.5	4	6427878	1996				4525	6.4	0.078	0.125		0.328
1993	104	Glenn Highway SB	004. Rabbit Slough/Nelson exit to Bridge #3	1998	0.52	5	8221625	1998				4970	8.2	0.063	0.104		0.266
1993	104	Glenn Highway SB	004. Rabbit Slough/Nelson exit to Bridge #3	1999	0.53	6	10015418	1999				4896	10.0	0.053	0.088		0.223
1993	104	Glenn Highway SB	004. Rabbit Slough/Nelson exit to Bridge #3	2000	0.55	7	11851733	2000				5076	11.9	0.046	0.079		0.195
1993	104	Glenn Highway SB	004. Rabbit Slough/Nelson exit to Bridge #3	2001	0.56	8	13848739	2001				5603	13.8	0.040	0.070		0.170
1993	104	Glenn Highway SB	004. Rabbit Slough/Nelson exit to Bridge #3	2002	0.7	9	15996089	2001				5603	16.0	0.044	0.078	0.084	0.184
1993	104	Glenn Highway SB	006. Bridge #3 to Knik R. Bridge #1	1993	0	0	0	1993				3100	0.0				
1993	104	Glenn Highway SB	006. Bridge #3 to Knik R. Bridge #1	1997	0.31	4	6017253	1996				4525	6.0	0.052	0.078		0.217
1993	104	Glenn Highway SB	006. Bridge #3 to Knik R. Bridge #1	1998	0.33	5	7811000	1998				4970	7.8	0.042	0.066		0.178
1993	104	Glenn Highway SB	006. Bridge #3 to Knik R. Bridge #1	1999	0.34	6	9604793	1999				4896	9.6	0.035	0.057		0.149
1993	104	Glenn Highway SB	006. Bridge #3 to Knik R. Bridge #1	2000	0.35	7	11441108	2000				5076	11.4	0.031	0.050		0.129
1993	104	Glenn Highway SB	006. Bridge #3 to Knik R. Bridge #1	2001	0.37	8	13438114	2001				5603	13.4	0.028	0.046		0.116
1993	104	Glenn Highway SB	006. Bridge #3 to Knik R. Bridge #1	2002	0.4	9	15585464	2001				5603	15.6	0.026	0.044	0.060	0.108
1994	67	Minnesota Drive (NB)	007. International Airport Rd. Interchange Project to Tudor Road	1994	0	0	0	1994	38736		6	6456	0.0				
1994	67	Minnesota Drive (NB)	007. International Airport Rd. Interchange Project to Tudor Road	1998	0.15	4	9942022	1998	41583	0.018	6	6931	9.9	0.015	0.038		0.064
1994	67	Minnesota Drive (NB)	007. International Airport Rd. Interchange Project to Tudor Road	1999	0.2	5	12334491	1999	40970	-0.015	6	6828	12.3	0.016	0.040		0.068
1994	67	Minnesota Drive (NB)	007. International Airport Rd. Interchange Project to Tudor Road	2000	0.39	6	15187696	2000	38781	-0.053	6	6464	15.2	0.026	0.065		0.108
1994	67	Minnesota Drive (NB)	007. International Airport Rd. Interchange Project to Tudor Road	2001	0.58	7	18008203	2001	49609	0.279	6	8268	18.0	0.032	0.083		0.136
1994	67	Minnesota Drive (NB)	007. International Airport Rd. Interchange Project to Tudor Road	2002	0.6	8	20734494	2002	45283	-0.087	6	7547	20.7	0.029	0.075		0.122
1994	67	Minnesota Drive (NB)	007. International Airport Rd. Interchange Project to Tudor Road	2003	0.74	9	23413933	2003	44660	-0.014	6	7443	23.4	0.032	0.082		0.133
1994	67	Minnesota Drive (NB)	007. International Airport Rd. Interchange Project to Tudor Road	2004	0.82	10	26190562	2004	44660	0.022	6	7443	26.2	0.031	0.082	0.066	0.132
1994	229	Minnesota Drive (SB)	004. Pvmt. change to International Airport Rd. Interchange Project	1994	0	0	0	1994	38736		6	6456	0.0				
1994	229	Minnesota Drive (SB)	004. Pvmt. change to International Airport Rd. Interchange Project	1997	0.37	3	7359541	1997	40711	0.017	6	6785	7.4	0.050	0.123		0.212
1994	229	Minnesota Drive (SB)	004. Pvmt. change to International Airport Rd. Interchange Project	1998	0.38	4	9882542	1998	41583	0.021	6	6931	9.9	0.038	0.095		0.162
1994	229	Minnesota Drive (SB)	004. Pvmt. change to International Airport Rd. Interchange Project	1999	0.4	5	12384207	1999	40970	-0.015	6	6828	12.4	0.032	0.080		0.136
1994	229	Minnesota Drive (SB)	004. Pvmt. change to International Airport Rd. Interchange Project	2000	0.45	6	14776675	2000	38781	-0.053	6	6464	14.8	0.030	0.075		0.128
1994	229	Minnesota Drive (SB)	004. Pvmt. change to International Airport Rd. Interchange Project	2001	0.6	7	17597182	2001	49609	0.279	6	8268	17.6	0.034	0.086		0.144
1994	229	Minnesota Drive (SB)	004. Pvmt. change to International Airport Rd. Interchange Project	2002	0.62	8	20323474	2002	45283	-0.087	6	7547	20.3	0.031	0.078		0.128
1994	229	Minnesota Drive (SB)	004. Pvmt. change to International Airport Rd. Interchange Project	2003	0.84	9	23002913	2003	44660	-0.014	6	7443	23.0	0.037	0.093		0.154
1994	229	Minnesota Drive (SB)	004. Pvmt. change to International Airport Rd. Interchange Project	2004	0.95	10	25836217	2004	45607.38	0.021	6	7601	25.8	0.037	0.095	0.091	0.155
1991	64	Muldoon Road	001. Regal Mt. Road to E. 36th Ave.	1991	0	0	0	1991	25000		4	6250	0.0				
1991	64	Muldoon Road	001. Regal Mt. Road to E. 36th Ave.	1997	0.27	6	14620349	1996	26053	0.008	4	6513	14.6	0.018	0.045		0.078
1991	64	Muldoon Road	001. Regal Mt. Road to E. 36th Ave.	1998	0.27	7	16959520	1998	25575	-0.009	4	6394	17.0	0.016	0.039		0.067
1991	64	Muldoon Road	001. Regal Mt. Road to E. 36th Ave.	1999	0.27	8	19310690	1999	25830	0.010	4	6458	19.3	0.014	0.034		0.059

ANCHORAGE AREA ASPHALT CONCRETE, TYPE 1 (1" minus, dense graded) TRAFFIC, AGE AND RUT MEASUREMENT DATA

Const. Year	RoadID	Road Name	Section Description	Condition Year	Rut Depth (in.)	Age at Condition Year (years)	Cummulative Traffic	Traffic Year	AADT	Growth Rate	Lanes	Lane ADT	Cumulative Traffic/10^6	Rut per Million Traffic Passes (in.)	Rut/year (in.)	Avg. Rut/year (in.)	Studded Tire Wear/10^6 Passes (in.)
1991	64	Muldoon Road	001. Regal Mt. Road to E. 36th Ave.	2000	0.33	9	21556330	2000	24203	-0.063	4	6051	21.6	0.015	0.037		0.064
1991	64	Muldoon Road	001. Regal Mt. Road to E. 36th Ave.	2001	0.6	10	23609637	2001	21935	-0.094	4	5484	23.6	0.025	0.060		0.107
1991	64	Muldoon Road	001. Regal Mt. Road to pvmt. change @ E. 36th Ave.	2002	0.7	11	25755678	2002	24046	0.096	4	6012	25.8	0.027	0.064		0.114
1991	64	Muldoon Road	001. Regal Mt. Road to pvmt. change @ E. 36th Ave.	2003	0.79	12	27989478	2003	24480	0.018	4	6120	28.0	0.028	0.066		0.119
1991	64	Muldoon Road	001. Regal Mt. Road to pvmt. change @ E. 36th Ave.	2004	0.83	13	30212687	2004	24480	-0.005	4	6120	30.2	0.027	0.064	0.051	0.116
1993	98	Northern Lights Blvd.	005. Lake Otis Parkway to New Seward Highway	1993	0	0	0	1993				9364	0.0				
1993	98	Northern Lights Blvd.	005. Lake Otis Parkway to New Seward Highway	1998	0.29	5	16887638	1996				8956	16.9	0.017	0.058		0.072
1993	98	Northern Lights Blvd.	005. Lake Otis Parkway to New Seward Highway	1999	0.3	6	20483070	1998				9738	20.5	0.015	0.050		0.062
1993	98	Northern Lights Blvd.	005. Lake Otis Parkway to New Seward Highway	2000	0.35	7	24169935	1999				9888	24.2	0.014	0.050		0.061
1993	98	Northern Lights Blvd.	005. Lake Otis Parkway to New Seward Highway	2001	0.6	8	27856800	2000				10172	27.9	0.022	0.075	0.058	0.091
1993	98	Northern Lights Blvd.	006. New Seward Highway to C Street	1993	0	0	0	1993				5750	0.0				
1993	98	Northern Lights Blvd.	006. New Seward Highway to C Street	1998	0.4	5	10742406	1996				5825	10.7	0.037	0.080		0.157
1993	98	Northern Lights Blvd.	006. New Seward Highway to C Street	1999	0.42	6	13055138	1998				6145	13.1	0.032	0.070		0.135
1993	98	Northern Lights Blvd.	006. New Seward Highway to C Street	2000	0.45	7	15441781	1999				6400	15.4	0.029	0.064		0.123
1993	98	Northern Lights Blvd.	006. New Seward Highway to C Street	2001	0.53	8	17965483	2000				6585	18.0	0.030	0.066	0.070	0.124
1993	98	Northern Lights Blvd.	007. C Street to Minnesota Drive	1993	0	0	0	1993				5102	0.0				
1993	98	Northern Lights Blvd.	007. C Street to Minnesota Drive	1998	0.32	5	9912488	1996				5512	9.9	0.032	0.064		0.136
1993	98	Northern Lights Blvd.	007. C Street to Minnesota Drive	1999	0.35	6	11996729	1998				5600	12.0	0.029	0.058		0.123
1993	98	Northern Lights Blvd.	007. C Street to Minnesota Drive	2000	0.4	7	14113546	1999				5747	14.1	0.028	0.057		0.119
1993	98	Northern Lights Blvd.	007. C Street to Minnesota Drive	2001	0.69	8	16342912	2000				5817	16.3	0.042	0.086	0.066	0.178
1993	98	Northern Lights Blvd.	008. Minnesota Drive to Turnagain Blvd.	1993	0	0	0	1993				6002	0.0				
1993	98	Northern Lights Blvd.	008. Minnesota Drive to Turnagain Blvd.	1998	0.16	5	13701644	1996				7864	13.7	0.012	0.032		0.049
1993	98	Northern Lights Blvd.	008. Minnesota Drive to Turnagain Blvd.	1999	0.17	6	16811718	1998				8301	16.8	0.010	0.028		0.043
1993	98	Northern Lights Blvd.	008. Minnesota Drive to Turnagain Blvd.	2000	0.18	7	20031200	1999				8594	20.0	0.009	0.026		0.038
1993	98	Northern Lights Blvd.	008. Minnesota Drive to Turnagain Blvd.	2001	0.53	8	23440592	2000				8896	23.4	0.023	0.066	0.038	0.095
1991	63	Tudor Road	002. Minn. Dr. to Arctic Blvd.	1991	0	0	0	1991	26200		4	6550	0.0				
1991	63	Tudor Road	002. Minn. Dr. to Arctic Blvd.	1997	0.3	6	15759559	1996	27811	0.012	4	6953	15.8	0.019	0.050		0.080
1991	63	Tudor Road	002. Minn. Dr. to Arctic Blvd.	1998	0.32	7	18698688	1998	32838	0.090	4	8210	18.7	0.017	0.046		0.072
1991	63	Tudor Road	002. Minn. Dr. to Arctic Blvd.	1999	0.35	8	21717192	1999	33160	0.010	4	8290	21.7	0.016	0.044		0.068
1991	63	Tudor Road	002. Minn. Dr. to Arctic Blvd.	2000	0.4	9	24759467	2000	33400	0.007	4	8350	24.8	0.016	0.044		0.068
1991	63	Tudor Road	002. Minn. Dr. to Arctic Blvd.	2001	0.7	10	27597798	2001	30340	-0.092	4	7585	27.6	0.025	0.070		0.107
1991	63	Tudor Road	002. Minn. Dr. to Arctic Blvd.	2002	0.75	11	30476781	2002	31954	0.053	4	7989	30.5	0.025	0.068		0.104
1991	63	Tudor Road	002. Minn. Dr. to Arctic Blvd.	2003	0.87	12	33472137	2003	32386.97	0.014	4	8097	33.5	0.026	0.073	0.056	0.109
1991	63	Tudor Road	003. Arctic to 'C' St.	1991	0	0	0	1991	30830		4	7708	0.0				
1991	63	Tudor Road	003. Arctic to 'C' St.	1997	0.35	6	18190551	1996	32000	0.008	4	8000	18.2	0.019	0.058		0.081
1991	63	Tudor Road	003. Arctic to 'C' St.	1998	0.37	7	21426892	1998	35962	0.062	4	8991	21.4	0.017	0.053		0.073
1991	63	Tudor Road	003. Arctic to 'C' St.	1999	0.4	8	24732925	1999	36320	0.010	4	9080	24.7	0.016	0.050		0.068
1991	63	Tudor Road	003. Arctic to 'C' St.	2000	0.44	9	27847287	2000	33400	-0.080	4	8350	27.8	0.016	0.049		0.067
1991	63	Tudor Road	003. Arctic to 'C' St.	2001	0.63	10	31110821	2001	36553	0.094	4	9138	31.1	0.020	0.063		0.085
1991	63	Tudor Road	003. Arctic to 'C' St.	2002	0.62	11	34647164	2002	36909	0.010	4	9227	34.6	0.018	0.056		0.075
1991	63	Tudor Road	003. Arctic to 'C' St.	2003	0.69	12	38323444	2003	40288	0.092	4	10072	38.3	0.018	0.058		0.076
1991	63	Tudor Road	003. Arctic to 'C' St.	2004	0.68	13	42102001	2004	40288	0.028	4	10072	42.1	0.016	0.052	0.055	0.068
1991	63	Tudor Road	004. 'C' St, to Old Seward Hwy	1991	0	0	0	1991	36600		4	9150	0.0				
1991	63	Tudor Road	004. 'C' St, to Old Seward Hwy	1997	0.41	6	22270612	1996	40449	0.021	4	10112	22.3	0.018	0.068		0.078
1991	63	Tudor Road	004. 'C' St, to Old Seward Hwy	1998	0.42	7	25948090	1998	40280	-0.002	4	10070	25.9	0.016	0.060		0.068
1991	63	Tudor Road	004. 'C' St, to Old Seward Hwy	1999	0.43	8	29560951	1999	39364	-0.023	4	9841	29.6	0.015	0.054		0.061
1991	63	Tudor Road	004. 'C' St, to Old Seward Hwy	2000	0.45	9	33171805	2000	39640	0.007	4	9910	33.2	0.014	0.050		0.057
1991	63	Tudor Road	004. 'C' St, to Old Seward Hwy	2001	0.77	10	36793061	2001	39700	0.002	4	9925	36.8	0.021	0.077		0.088
1991	63	Tudor Road	004. 'C' St, to Old Seward Hwy. pvmt change	2002	0.92	11	40473105	2002	40539	0.021	4	10135	40.5	0.023	0.084		0.096
1991	63	Tudor Road	004. 'C' St, to Old Seward Hwy. pvmt change	2003	0.93	12	44238992	2003	41270	0.018	4	10318	44.2	0.021	0.078		0.089
1991	63	Tudor Road	004. 'C' St, to Old Seward Hwy. pvmt change	2004	1.07	13	48028494	2004	41270	0.006	4	10318	48.0	0.022	0.082	0.069	0.094
1991	63	Tudor Road	010. WIM slab to Regal Mt. Road	1991	0	0	0	1991	20320		4	5080	0.0				
1991	63	Tudor Road	010. WIM slab to Regal Mt. Road	1997	0.27	6	12447458	1996	22681	0.023	4	5670	12.4	0.022	0.045		0.091
1991	63	Tudor Road	010. WIM slab to Regal Mt. Road	1998	0.27	7	14511750	1998	22614	-0.001	4	5654	14.5	0.019	0.039		0.078
1991	63	Tudor Road	010. WIM slab to Regal Mt. Road	1999	0.28	8	16590744	1999	22840	0.010	4	5710	16.6	0.017	0.035		0.071
1991	63	Tudor Road	010. WIM slab to Regal Mt. Road	2000	0.42	9	18791922	2000	24550	0.075	4	6138	18.8	0.022	0.047		0.094
1991	63	Tudor Road	010. WIM slab to Regal Mt. Road	2001	0.56	10	21034847	2001	24590	0.002	4	6148	21.0	0.027	0.056		0.112
1991	63	Tudor Road	010. WIM slab to Regal Mt. Road	2002	0.76	11	23241729	2002	24050	-0.022	4	6013	23.2	0.033	0.069		0.138
1991	63	Tudor Road	010. WIM slab to Regal Mt. Road	2003	0.8	12	25547616	2003	25270	0.051	4	6318	25.5	0.031	0.067		0.132
1991	63	Tudor Road	010. WIM slab to Regal Mt. Road	2004	0.88	13	27898640	2003	25270	0.020	4	6318	27.9	0.032	0.068	0.053	0.133
1996	63	Tudor Road	005. Old Seward Hwy to New Seward Hwy	1991	0	0	0	1991	39100		4	9775					
1996	63	Tudor Road	005. Old Seward Hwy to New Seward Hwy	1992			3620800	1992	40260	0.030	4	10065					
1996	63	Tudor Road	005. Old Seward Hwy to New Seward Hwy	1993			7278283	1993	39904	-0.009	4	9976					

ANCHORAGE AREA ASPHALT CONCRETE, TYPE 1 (1" minus, dense graded) TRAFFIC, AGE AND RUT MEASUREMENT DATA

Const. Year	RoadID	Road Name	Section Description	Condition Year	Rut Depth (in.)	Age at Condition Year (years)	Cummulative Traffic	Traffic Year	AADT	Growth Rate	Lanes	Lane ADT	Cumulative Traffic/10^6	Rut per Million Traffic Passes (in.)	Rut/year (in.)	Avg. Rut/year (in.)	Studded Tire Wear/10^6 Passes (in.)
1996	63	Tudor Road	005. Old Seward Hwy to New Seward Hwy	1994			10953559	1994	40650	0.019	4	10163					
1996	63	Tudor Road	005. Old Seward Hwy to New Seward Hwy	1996	1	5	14630067	1996	39931	-0.004	4	9983	14.6	0.068	0.200	0.200	0.288
1996	63	Tudor Road	006. New Seward Hwy to Lake Otis Parkway	1991	0	0	0	1991	41100		4	10275					
1996	63	Tudor Road	006. New Seward Hwy to Lake Otis Parkway	1992			3873836	1992	43806	0.066	4	10952					
1996	63	Tudor Road	006. New Seward Hwy to Lake Otis Parkway	1993			7889019	1993	44198	0.009	4	11050					
1996	63	Tudor Road	006. New Seward Hwy to Lake Otis Parkway	1994			11960959	1994	45050	0.019	4	11263					
1996	63	Tudor Road	006. New Seward Hwy to Lake Otis Parkway	1996	1	5	15966971	1996	42753	-0.013	4	10688	16.0	0.063	0.200	0.200	0.264
1996	63	Tudor Road	007. Lake Otis Parkway to Bragaw St.	1991	0	0	0	1991	38919		4	9730					
1996	63	Tudor Road	007. Lake Otis Parkway to Bragaw St.	1992			3710864	1992	42415	0.090	4	10604					
1996	63	Tudor Road	007. Lake Otis Parkway to Bragaw St.	1993			7662582	1993	44198	0.042	4	11050					
1996	63	Tudor Road	007. Lake Otis Parkway to Bragaw St.	1994			11712987	1994	44578	0.009	4	11145					
1996	63	Tudor Road	007. Lake Otis Parkway to Bragaw St.	1996	1	5	15751575	1996	43939	-0.004	4	10985	15.8	0.063	0.200	0.200	0.267
1996	63	Tudor Road	008. Bragaw St. to Boniface Pkway	1991	0	0	0	1991	33519		4	8380					
				1992			3149357	1992	35508	0.059	4	8877					
				1993			6437870	1993	36569	0.030	4	9142					
				1994			9688469	1994	34677	-0.052	4	8669					
1996	63	Tudor Road	008. Bragaw St. to Boniface Pkway	1996	0.8	5	12894036	1996	35582	0.007	4	8896	12.9	0.062	0.160	0.160	0.261
1996	63	Tudor Road	009. Boniface Pkway to WIM slab	1991	0	0	0	1991	24815		4	6204					
				1992			2347041	1992	26627	0.073	4	6657					
				1993			4811248	1993	27383	0.028	4	6846					
				1994			7215822	1994	25320	-0.075	4	6330					
1996	63	Tudor Road	009. Boniface Pkway to WIM slab	1996	0.6	5	9578284	1996	26460	0.011	4	6615	9.6	0.063	0.120	0.120	0.264
1992	60	Seward Highway	111. O'Malley Road overpass to Dimond Blvd.	1992	0	0	0	1992	38292		4	9573					
				1993			3646031	1993	41621	0.087	4	10405					
				1994			7393942	1994	40525	-0.026	4	10131					0.000
1992	60	Seward Highway	111. O'Malley Road overpass to Dimond Blvd.	1996	0.7	4	11166034	1996	42151	0.020	4	10538	11.2	0.063	0.175	0.175	0.264
1992	232	Seward Highway -SB	111. O'Malley Road overpass to Dimond Blvd.	1996	0.7	4	11166034	1996	42151	0.020062	4	10538	11.2	0.063	0.175	0.175	0.264
1992	60	Seward Highway	112. Dimond Blvd to Dowling Road overpass	1992	0	0	0	1992	45484		4	11371					
				1993			4493104	1993	52995	0.165	4	13249					
				1994			9283912	1994	52009	-0.019	4	13002					
1992	60	Seward Highway	112. Dimond Blvd to Dowling Road overpass	1996	0.9	4	14043010	1996	52300	0.003	4	13075	14.0	0.064	0.225	0.225	0.270
1992	232	Seward Highway-SB	112. Dimond Blvd to Dowling Road overpass	1996	0.9	4	14043010	1996	52300	0.002798	4	13075	14.0	0.064	0.225	0.225	0.270
1992	60	Seward Highway	113. Dowling Rd. overpass to Tudor Rd. overcrossing	1992	0	0	0	1992	45500		4	11375					
				1993			4380000	1993	50500	0.110	4	12625					
				1994			8988125	1994	50500	0.000	4	12625					
1992	60	Seward Highway	113. Dowling Rd. overpass to Tudor Rd. overcrossing	1996	0.9	4	13562305	1996	49756	-0.007	4	12439	13.6	0.066	0.225	0.225	0.279
1992	232	Seward Highway-SB	113. Dowling Rd. overpass to Tudor Rd. overcrossing	1996	0.9	4	13562305	1996	49756	-0.007366	4	12439	13.6	0.066	0.225	0.225	0.279
1992	60	Seward Highway	114. Tudor Rd. overcrossing to 36th Avenue	1992	0	0	0	1992	46300		4	11575					
				1993			4446339	1993	51154	0.105	4	12789					
				1994			9127327	1994	51443	0.006	4	12861					
1992	60	Seward Highway	114. Tudor Rd. overcrossing to 36th Avenue	1996	0.9	4	13716107	1996	49133	-0.022	4	12283	13.7	0.066	0.225	0.225	0.276
1992	232	Seward Highway-SB	114. Tudor Rd. overcrossing to 36th Avenue	1996	0.9	4	13716107	1996	49133	-0.022452	4	12283	13.7	0.066	0.225	0.225	0.276

Avg	0.033	0.070		0.138
min	0.009	0.010		0.000
max	0.078	0.225		0.328
stdev	0.014	0.042		0.060
84%	0.047	0.112		0.198
95%	0.056	0.139		0.237
99%	0.065	0.166		0.276
COUNT	170			

APPENDIX B

DATA FOR ANCHORAGE TYPE II HOT-MIX ASPHALT PAVEMENT

ANCHORAGE AREA ASPHALT CONCRETE, TYPE II (3/4" minus, dense graded) TRAFFIC, AGE AND RUT MEASUREMENT DATA

FromY	RoadID	CDS #	Name	Description	Condition. Year	RutDepth	Traffic. Year	Lane AADT	Total AADT	Lanes	Age (yrs)	Accumulated ADT	Cumulative Traffic (millions)	Rut/10^6 Traffic Passes (in.)	Rut/year (in.)	Avg. Rut/yr in Section	Studded Tire Wear/10^6 Traffic Passes (in.)
1990	66	134700	Boniface Parkway	001. Tudor to Northern Lights Blvd.	1990	0	1990	3333	13332	4	0						
1990	66	134700	Boniface Parkway	001. Tudor to Northern Lights Blvd.	2003	0.89	2002	4129	16516	4	13	17703595	17.7	0.050	0.068	0.068	0.212
1990	66	134700	Boniface Parkway	002. Northern Lts. Blvd. to pvmt. change near DeBarr Rd.	1990	0	1990	4149	16596	4	0						
1990	66	134700	Boniface Parkway	002. Northern Lts. Blvd. to pvmt. change near DeBarr Rd.	2003	1.1	2002	5308	21232	4	13	22436733	22.4	0.049	0.085	0.085	0.206
1987	101	133200	Old Seward Highway (north end)	002. De Armoun Road to Huffman Road	1987	0	1987	4580	9160	2	0						
1987	101	133200	Old Seward Highway (north end)	002. De Armoun Road to Huffman Road	2003	0.76	2002	6295	12590	2	16	31755000	31.8	0.024	0.048		0.101
1987	101	133200	Old Seward Highway (north end)	002. De Armoun Road to Huffman Road	2004	0.81	2003	6240	12480	2	17	34032600	34.0	0.024	0.048	0.048	0.100
1995	101	133200	Old Seward Highway (north end)	006. O'Malley Centre Road to Abbot Rd.	1995	0	1993	4025	16100	4	0						
1995	101	133200	Old Seward Highway (north end)	006. O'Malley Centre Road to Abbot Rd.	2003	0.4	2002	5099	20396	4	8	13321040	13.3	0.030	0.050		0.126
1995	101	133200	Old Seward Highway (north end)	006. O'Malley Centre Road to Abbot Rd.	2004	0.42	2003	5053.75	20215	4	9	15165659	15.2	0.028	0.047	0.048	0.117
1994	101	133200	Old Seward Highway (north end)	007. Abbott Rd. to Dimond Blvd. Paving	1994	0	1994	3730	14920	4	0						
1994	101	133200	Old Seward Highway (north end)	007. Abbott Rd. to Dimond Blvd. Paving	2003	0.45	2002	5790	23160	4	9	15636600	15.6	0.029	0.050		0.121
1994	101	133200	Old Seward Highway (north end)	007. Abbott Rd. to Dimond Blvd. Paving	2004	0.46	2003	5737.5	22950	4	10	17730788	17.7	0.026	0.046	0.048	0.109
1994	101	133200	Old Seward Highway (north end)	012. Dowling Road Intersection paving to IAR	1994	0	1994	4834	19336	4	0						
1994	101	133200	Old Seward Highway (north end)	012. Dowling Road Intersection paving to IAR	2003	0.94	2002	6493	25972	4	9	18604598	18.6	0.051	0.104		0.213
1994	101	133200_17	Old Seward Highway (north end)	012. Dowling Road Intersection paving to IAR	2004	1.17	2003	6532.5	26130	4	10	20988960	21.0	0.056	0.117	0.111	0.235
1994	101	133200	Old Seward Highway (north end)	013. IAR to Tudor Road	1994	0	1994	4200	16800	4	0						
1994	101	133200	Old Seward Highway (north end)	013. IAR to Tudor Road	2003	0.91	2002	5729	22914	4	9	16308383	16.3	0.056	0.101		0.235
1994	101	133200_18	Old Seward Highway (north end)	013. IAR to Tudor Road	2004	0.96	2003	5762.5	23050	4	10	18411695	18.4	0.052	0.096	0.099	0.220
1989	103	133300	Huffman Road	001. Old Seward to change pavement	1989	0	1989	6307	12614	2	0						
1989	103	133300	Huffman Road	001. Old Seward to change pavement	2003	0.91	2002	6924	13848	2	14	33805205	33.8	0.027	0.065		0.113
1989	103	133300	Huffman Road	001. Old Seward to change pavement	2004	0.94	2003	7325	14650	2	15	36478830	36.5	0.026	0.063	0.064	0.108
1984	93	133724	Abbott Road	003. Bragaw St./Abbott Lp. to Lake Otis Parkway	1984	0	1987	4455	8910	2	0						
1984	93	133724	Abbott Road	003. Bragaw St./Abbott Lp. to Lake Otis Parkway	2003	1.02	2002	6390	12780	2	19	37605038	37.6	0.027	0.054	0.054	0.114
1996	111	133750	Jewel Lake Road	002. 88th Ave. to Caravelle Drive	1996	0	1996	6791	13582	2	0						
1996	111	133750	Jewel Lake Road	002. 88th Ave. to Caravelle Drive	2003	0.78	2002	7693	15386	2	7	34363290	34.4	0.023	0.111		0.096
1996	111	133750_5	Jewel Lake Road	002. 88th Ave. to Caravelle Drive	2004	0.82	2003	7277	14554	2	8	37019395	37.0	0.022	0.103	0.107	0.093
1996	111	133750	Jewel Lake Road	004. Thurman Road to Collins Way	1996	0	1996	6300	12600	2	0						
1996	111	133750	Jewel Lake Road	004. Thurman Road to Collins Way	2003	0.49	2002	6403	12806	2	7	16228083	16.2	0.030	0.070		0.127
1996	111	133750_9	Jewel Lake Road	004. Thurman Road to Collins Way	2004	0.49	2003	6561	13122	2	8	18622848	18.6	0.026	0.061	0.066	0.111
1996	111	133750	Jewel Lake Road	005. Collins Way to International Airport Rd.	1996	0	1996	6300	18900	3	0						
1996	111	133750	Jewel Lake Road	005. Collins Way to International Airport Rd.	2003	0.4	2002	5111	15333	3	7	14577553	14.6	0.027	0.057		0.116
1996	111	133750_11	Jewel Lake Road	005. Collins Way to International Airport Rd.	2004	0.33	2003	5257	15770	3	8	16496236	16.5	0.020	0.041	0.049	0.084
1982	99	134120	Fireweed Lane	001. New Seward Highway to Arctic Blvd.	1982	0	1982	4448	13344	3	0						
1982	99	134120	Fireweed Lane	001. New Seward Highway to Arctic Blvd.	2003	0.71	2002	5020	15060	3	21	36286110	36.3	0.020	0.034		0.082
1982	99	134120_1	Fireweed Lane	001. New Seward Highway to Arctic Blvd.	2004	0.72	2003	4205	12615	3	22	37820935	37.8	0.019	0.033	0.033	0.080
1994	118	134140	Lake Otis Parkway	002. Northern Lights Blvd. To Tudor Road	1994	0	1982	4362	17448	4	0						
1994	118	134140	Lake Otis Parkway	002. Northern Lights Blvd. To Tudor Road	2003	0.94	2002	6398	25592	4	9	17673300	17.7	0.053	0.104	0.104	0.224
1994	82	134341	C Street (Anchorage)	001. Hollywood Drive to Port Access Bridge	1994	0	1994	4411	13233	3	0						
1994	82	134341	C Street (Anchorage)	001. Hollywood Drive to Port Access Bridge	2003	0.45	2002	4068	12204	3	9	13926758	13.9	0.032	0.050		0.136
1994	82	134341_1	C Street (Anchorage)	001. Hollywood Drive to Port Access Bridge	2004	0.52	2003	4337.333	13012	3	10	15509884	15.5	0.034	0.052	0.051	0.141
1975	82	134341	C Street (Anchorage)	004. 6th Avenue to 15th Avenue	1975	0	1975	2841	8523	3	0						
1975	82	134341	C Street (Anchorage)	004. 6th Avenue to 15th Avenue	2003	0.59	2002	6689	20067	3	28	48698300	48.7	0.012	0.021		0.051
1975	82	134341	C Street (Anchorage)	004. 6th Avenue to 15th Avenue	2004	0.67	2003	6616.667	19850	3	29	51113383	51.1	0.013	0.023	0.022	0.055
1985	82	134341	C Street (Anchorage)	006. Fireweed Lane to 36th Avenue	1985	0	1987	5925	17775	3	0						
1985	82	134341	C Street (Anchorage)	006. Fireweed Lane to 36th Avenue	2003	0.94	2002	6667	20001	3	18	41364720	41.4	0.023	0.052	0.052	0.096
1984	83	134342	A Street (Anchorage)	002. 36th Avenue to Benson Blvd	1984	0	1987	5984	15857	3	0						
1984	83	134342	A Street (Anchorage)	002. 36th Avenue to Benson Blvd	2003	0.6	2002	5984	17952	3	19	41499040	41.5	0.014	0.032		0.061
1984	83	134342	A Street (Anchorage)	002. 36th Avenue to Benson Blvd	2004	0.58	2003	6119.667	18359	3	20	43732718	43.7	0.013	0.029	0.030	0.056
1984	83	134342	A Street (Anchorage)	004. Northern Lts. Blvd. To Fireweed Lane	1984	0	1987	5305.333	15916	3	0						
1984	83	134342	A Street (Anchorage)	004. Northern Lts. Blvd. To Fireweed Lane	2003	0.88	2002	4917	14751	3	19	35445941	35.4	0.025	0.046		0.105
1984	83	134342	A Street (Anchorage)	004. Northern Lts. Blvd. To Fireweed Lane	2004	0.69	2003	4940	14820	3	20	37249041	37.2	0.019	0.035	0.040	0.078
1984	83	134342	A Street (Anchorage)	006. 13th Avenue to 6th Avenue	1984	0	1987	3683.333	11050	3	0						
1984	83	134342	A Street (Anchorage)	006. 13th Avenue to 6th Avenue	2003	0.61	2002	4291	12873	3	19	27651001	27.7	0.022	0.032		0.093
1984	83	134342	A Street (Anchorage)	006. 13th Avenue to 6th Avenue	2004	0.93	2003	4310	12930	3	20	29224151	29.2	0.032	0.047	0.039	0.134
1987	98	134750	Northern Lights Blvd.	009. Turnagain Pkwy. To Aircraft Drive	1987	0	1987	5839	11678	2	0						
1987	98	134750	Northern Lights Blvd.	009. Turnagain Pkwy. To Aircraft Drive	2003	0.94	2002	7116	14232	2	16	37828600	37.8	0.025	0.059		0.105
1987	98	134750	Northern Lights Blvd.	010. Turnagain Pkwy. To Aircraft Drive	2004	1.01	2003	6644.5	13289	2	17	40253843	40.3	0.025	0.059	0.059	0.106
1999	104	135000	Glenn Highway SB	022. Highland Dr. Off Ramp to Highland Dr. Overpass	1999	0	1999	5281.667	31690	6	0						
1999	104	135000	Glenn Highway SB	022. Highland Dr. Off Ramp to Highland Dr. Overpass	2003	0.5	2002	6838	41028	6	4	8847357	8.8	0.057	0.125		0.238
1999	104	135000	Glenn Highway SB	022. Highland Dr. Off Ramp to Highland Dr. Overpass	2004	0.9	2003	7025	42150	6	5	11411482	11.4	0.079	0.180	0.153	0.332
1993	274	135225	Eagle River Rd.	002. VFW Rd. to mile 1	1993	0	1993	3025	6050	2	0						

ANCHORAGE AREA ASPHALT CONCRETE, TYPE II (3/4" minus, dense graded) TRAFFIC, AGE AND RUT MEASUREMENT DATA

FromY	RoadID	CDS #	Name	Description	Condition. Year	RutDepth	Traffic. Year	Lane AADT	Total AADT	Lanes	Age (yrs)	Accumulated ADT	Cumulative Traffic (millions)	Rut/10^6 Traffic Passes (in.)	Rut/year (in.)	Avg. Rut/yr in Section	Studded Tire Wear/10^6 Traffic Passes (in.)
1993	274	135225	Eagle River Rd.	002. VFW Rd. to mile 1	2003	0.57	2002	4172	8344	2	10	13134525	13.1	0.043	0.057		0.183
1993	274	135225_3	Eagle River Rd.	002. VFW Rd. to mile 1	2004	0.65	2003	4119.5	8239	2	11	14638143	14.6	0.044	0.059	0.058	0.187
1993	274	135225	Eagle River Rd.	003. mile 1 to Eagle River Loop Road	1993	0	1993	3025	6050	2	0						
1993	274	135225	Eagle River Rd.	003. mile 1 to Eagle River Loop Road	2003	0.51	2002	4172	8344	2	10	13134525	13.1	0.039	0.051		0.163
1993	274	135225_5	Eagle River Rd.	003. mile 1 to Eagle River Loop Road	2004	0.56	2003	4119.5	8239	2	11	14638143	14.6	0.038	0.051	0.051	0.161
1993	274	135225	Eagle River Rd.	004. Eagle River Loop Rd. to Crestview Lane	1993	0	1993	2425	4850	2	0						
1993	274	135225	Eagle River Rd.	004. Eagle River Loop Rd. to Crestview Lane	2003	0.42	2002	4680	9360	2	10	12966625	13.0	0.032	0.042		0.136
1993	274	135225_7	Eagle River Rd.	004. Eagle River Loop Rd. to Crestview Lane	2004	0.37	2002	4172	9240	2	11	14489405	14.5	0.026	0.034	0.038	0.108
1978	273	135235	Eagle River Loop Rd.	001. Old Glenn Hwy. To begin patch	1978	0	1978	3708	7416	2	0						
1978	273	135235	Eagle River Loop Rd.	001. Old Glenn Hwy. To begin patch	2003	0.75	2002	4246	8492	2	25	36290125	36.3	0.021	0.030		0.087
1978	273	135235_1	Eagle River Loop Rd.	001. Old Glenn Hwy. To begin patch	2004	0.72	2003	4350	8700	2	26	37877875	37.9	0.019	0.028	0.029	0.080
1978	273	135235	Eagle River Loop Rd.	003. Off 2003 Patch	1978	0	1978	3708	7416	2	0						
1978	273	135235	Eagle River Loop Rd.	003. Off 2003 Patch	2003	0.65	2002	4246	8492	2	25	36290125	36.3	0.018	0.026		0.075
1978	273	135235_5	Eagle River Loop Rd.	003. Off 2003 Patch	2004	0.55	2003	4350	8700	2	26	37877875	37.9	0.015	0.021	0.024	0.061
1978	273	135235	Eagle River Loop Rd.	005. 2003 Patch 2 to Eagle River Road	1978	0	1978	1928	3856	2	0						
1978	273	135235	Eagle River Loop Rd.	005. 2003 Patch 2 to Eagle River Road	2003	0.6	2002	4390	8780	2	25	28825875	28.8	0.021	0.024		0.088
1978	273	135235_9	Eagle River Loop Rd.	005. 2003 Patch 2 to Eagle River Road	2004	0.52	2003	4500	9000	2	26	30468375	30.5	0.017	0.020	0.022	0.072
1985	131	133950s1	Bragaw St., Anchorage	002. DeBarr Road to Glenn Highway	1985	0	1985	2750	11000	4	0						
1985	131	133950s1	Bragaw St., Anchorage	002. DeBarr Road to Glenn Highway	2003	0.72	2002	5108	20432	4	18	25813530	25.8	0.028	0.040	0.040	0.117
1987	94	133700	Dimond Blvd.	001. New Seward Hwy. To OSH Intersection paving	1987	0	1987	4044	24264	6	0	0	0.0				
1987	94	133700	Dimond Blvd.	001. New Seward Hwy. To OSH Intersection paving	1998	0.6	1998	6614	39684	6	11	21395935	21.4	0.028	0.055		0.118
1987	94	133700	Dimond Blvd.	001. New Seward Hwy. To OSH Intersection paving	1999	0.81	1999	6755.5	40533	6	12	23861693	23.9	0.034	0.068		0.143
1987	94	133700	Dimond Blvd.	001. New Seward Hwy. To OSH Intersection paving	2000	0.9	2000	6897	41382	6	13	26379098	26.4	0.034	0.069		0.144
1987	94	133700	Dimond Blvd.	001. New Seward Hwy. To OSH Intersection paving	2001	0.99	2001	6862	41172	6	14	28883728	28.9	0.034	0.071	0.065	0.144
1987	94	133700	Dimond Blvd.	003. OSH intersection paving to Rainy Place	1987	0	1987	4852	29112	6	0	0	0.0				
1987	94	133700	Dimond Blvd.	003. OSH intersection paving to Rainy Place	1998	0.6	1998	6336	38016	6	11	22459910	22.5	0.027	0.055		0.112
1987	94	133700	Dimond Blvd.	003. OSH intersection paving to Rainy Place	1999	0.66	1999	6131	36786	6	12	24697725	24.7	0.027	0.055		0.113
1987	94	133700	Dimond Blvd.	003. OSH intersection paving to Rainy Place	2000	0.7	2000	5926	35556	6	13	26860715	26.9	0.026	0.054		0.110
1987	94	133700	Dimond Blvd.	003. OSH intersection paving to Rainy Place	2001	0.82	2001	6253	37518	6	14	29143060	29.1	0.028	0.059		0.118
1987	94	133700	Dimond Blvd.	003. OSH intersection paving to Rainy Place	2002	0.89	2002	7944	47664	6	15	32042620	32.0	0.028	0.059	0.057	0.117
1987	94	133700	Dimond Blvd.	004. Rainy Place to Arctic Blvd.	1987	0	1987	4488	26928	6	0	0	0.0				
1987	94	133700	Dimond Blvd.	004. Rainy Place to Arctic Blvd.	1998	0.6	1998	6336	38016	6	11	21729180	21.7	0.028	0.055		0.116
1987	94	133700	Dimond Blvd.	004. Rainy Place to Arctic Blvd.	1999	0.66	1999	6131	36786	6	12	23966995	24.0	0.028	0.055		0.116
1987	94	133700	Dimond Blvd.	004. Rainy Place to Arctic Blvd.	2000	0.7	2000	5926	35556	6	13	26129985	26.1	0.027	0.054		0.113
1987	94	133700	Dimond Blvd.	004. Rainy Place to Arctic Blvd.	2001	0.82	2001	6253	37518	6	14	28412330	28.4	0.029	0.059		0.122
1987	94	133700	Dimond Blvd.	004. Rainy Place to Arctic Blvd.	2002	0.89	2002	5770	34620	6	15	30518380	30.5	0.029	0.059	0.057	0.123
1987	94	133700	Dimond Blvd.	005. Arctic Blvd. to Minnesota Dr. Overpass	1987	0	1987	3800	22800	6	0	0	0.0				
1987	94	133700	Dimond Blvd.	005. Arctic Blvd. to Minnesota Dr. Overpass	1998	0.5	1998	5737	34422	6	11	19145528	19.1	0.026	0.045		0.110
1987	94	133700	Dimond Blvd.	005. Arctic Blvd. to Minnesota Dr. Overpass	1999	0.73	1999	5712.5	34275	6	12	21230590	21.2	0.034	0.061		0.145
1987	94	133700	Dimond Blvd.	005. Arctic Blvd. to Minnesota Dr. Overpass	2000	0.75	2000	5688	34128	6	13	23306710	23.3	0.032	0.058		0.135
1987	94	133700	Dimond Blvd.	005. Arctic Blvd. to Minnesota Dr. Overpass	2001	0.92	2001	5826	34956	6	14	25433200	25.4	0.036	0.066		0.152
1987	94	133700	Dimond Blvd.	005. Arctic Blvd. to Minnesota Dr. Overpass	2002	0.95	2002	5692	34152	6	15	27510780	27.5	0.035	0.063	0.062	0.145
1987	94	133700	Dimond Blvd.	006. Minnesota Dr. Overapass to Victor Road	1987	0	1987	3455	20730	6	0	0	0.0				
1987	94	133700	Dimond Blvd.	006. Minnesota Dr. Overapass to Victor Road	1998	0.4	1998	5003	30018	6	11	16979435	17.0	0.024	0.036		0.099
1987	94	133700	Dimond Blvd.	006. Minnesota Dr. Overapass to Victor Road	1999	0.64	1999	5018	30108	6	12	18811005	18.8	0.034	0.053		0.143
1987	94	133700	Dimond Blvd.	006. Minnesota Dr. Overapass to Victor Road	2000	0.74	2000	5033	30198	6	13	20648050	20.6	0.036	0.057		0.151
1987	94	133700	Dimond Blvd.	006. Minnesota Dr. Overapass to Victor Road	2001	0.84	2001	4729	28374	6	14	22374135	22.4	0.038	0.060		0.158
1987	94	133700	Dimond Blvd.	006. Minnesota Dr. Overapass to Victor Road	2002	1	2002	4847	29082	6	15	24143290	24.1	0.041	0.067	0.059	0.174
1987	94	133700	Dimond Blvd.	007. Victor Road to Arlene Street (incl. bridge)	1987	0	1987	2718	16308	6	0	0	0.0				
1987	94	133700	Dimond Blvd.	007. Victor Road to Arlene Street (incl. bridge)	1998	0.35	1998	4796	28776	6	11	15084355	15.1	0.023	0.032		0.098
1987	94	133700	Dimond Blvd.	007. Victor Road to Arlene Street (incl. bridge)	1999	0.67	1999	4781.5	28689	6	12	16829603	16.8	0.040	0.056		0.168
1987	94	133700	Dimond Blvd.	007. Victor Road to Arlene Street (incl. bridge)	2000	0.7	2000	4767	28602	6	13	18569558	18.6	0.038	0.054		0.159
1987	94	133700	Dimond Blvd.	007. Victor Road to Arlene Street (incl. bridge)	2001	0.73	2001	4742	28452	6	14	20300388	20.3	0.036	0.052		0.151
1987	94	133700	Dimond Blvd.	007. Victor Road to Arlene Street (incl. bridge)	2002	0.82	2002	4770	28620	6	15	22041438	22.0	0.037	0.055	0.054	0.157
1987	94	133700	Dimond Blvd.	008. Arlene Street to Jewel Lake Road	1987	0	1987	2580	10320	4	0	0	0.0				
1987	94	133700	Dimond Blvd.	008. Arlene Street to Jewel Lake Road	1998	0.67	1998	5083	20332	4	11	15383473	15.4	0.044	0.061		0.183
1987	94	133700	Dimond Blvd.	008. Arlene Street to Jewel Lake Road	1999	0.67	1999	5025.5	20102	4	12	17217780	17.2	0.039	0.056		0.164
1987	94	133700	Dimond Blvd.	008. Arlene Street to Jewel Lake Road	2000	0.71	2000	4968	19872	4	13	19031100	19.0	0.037	0.055		0.157
1987	94	133700	Dimond Blvd.	008. Arlene Street to Jewel Lake Road	2001	0.85	2001	4942	19768	4	14	20834930	20.8	0.041	0.061		0.172
1987	94	133700	Dimond Blvd.	008. Arlene Street to Jewel Lake Road	2002	1.03	2002	4995	19980	4	15	22658105	22.7	0.045	0.069	0.060	0.191
1980	101	133200	Old Seward Highway (north end)	009. Dimond Blvd. Paving To 76th Ave.	1980	0	1980	4000	16000	4	0	0	0.0				
1980	101	133200	Old Seward Highway (north end)	009. Dimond Blvd. Paving To 76th Ave.	1998	0.4	1998	9163	36652	4	18	43240455	43.2	0.009	0.022		0.039

ANCHORAGE AREA ASPHALT CONCRETE, TYPE II (3/4" minus, dense graded) TRAFFIC, AGE AND RUT MEASUREMENT DATA

FromY	RoadID	CDS #	Name	Description	Condition. Year	RutDepth	Traffic. Year	Lane AADT	Total AADT	Lanes	Age (yrs)	Accumulated ADT	Cumulative Traffic (millions)	Rut/10^6 Traffic Passes (in.)	Rut/year (in.)	Avg. Rut/yr in Section	Studded Tire Wear/10^6 Traffic Passes (in.)
1980	101	133200	Old Seward Highway (north end)	009. Dimond Blvd. Paving To 76th Ave.	1999	0.64	1999	9115	36460	4	19	46567430	46.6	0.014	0.034		0.058
1980	101	133200	Old Seward Highway (north end)	009. Dimond Blvd. Paving To 76th Ave.	2000	1	2000	7845	31380	4	20	49430855	49.4	0.020	0.050	0.035	0.085
1980	101	133200	Old Seward Highway (north end)	010. 76th Ave. to Dowling Road Intersection paving	1980	0	1980	4500	18000	4	0	0	0.0				
1980	101	133200	Old Seward Highway (north end)	010. 76th Ave. to Dowling Road Intersection paving	1998	0.65	1998	8363	33452	4	18	42254955	42.3	0.015	0.036		0.065
1980	101	133200	Old Seward Highway (north end)	010. 76th Ave. to Dowling Road Intersection paving	1999	0.8	1999	8604	34416	4	19	45395415	45.4	0.018	0.042		0.074
1980	101	133200	Old Seward Highway (north end)	010. 76th Ave. to Dowling Road Intersection paving	2000	1	2000	9480	37920	4	20	48855615	48.9	0.020	0.050	0.043	0.086
1985	60	130000	Seward Highway	111. O'Malley Road overpass to Dimond Blvd.	1985	0	1985	6500	26000	4	0	0	0.0				
1985	60	130000	Seward Highway	111. O'Malley Road overpass to Dimond Blvd.	1991	0.8	1991	9378	37512	4	6	17386410	17.4	0.046	0.133	0.133	0.194
1985	60	130000	Seward Highway	112. Dimond Blvd to Dowling Road overpass	1985	0	1985	8750	35000	4	0	0	0.0				
1985	60	130000	Seward Highway	112. Dimond Blvd to Dowling Road overpass	1991	0.9	1991	11200	44800	4	6	21845250	21.8	0.041	0.150	0.150	0.173
1985	60	130000	Seward Highway	113. Dowling Rd. overpass to Tudor Rd. overcrossing	1985	0	1985	9500	38000	4	0	0	0.0				
1985	60	130000	Seward Highway	113. Dowling Rd. overpass to Tudor Rd. overcrossing	1991	1.2	1991	12211	48844	4	6	23773545	23.8	0.050	0.200	0.200	0.213
1985	60	130000	Seward Highway	114. Tudor Rd. overcrossing to 36th Avenue	1985	0	1985	7000	42000	6	0	0	0.0				
1985	60	130000	Seward Highway	114. Tudor Rd. overcrossing to 36th Avenue	1991	1	1991	7800	46800	6	6	16206000	16.2	0.062	0.167	0.167	0.260
1987	60	130000	Seward Highway	115. 36th Avenue to Benson Blvd.	1987	0	1987	8200	49200	6	0	0	0.0				
1987	60	130000	Seward Highway	115. 36th Avenue to Benson Blvd.	1998	1.3	1998	8880	53280	6	11	34288100	34.3	0.038	0.118	0.118	0.160
1987	60	130000	Seward Highway	116. Benson Blvd. To Fireweed Lane	1987	0	1987	8090	48540	6	0	0	0.0				
1987	60	130000	Seward Highway	116. Benson Blvd. To Fireweed Lane	1998	1.2	1998	8155	48930	6	11	32611838	32.6	0.037	0.109	0.109	0.155
1987	60	130000	Seward Highway	117. Fireweed Lane to 20th Avenue	1987	0	1987	5500	33000	6	0	0	0.0				
1987	60	130000	Seward Highway	117. Fireweed Lane to 20th Avenue	1998	1.3	1998	8888	53328	6	11	28883910	28.9	0.045	0.118	0.118	0.190
1975	67	134300	Minnesota Drive (NB)	008. Tudor Road to Spenard Road	1975	0	1975	6100	24400	4	0	0	0.0				
1975	67	134300	Minnesota Drive (NB)	008. Tudor Road to Spenard Road	1996	1.5	1996	9400	37600	4	21	59403750	59.4	0.025	0.071	0.071	0.106
1975	67	134300	Minnesota Drive (NB)	009. Spenard Road to Northern Lights Blvd.	1975	0	1975	6100	24400	4	0	0	0.0				
1975	67	134300	Minnesota Drive (NB)	009. Spenard Road to Northern Lights Blvd.	1996	1.5	1996	9240	36960	4	21	58790550	58.8	0.026	0.071	0.071	0.107
1975	67	134300	Minnesota Drive (NB)	010. Northern Lights Blvd. To 15th Avenue	1975	0	1975	5000	20000	4	0	0	0.0				
1975	67	134300	Minnesota Drive (NB)	010. Northern Lights Blvd. To 15th Avenue	1996	1.2	1996	5725	22900	4	21	41103563	41.1	0.029	0.057	0.057	0.123
1975	229	134300	Minnesota Drive (SB)	008. Tudor Road to Spenard Road	1975	0	1975	6100	24400	4	0	0	0.0				
1975	229	134300	Minnesota Drive (SB)	008. Tudor Road to Spenard Road	1996	1.5	1996	9400	37600	4	21	59403750	59.4	0.025	0.071	0.071	0.106
1975	229	134300	Minnesota Drive (SB)	009. Spenard Road to Northern Lights Blvd.	1975	0	1975	6100	24400	4	0	0	0.0				
1975	229	134300	Minnesota Drive (SB)	009. Spenard Road to Northern Lights Blvd.	1996	1.5	1996	9240	36960	4	21	58790550	58.8	0.026	0.071	0.071	0.107
1975	229	134300	Minnesota Drive (SB)	010. Northern Lights Blvd. To 15th Avenue	1975	0	1975	5000	20000	4	0	0	0.0				
1975	229	134300	Minnesota Drive (SB)	010. Northern Lights Blvd. To 15th Avenue	1996	1.2	1996	5725	22900	4	21	41103563	41.1	0.029	0.057	0.057	0.123
1985	232	130000	Seward Highway - SB	111. O'Malley Road overpass to Dimond Blvd.	1985	0	1985	6500	26000	4	0	0	0.0				
1985	232	130000	Seward Highway - SB	111. O'Malley Road overpass to Dimond Blvd.	1991	0.8	1991	9378	37512	4	6	17386410	17.4	0.046	0.133	0.133	0.194
1985	232	130000	Seward Highway - SB	112. Dimond Blvd to Dowling Road overpass	1985	0	1985	8750	35000	4	0	0	0.0				
1985	232	130000	Seward Highway - SB	112. Dimond Blvd to Dowling Road overpass	1991	0.9	1991	11200	44800	4	6	21845250	21.8	0.041	0.150	0.150	0.173
1985	232	130000	Seward Highway - SB	113. Dowling Rd. overpass to Tudor Rd. overcrossing	1985	0	1985	9500	38000	4	0	0	0.0				
1985	232	130000	Seward Highway - SB	113. Dowling Rd. overpass to Tudor Rd. overcrossing	1991	1.2	1991	12211	48844	4	6	23773545	23.8	0.050	0.200	0.200	0.213
1985	232	130000	Seward Highway - SB	114. Tudor Rd. overcrossing to 36th Avenue	1985	0	1985	7000	42000	6	0	0	0.0				
1985	232	130000	Seward Highway - SB	114. Tudor Rd. overcrossing to 36th Avenue	1991	1	1991	7800	46800	6	6	16206000	16.2	0.062	0.167	0.167	0.260
1987	232	130000	Seward Highway - SB	115. 36th Avenue to Benson Blvd.	1987	0	1987	8200	49200	6	0	0	0.0				
1987	232	130000	Seward Highway - SB	115. 36th Avenue to Benson Blvd.	1998	1.3	1998	8880	53280	6	11	34288100	34.3	0.038	0.118	0.118	0.160
1987	232	130000	Seward Highway - SB	116. Benson Blvd. To Fireweed Lane	1987	0	1987	8090	48540	6	0	0	0.0				
1987	232	130000	Seward Highway - SB	116. Benson Blvd. To Fireweed Lane	1998	1.2	1998	8155	48930	6	11	32611838	32.6	0.037	0.109	0.109	0.155
1987	232	130000	Seward Highway - SB	117. Fireweed Lane to 20th Avenue	1987	0	1987	5500	33000	6	0	0	0.0				
1987	232	130000	Seward Highway - SB	117. Fireweed Lane to 20th Avenue	1998	1.3	1998	8888	53328	6	11	28883910	28.9	0.045	0.118	0.118	0.190
1987	61	135000_33	Glenn Highway	009. Muldoon Road overpass to Arctic Valley Rd.	1987	0	1987	5981	35888	6	0	0	0.0				
1987	61	135000_33	Glenn Highway	009. Muldoon Road overpass to Arctic Valley Rd.	1992	1	1992	6730	40378	6	5	11598788	11.6	0.086	0.200	0.200	0.363
1987	61	135000_41	Glenn Highway	011. Arctic Valley Rd. to Fort Richardson overpass	1987	0	1987	5917	35500	6	0	0	0.0				
1987	61	135000_41	Glenn Highway	011. Arctic Valley Rd. to Fort Richardson overpass	1992	1	1992	6567	39400	6	5	11391042	11.4	0.088	0.200	0.200	0.370
1987	61	135000_49	Glenn Highway	013. Fort Richardson mile 7.1	1987	0	1987	5517	33100	6	0	0	0.0				
1987	61	135000_49	Glenn Highway	013. Fort Richardson mile 7.1	1992	1	1992	6373	38235	6	5	10848865	10.8	0.092	0.200	0.200	0.388
1987	61	135000_51	Glenn Highway	015. Mile 7.1 to mile 8	1987	0	1987	5517	33100	6	0	0	0.0				
1987	61	135000_51	Glenn Highway	015. Mile 7.1 to mile 8	1992	1	1992	6373	38235	6	5	10848865	10.8	0.092	0.200	0.200	0.388
1987	61	135000_53	Glenn Highway	017. Mile 8 to Scalehouse	1987	0	1987	5517	33100	6	0	0	0.0				
1987	61	135000_53	Glenn Highway	017. Mile 8 to Scalehouse	1992	1	1992	6373	38235	6	5	10848865	10.8	0.092	0.200	0.200	0.388
1987	61	135000_57	Glenn Highway	021. Scalehouse entrance to Highland Dr. pvmt. Break	1987	0	1987	5505	33030	6	0	0	0.0				
1987	61	135000_57	Glenn Highway	021. Scalehouse entrance to Highland Dr. pvmt. Break	1992	1	1992	6373	38235	6	5	10838219	10.8	0.092	0.200	0.200	0.388
1987	61	135000_65	Glenn Highway	023. Highland Dr. pvmt. Break to Eagle R. Bridge	1987	0	1987	7800	31200	4	0	0	0.0				
1987	61	135000_65	Glenn Highway	023. Highland Dr. pvmt. Break to Eagle R. Bridge	1992	0.9	1992	9133	36533	4	5	15451591	15.5	0.058	0.180	0.180	0.245
1987	61	135000_33	Glenn Highway-SB	009. Muldoon Road overpass to Arctic Valley Rd.	1987	0	1987	5981	35888	6	0	0	0.0				
1987	61	135000_33	Glenn Highway-SB	009. Muldoon Road overpass to Arctic Valley Rd.	1992	1	1992	6730	40378	6	5	11598788	11.6	0.086	0.200	0.200	0.363

ANCHORAGE AREA ASPHALT CONCRETE, TYPE II (3/4" minus, dense graded) TRAFFIC, AGE AND RUT MEASUREMENT DATA

FromY	RoadID	CDS #	Name	Description	Condition. Year	RutDepth	Traffic. Year	Lane AADT	Total AADT	Lanes	Age (yrs)	Accumulated ADT	Cumulative Traffic (millions)	Rut/10^6 Traffic Passes (in.)	Rut/year (in.)	Avg. Rut/yr in Section	Studded Tire Wear/10^6 Traffic Passes (in.)
1987	61	135000_41	Glenn Highway-SB	011. Arctic Valley Rd. to Fort Richardson overpass	1987	0	1987	5917	35500	6	0	0	0.0				
1987	61	135000_41	Glenn Highway-SB	011. Arctic Valley Rd. to Fort Richardson overpass	1992	1	1992	6567	39400	6	5	11391042	11.4	0.088	0.200	0.200	0.370
1987	61	135000_49	Glenn Highway-SB	013. Fort Richardson mile 7.1	1987	0	1987	5517	33100	6	0	0	0.0				
1987	61	135000_49	Glenn Highway-SB	013. Fort Richardson mile 7.1	1992	1	1992	6373	38235	6	5	10848865	10.8	0.092	0.200	0.200	0.388
1987	61	135000_51	Glenn Highway-SB	015. Mile 7.1 to mile 8	1987	0	1987	5517	33100	6	0	0	0.0				
1987	61	135000_51	Glenn Highway-SB	015. Mile 7.1 to mile 8	1992	1	1992	6373	38235	6	5	10848865	10.8	0.092	0.200	0.200	0.388
1987	61	135000_53	Glenn Highway-SB	017. Mile 8 to Scalehouse	1987	0	1987	5517	33100	6	0	0	0.0				
1987	61	135000_53	Glenn Highway-SB	017. Mile 8 to Scalehouse	1992	1	1992	6373	38235	6	5	10848865	10.8	0.092	0.200	0.200	0.388
1987	61	135000_57	Glenn Highway-SB	021. Scalehouse entrance to Highland Dr. pvmt. Break	1987	0	1987	5505	33030	6	0	0	0.0				
1987	61	135000_57	Glenn Highway-SB	021. Scalehouse entrance to Highland Dr. pvmt. Break	1992	1	1992	6373	38235	6	5	10838219	10.8	0.092	0.200	0.200	0.388
1987	61	135000_65	Glenn Highway-SB	023. Highland Dr. pvmt. Break to Eagle R. Bridge	1987	0	1987	7800	31200	4	0	0	0.0				
1987	61	135000_65	Glenn Highway-SB	023. Highland Dr. pvmt. Break to Eagle R. Bridge	1992	0.9	1992	9133	36533	4	5	15451591	15.5	0.058	0.180	0.180	0.245
1982	AC_Type2	130000_42	Seward Highway	108. Begin divided Highway to start 1996 SMA	1982	0	1987	3038	12151	4	0	0	0.0				
1982	AC_Type2	130000_42	Seward Highway	108. Begin divided Highway to start 1996 SMA	2003	0.79	2002	3670	14680	4	21	25707452	25.7	0.031	0.038	0.038	0.129
1982	232	130000_63	Seward Highway (SB in Anchorage)	010. End '96 SMA to Rabbit Cr. Rd. Overcrossing	1982	0	1987	3038	12151	4	0	0	0.0				
1982	232	130000_63	Seward Highway (SB in Anchorage)	010. End '96 SMA to Rabbit Cr. Rd. Overcrossing	2003	1.09	2002	3670	14680	4	21	25707452	25.7	0.042	0.052	0.052	0.179
1982	232	130000_63	Seward Highway (SB in Anchorage)	011. Rabbit Cr. Rd. Overpass to end divided Hwy.	1982	0	1987	2328	6866	4	0	0	0.0				
1982	232	130000_63	Seward Highway (SB in Anchorage)	011. Rabbit Cr. Rd. Overpass to end divided Hwy.	2003	0.43	2002	2328	9312	4	21	17844120	17.8	0.024	0.020	0.020	0.101
1990	130	134330_9	Arctic Blvd.	003. Benson Blvd. To 36th Avenue	1990	0	1992	3883	15533	4	0	0					
1990	130	134330_9	Arctic Blvd.	003. Benson Blvd. To 36th Avenue	2004	0.69	2003	3954	15816	4	14	20024174	20.0	0.034	0.049	0.049	0.145
1990	130	134330_13	Arctic Blvd.	004. 36th Avenue to Tudor Road	1990	0	1992	3781	15123	4	0	0					
1990	130	134330_13	Arctic Blvd.	004. 36th Avenue to Tudor Road	2004	0.73	2003	5773	23090	4	14	24408554	24.4	0.030	0.052	0.052	0.126
1990	130	134330_17	Arctic Blvd.	005. Tudor Road to International Airport Road	1990	0	1991	3896	15583	4	0	0					
1990	130	134330_17	Arctic Blvd.	005. Tudor Road to International Airport Road	2004	0.77	2003	3533	14130	4	14	18979179	19.0	0.041	0.055	0.055	0.171
1990	130	134330_21	Arctic Blvd.	006. International Airport Road to Raspberry R.	1990	0	1991	2732	10929	4	0	0					
1990	130	134330_21	Arctic Blvd.	006. International Airport Road to Raspberry R.	2004	0.57	2003	2483	9930	4	14	13323686	13.3	0.043	0.041	0.041	0.180

79 Sections

	Rut/10^6 Traffic Passes (in.)	Rut/year (in.)	Avg. Rut/yr in Section	Studded Tire Wear/10^6 Traffic Passes (in.)
Averages	0.038	0.080		0.160
Min.	0.009	0.020		0.039
Max.	0.092	0.200		0.388
Stnd. Dev.	0.021	0.054		0.088
84% Conf.	0.059	0.134		0.248
95% Conf.	0.072	0.169		0.304
99% Conf.	0.086	0.204		0.361
Count	128	126		128

APPENDIX C

DATA FOR FAIRBANKS TYPE II HOT-MIX ASPHALT PAVEMENT

FAIRBANKS AREA ASPHALT CONCRETE, TYPE II (3/4" minus dense graded) TRAFFIC, AGE AND RUT MEASUREMENT DATA

Const. Year	SecId	RoadID	Road Name	Section Description	frommi	tomi	Condition. Year	Rut Depth (in.)	Age	Accumulated Traffic (milllions)	Accumulated traffic	Traffic Year	Total ADT	Lanes	Lane ADT	Rut per 10^6 ADT (in.)	Rut per year (in.)	Studded tire wear per 10^6 vehicle passes
1977	1142	69	Steese Highway	001. Airport Way to Chena River Bridge			1977	0	0	0.00	0	1977	14000	4	3500			
1977	1142	69	Steese Highway	001. Airport Way to Chena River Bridge	0.00	0.57	1998	0.1	21	33.71	33,709,393	1996	20460	4	5115	0.003	0.005	0.025
1977	1142	69	Steese Highway	001. Airport Way to Chena River Bridge	0.00	0.57	1999	0.12	22	35.67	35,670,538	1998	21588	4	5397	0.003	0.005	0.028
1977	1142	69	Steese Highway	001. Airport Way to Chena River Bridge	0.00	0.57	2000	0.31	23	37.67	37,673,658	1999	21492	4	5373	0.008	0.013	0.069
1977	1142	69	Steese Highway	001. Airport Way to Chena River Bridge	0.00	0.57	2001	0.4	24	39.72	39,724,228	2000	21952	4	5488	0.010	0.017	0.085
1977	1142	69	Steese Highway	001. Airport Way to Chena River Bridge			2002	0.41	25	41.91	41,914,228	2001	22472	4	5618	0.010	0.016	0.082
1977	1142	69	Steese Highway	001. Airport Way to Chena River Bridge	0.00	0.63	2003	0.46	26	44.30	44,300,598	2002	24000	4	6000	0.010	0.018	0.087
1977	1142	69	Steese Expressway/Highway	001. Airport Way to Chena River Bridge	0.00	0.63	2004	0.48	27	46.78	46782422	2003	26152	4	6538	0.010	0.018	0.086
1977	3145	69	Steese Highway	002. Chena River Bridge to Trainor Gate Rd.			1977	0	0	0.00	0	1977	8000	4	2000			
1977	3145	69	Steese Highway	002. Chena River Bridge to Trainor Gate Rd.	0.57	1.35	1999	0.11	22	18.18	18,180,650	1996	10624	4	2656	0.006	0.005	0.051
1977	3145	69	Steese Highway	002. Chena River Bridge to Trainor Gate Rd.	0.57	1.35	2000	0.22	23	19.56	19,558,525	1998	12200	4	3050	0.011	0.010	0.095
1977	3145	69	Steese Highway	002. Chena River Bridge to Trainor Gate Rd.	0.57	1.35	2001	0.3	24	21.32	21,319,650	1999	10900	4	2725	0.014	0.013	0.118
1977	3145	69	Steese Highway	002. Chena River Bridge to Trainor Gate Rd.			2002	0.31	25	23.36	23,361,460	2001	19300	4	4825	0.013	0.012	0.112
1977	3145	69	Steese Highway	002. Chena River Bridge to Trainor Gate Rd.	0.63	1.34	2003	0.32	26	25.53	25,528,830	2002	22376	4	5594	0.013	0.012	0.106
1977	3145	69	Steese Expressway/Highway	002. Chena River Bridge to Trainor Gate Rd.	0.63	1.34	2004	0.34	27	27.78	27782895	2003	23752	4	5938	0.012	0.013	0.103
1989	1144	69	Steese Highway	003. Johansen Expy. To Farmers Loop Road			1989	0	0	0.00	0	1989	7500	4	1875			
1989	1144	69	Steese Highway	003. Johansen Expy. To Farmers Loop Road	2.02	2.79	1998	0.1	9	9.82	9,817,040	1996	14524	4	3631	0.010	0.011	0.086
1989	1144	69	Steese Highway	003. Johansen Expy. To Farmers Loop Road	2.02	2.79	1999	0.11	10	11.37	11,366,100	1998	15976	4	3994	0.010	0.011	0.081
1989	1144	69	Steese Highway	003. Johansen Expy. To Farmers Loop Road	2.02	2.79	2000	0.21	11	13.07	13,072,475	1999	16976	4	4244	0.016	0.019	0.135
1989	1144	69	Steese Highway	003. Johansen Expy. To Farmers Loop Road	2.02	2.79	2001	0.28	12	14.73	14,731,035	2000	18700	4	4675	0.019	0.023	0.160
1989	1144	69	Steese Highway	003. Johansen Expy. To Farmers Loop Road			2002	0.29	13	16.52	16524280	2001	18176	4	4544	0.018	0.022	0.148
1989	1144	69	Steese Highway	003. Johansen Expy. To Farmers Loop Road	2.01	2.78	2003	0.31	14	18.29	18294530	2002	19652	4	4913	0.017	0.022	0.143
1989	1143	69	Steese Expressway/Highway	003. Johansen Expy. To Farmers Loop Road	1.34	2.01	2004	0.33	15	20.10	20100185	2003	19400	4	4850	0.016	0.022	0.138
1985	3135	74	Richardson Highway	330. Badger Rd. to MP 358			1985	0	0	0.00	0	1985	17120	4	4280			
1985	3135	74	Richardson Highway	330. Badger Rd. to MP 358			2002	0.36	17	30.97	30972258	2001	22812	4	5703	0.012	0.021	0.098
1985	1513	74	Richardson Highway	331. MP 358 to MP 359			1985	0	0	0.00	0	1985	17120	4	4280			
1985	1513	74	Richardson Highway	331. MP 358 to MP 359			2002	0.34	17	32.55	32553438	2001	22812	4	5703	0.010	0.020	0.088
1985	1513	74	Richardson Highway	331. MP 358 to MP 359	359.88	360.85	2003	0.46	18	34.24	34240030	2002	23104	4	5776	0.013	0.026	0.113
1985	3135	74	Richardson Highway	330. MP 357.8 to MP 359	358.79	359.91	2004	0.52	19	35.95	35948449	2003	23403	4	5850.75	0.014	0.027	0.122
1985	1514	74	Richardson Highway	332. MP 359 to MP 360			1985	0	0	0.00	0	1985	17120	4	4280			
1985	1514	74	Richardson Highway	332. MP 359 to MP 360			2002	0.44	17	32.55	32553438	2001	22812	4	5703	0.014	0.026	0.114
1985	1514	74	Richardson Highway	332. MP 359 to MP 360	360.85	361.85	2003	0.42	18	34.24	34240030	2002	23104	4	5776	0.012	0.023	0.103
1985	1513	74	Richardson Highway	331. MP 359 to MP 360	359.91	360.91	2004	0.45	19	35.95	35948449	2003	23403	4	5850.75	0.013	0.024	0.105
1985	1515	74	Richardson Highway	333. MP 360 to MP 361			1985	0	0	0.00	0	1985	15600	4	3900			
1985	1515	74	Richardson Highway	333. MP 360 to MP 361			2002	0.16	17	27.75	27749855	2001	18448	4	4612	0.006	0.009	0.049
1985	1515	74	Richardson Highway	333. MP 360 to MP 361	361.85	362.85	2003	0.43	18	29.18	29180655	2002	19600	4	4900	0.015	0.024	0.124
1985	1514	74	Richardson Highway	332. MP 360 to MP 360.7	360.91	361.64	2004	0.54	19	30.73	30726430	2003	21175	4	5293.75	0.018	0.028	0.148
1985	1516	74	Richardson Highway	334. MP 361 to Airport Road			1985	0	0	0.00	0	1985	15600	4	3900			
1985	1516	74	Richardson Highway	334. MP 361 to Airport Road			2002	0.37	17	27.75	27749855	2001	18448	4	4612	0.013	0.022	0.112
1985	1516	74	Richardson Highway	334. MP 361 to Airport Road	362.85	363.91	2003	0.4	18	29.18	29180655	2002	19600	4	4900	0.014	0.022	0.115
1985	1516	74	Richardson Highway	334. MP 361 to Airport Way	362.41	362.98	2004	0.42	19	30.73	30726430	2003	21175	4	5293.75	0.014	0.022	0.115
1989	1966	134	Johansen Expy. (Westbound)	002. College Road overcrossing to Danby Street			1989	0	0	0.00	0	1989	6000	4	1500			
1989	1966	134	Johansen Expy. (Westbound)	002. College Road overcrossing to Danby Street			2002	0.21	13	14.45	14447248	2001	16376	4	4094	0.015	0.016	0.122
1989	1966	134	Johansen Expy. (Westbound)	002. College Road overcrossing to Danby Street	2.99	1.81	2003	0.23	14	16.10	16103435	2002	17176	4	4294	0.014	0.016	0.120
1989	1966	134	Johansen Expy. (Westbound)	002. College Road overcrossing to Danby Street	3.01	1.82	2004	0.27	15	17.76	17759623	2003	18150	4	4537.5	0.015	0.018	0.128
1989	1967	134	Johansen Expy. (Westbound)	003. Danby Street to Peger Rd. overpass			1989	0	0	0.00	0	1989	5000	4	1250			
1989	1967	134	Johansen Expy. (Westbound)	003. Danby Street to Peger Rd. overpass			2002	0.17	13	13.85	13853461	2001	16375	4	4093.75	0.012	0.013	0.103
1989	1967	134	Johansen Expy. (Westbound)	003. Danby Street to Peger Rd. overpass	1.81	0.99	2003	0.23	14	15.51	15509648	2002	17175	4	4293.75	0.015	0.016	0.125
1989	1967	134	Johansen Expy. (Westbound)	003. Danby Street to Peger Rd. overpass	1.82	1.00	2004	0.24	15	17.17	17165836	2003	18150	4	4537.5	0.014	0.016	0.118
1989	8038	134	Johansen Expy. (Westbound)	004. Peger Rd. overpass to University Avenue			1989	0	0	0.00	0	1989	6000	4	1500			
1989	8038	134	Johansen Expy. (Westbound)	004. Peger Rd. overpass to University Avenue			2002	0.09	13	15.92	15915004	2001	18600	4	4650	0.006	0.007	0.048
1989	8038	134	Johansen Expy. (Westbound)	004. Peger Rd. overpass to University Avenue	0.99	0.00	2003	0.27	14	17.78	17782070	2002	19348	4	4837	0.015	0.019	0.128
1989	8038	134	Johansen Expy. (Westbound)	004. Peger Rd. overpass to University Avenue	1.00	0.00	2004	0.28	15	19.65	19649136	2003	20461	4	5115.25	0.014	0.019	0.120
1989	1974	135	Johansen Expy. (Eastbound)	001. University Avenue to Danby Street			1989	0	0	0.00	0	1989	6000	4	1500			
1989	1974	135	Johansen Expy. (Eastbound)	001. University Avenue to Peger Rd. overpass			2002	0.12	13	16.70	16695898	2001	19775	4	4943.75	0.007	0.009	0.061
1989	1974	135	Johansen Expy. (Eastbound)	001. University Avenue to Peger Rd. overpass	0.00	1.01	2003	0.19	14	18.68	18680586	2002	20575	4	5143.75	0.010	0.014	0.086
1989	1974	135	Johansen Expy. (Eastbound)	001. University Avenue to Peger Rd. overpass	0.00	1.23	2004	0.22	15	20.67	20665273	2003	21750	4	5437.5	0.011	0.015	0.090
1989	8037	135	Johansen Expy. (Eastbound)	002. Mile 1 to Danby St.			1989	0	0	0.00	0	1989	5000	4	1250			
1989	8037	135	Johansen Expy. (Eastbound)	002. Mile 1 to Danby St.			2002	0.31	13	15.41	15405920	2001	18600	4	4650	0.020	0.024	0.169
1989	8037	135	Johansen Expy. (Eastbound)	002. Mile 1 to Danby St.	1.01	1.82	2003	0.32	14	17.39	17390608	2002	20576	4	5144	0.018	0.023	0.155
1989	8037	135	Johansen Expy. (Eastbound)	002. Mile 1 to Danby St.	1.23	1.81	2004	0.33	15	19.38	19375295	2003	21750	4	5437.5	0.017	0.022	0.143
1989	1975	135	Johansen Expy. (Eastbound)	003. Danby Street to College Rd. overcrossing			1989	0	0	0.00	0	1989	6000	4	1500			
1989	1975	135	Johansen Expy. (Eastbound)	003. Danby Street to College Rd. overcrossing			2002	0.31	13	14.45	14447248	2001	16376	4	4094	0.021	0.024	0.181
1989	1975	135	Johansen Expy. (Eastbound)	003. Danby Street to College Rd. overcrossing	1.82	3.01	2003	0.35	14	16.10	16103435	2002	17176	4	4294	0.022	0.025	0.183
1989	1975	135	Johansen Expy. (Eastbound)	003. Danby Street to College Rd. overcrossing	1.81	3.00	2004	0.36	15	17.76	17759623	2003	18150	4	4537.5	0.020	0.024	0.171
1987	1978	137	Airport Way WB (Fairbanks)	001. Steese/Richardson Hwy. to Lathrop/W St.			1987	0	0	0.00	0	1987	21400	4	5350			
1987	1978	137	Airport Way WB (Fairbanks)	001. Steese/Richardson Hwy. to Lathrop/W St.	0.00	0.99	1998	0.07	11	20.22	20,215,708	1996	18676	4	4669	0.003	0.006	0.029
1987	1978	137	Airport Way WB (Fairbanks)	001. Steese/Richardson Hwy. to Lathrop/W St.	0.00	0.99	1999	0.08	12	22.18	22,175,393	1998	22524	4	5631	0.004	0.007	0.030
1987	1978	137	Airport Way WB (Fairbanks)	001. Steese/Richardson Hwy. to Lathrop/W St.	0.00	0.99	2000	0.13	13	24.12	24,119,018	1999	21476	4	5369	0.005	0.010	0.045
1987	1978	137	Airport Way WB (Fairbanks)	001. Steese/Richardson Hwy. to Lathrop/W St.	0.00	0.99	2001	0.26	14	26.04	26,037,458	2000	21300	4	5325	0.010	0.019	0.084
1987	1978	137	Airport Way (Fairbanks)	001. Steese/Richardson Hwy. to West Cowles St.			2002	0.22	15	28.00	27997142.5	2001	21024	4	5256	0.008	0.015	0.066
1987	1978	137	Airport Way (Fairbanks)	001. Steese/Richardson Hwy. to West Cowles St.	0.00	0.98	2003	0.29	16	29.52	29519877	2002	21476	4	5369	0.010	0.018	0.083

1987	1978	137	Airport Way (Fairbanks)	001. Steese/Richardson Hwy. to West Cowles St.	0.00	0.97	2004	0.21	17	31.55	31550189	2003	22250	4	5562.5	0.007	0.012	0.056
1987	1979	137	Airport Way WB (Fairbanks)	002. Lathrop St. to Peger Road	0.99	2.16	1987	0	0	0.00	0	1987	26572	4	6643			
1987	1979	137	Airport Way WB (Fairbanks)	002. Lathrop St. to Peger Road	0.99	2.16	1998	0.09	11	25.62	25,624,278	1996	24752	4	6188	0.004	0.008	0.030
1987	1979	137	Airport Way WB (Fairbanks)	002. Lathrop St. to Peger Road	0.99	2.16	1999	0.09	12	28.49	28,485,148	1998	25104	4	6276	0.003	0.008	0.027
1987	1979	137	Airport Way WB (Fairbanks)	002. Lathrop St. to Peger Road	0.99	2.16	2000	0.22	13	30.68	30,677,338	1999	31352	4	7838	0.007	0.017	0.060
1987	1979	137	Airport Way WB (Fairbanks)	002. Lathrop St. to Peger Road	0.99	2.16	2001	0.31	14	32.88	32,883,398	2000	24024	4	6006	0.009	0.022	0.079
1987	1979	137	Airport Way (Fairbanks)	002. West Cowles St. to Peger Road			2002	0.26	15	35.17	35169392.5	2001	24176	4	6044	0.007	0.017	0.062
1987	1979	137	Airport Way (Fairbanks)	002. West Cowles St. to Peger Road	0.98	2.14	2003	0.32	16	36.87	36866643	2002	25052	4	6263	0.009	0.020	0.073
1987	1979	137	Airport Way (Fairbanks)	002. West Cowles St. to Peger Road	0.97	2.14	2004	0.29	17	39.13	39129643	2003	24800	4	6200	0.007	0.017	0.062
1987	1980	137	Airport Way WB (Fairbanks)	003. Peger Road to University Avenue			1987	0	0	0.00	0	1987	18448	4	4612			
1987	1980	137	Airport Way WB (Fairbanks)	003. Peger Road to University Avenue	2.16	3.17	1998	0.06	11	21.72	21,724,983	1996	23748	4	5937	0.003	0.005	0.023
1987	1980	137	Airport Way WB (Fairbanks)	003. Peger Road to University Avenue	2.16	3.17	1999	0.06	12	23.85	23,853,663	1998	24452	4	6113	0.003	0.005	0.021
1987	1980	137	Airport Way WB (Fairbanks)	003. Peger Road to University Avenue	2.16	3.17	2000	0.19	13	25.96	25,963,728	1999	23328	4	5832	0.007	0.015	0.062
1987	1980	137	Airport Way WB (Fairbanks)	003. Peger Road to University Avenue	2.16	3.17	2001	0.28	14	28.09	28,087,663	2000	23124	4	5781	0.010	0.020	0.084
1987	1980	137	Airport Way (Fairbanks)	003. Peger Road to University Avenue			2002	0.23	15	30.38	30384972.5	2001	23276	4	5819	0.008	0.015	0.064
1987	1980	137	Airport Way (Fairbanks)	003. Peger Road to University Avenue	2.14	3.15	2003	0.26	16	31.89	31888887	2002	25176	4	6294	0.008	0.016	0.069
1987	1980	137	Airport Way (Fairbanks)	003. Peger Road to University Avenue	2.14	3.15	2004	0.23	17	33.89	33894105	2003	21975	4	5493.75	0.007	0.014	0.057
1986	2056	140	College Road (Fairbanks)	002. New Steese Highway to Illinois Street			1986	0	0	0.00	0	1986	18000	4	4500			
1986	2056	140	College Road (Fairbanks)	002. New Steese Highway to Illinois Street	0.11	0.76	1998	0.05	12	17.99	17,985,010	1996	15140	4	3785	0.003	0.004	0.023
1986	2056	140	College Road (Fairbanks)	002. New Steese Highway to Illinois Street	0.11	0.76	1999	0.08	13	19.47	19,467,640	1998	16256	4	4064	0.004	0.006	0.035
1986	2056	140	College Road (Fairbanks)	002. New Steese Highway to Illinois Street	0.11	0.76	2000	0.1	14	21.00	20,996,260	1999	16248	4	4062	0.005	0.007	0.040
1986	2056	140	College Road (Fairbanks)	002. New Steese Highway to Illinois Street	0.11	0.76	2001	0.17	15	22.54	22,536,195	2000	16752	4	4188	0.008	0.011	0.064
1986	2056	140	College Road (Fairbanks)	002. New Steese Highway to Illinois Street			2002	0.22	16	24.10	24098121.25	2001	16876	4	4219	0.009	0.014	0.077
1986	2056	140	College Road (Fairbanks)	002. New Steese Highway to Illinois Street	0.11	0.74	2003	0.3	17	25.72	25723283.75	2002	17117	4	4279.25	0.012	0.018	0.098
1986	2056	140	College Road (Fairbanks)	002. New Steese Highway to Illinois Street	0.11	0.75	2004	0.31	18	27.35	27348446	2003	17810	4	4452.5	0.011	0.017	0.095
1986	2057	140	College Road (Fairbanks)	003. Illinois Street to Margaret Avenue			2002	0.29	16	28.58	28584153.75	2001	21200	4	5300	0.010	0.018	0.085
1986	2057	140	College Road (Fairbanks)	003. Illinois Street to Margaret Avenue	0.74	1.26	2003	0.35	17	30.87	30872850	2002	31352	4	7838	0.011	0.021	0.095
1986	2057	140	College Road (Fairbanks)	003. Illinois Street to Margarete Avenue			1986	0	0	0.00	0	1986	17000	4	4250			
1986	2057	140	College Road (Fairbanks)	003. Illinois Street to Margarete Avenue	0.76	1.29	1998	0.1	12	21.90	21,900,000	1999	22325	4	5581.25	0.005	0.008	0.038
1986	2057	140	College Road (Fairbanks)	003. Illinois Street to Margarete Avenue	0.76	1.29	1999	0.14	13	23.83	23,834,500	2000	21050	4	5262.5	0.006	0.011	0.049
1986	2057	140	College Road (Fairbanks)	003. Illinois Street to Margarete Avenue	0.76	1.29	2000	0.16	14	25.80	25,796,375	2001	21200	4	5300	0.006	0.011	0.052
1986	2057	140	College Road (Fairbanks)	003. Illinois Street to Margarete Avenue	0.76	1.29	2001	0.17	15	27.26	27258656.25	2002	21500	4	5375	0.006	0.011	0.053
1986	2057	140	College Road (Fairbanks)	003. Illinois Street to Margaret Avenue	0.75	1.27	2004	0.28	18	28.72	28720938	2003	16025	4	4006.25	0.010	0.016	0.082
1986	2058	140	College Road (Fairbanks)	004. Margarete Avenue to Aurora Drive			1986	0	0	0.00	0	1986	7308	2	3654			
1986	2058	140	College Road (Fairbanks)	004. Margarete Avenue to Aurora Drive			2002	0.4	16	26.18	26179899	2001	9700	2	4850	0.015	0.025	0.129
1986	2058	140	College Road (Fairbanks)	004. Margarete Avenue to Aurora Drive	1.26	2.34	2003	0.39	17	27.85	27845211.25	2002	9850	2	4925	0.014	0.023	0.118
1986	2058	140	College Road (Fairbanks)	004. Margarete Avenue to Aurora Drive	1.27	2.35	2004	0.38	18	29.51	29510524	2003	9125	2	4562.5	0.013	0.021	0.108
1982	2059	140	College Road (Fairbanks)	005. Aurora Drive to Morgan Way			1982	0	0	0.00	0	1982	7600	2	3800			
1982	2059	140	College Road (Fairbanks)	005. Aurora Drive to Morgan Way			2002	0.42	20	29.73	29731075	2001	8076	2	4038	0.014	0.021	0.119
1982	2059	140	College Road (Fairbanks)	005. Aurora Drive to Morgan Way	2.34	3.54	2003	0.45	21	31.03	31026825	2002	8200	2	4100	0.015	0.021	0.122
1982	2059	140	College Road (Fairbanks)	005. Aurora Drive to Morgan Way	2.35	3.54	2004	0.46	22	32.32	32322575	2003	7100	2	3550	0.014	0.021	0.120
1982	3239	140	College Road (Fairbanks)	006. Morgan Way to widening			1982	0	0	0.00	0	1982	5000	2	2500			
1982	3239	140	College Road (Fairbanks)	006. Morgan Way to widening			2002	0.39	20	25.95	25953690	2001	8352	2	4176	0.015	0.020	0.127
1982	3239	140	College Road (Fairbanks)	006. Morgan Way to widening	3.54	4.03	2003	0.42	21	27.51	27511145	2002	8692	2	4346	0.015	0.020	0.129
1982	3239	140	College Road (Fairbanks)	006. Morgan Way to widening	3.54	3.93	2004	0.46	22	29.07	29068600	2003	8534	2	4267	0.016	0.021	0.133
1978	2074	142	University Avenue	003. Davis Road to Airport Way			1978	0	0	0.00	-	1978	5200	4	1300			
1978	2074	142	University Avenue	003. Davis Road to Airport Way			2002	0.32	24	27.94	27935275	2001	18724	4	4681	0.011	0.013	0.096
1978	2074	142	University Avenue	003. Davis Road to Airport Way	2.00	2.65	2003	0.394	25	29.33	29333225	2002	19052	4	4763	0.013	0.016	0.113
1978	2074	142	University Avenue	003. Davis Road to Airport Way	2.00	2.60	2004	0.4	26	31.08	31080662.5	2003	19150	4	4787.5	0.013	0.015	0.108
1977	2075	142	University Avenue	004. Airport Way to Johansen Expressway			1977	0	0	0.00	0	1977	16800	4	4200			
1977	2075	142	University Avenue	004. Airport Way to Johansen Expressway	2.68	3.53	1998	0.2	21	34.07	34,073,480	1996	18616	4	4654	0.006	0.010	0.049
1977	2075	142	University Avenue	004. Airport Way to Johansen Expressway	2.68	3.53	1999	0.25	22	35.71	35,709,410	1998	18340	4	4585	0.007	0.011	0.059
1977	2075	142	University Avenue	004. Airport Way to Johansen Expressway	2.68	3.53	2000	0.36	23	37.36	37,357,750	1999	17928	4	4482	0.010	0.016	0.081
1977	2075	142	University Avenue	004. Airport Way to Johansen Expressway	2.68	3.53	2001	0.51	24	39.07	39,065,585	2000	18064	4	4516	0.013	0.021	0.110
1977	2075	142	University Avenue	004. Airport Way to Johansen Expressway			2002	0.53	25	40.46	40,457,257	2001	18716	4	4679	0.013	0.021	0.110
1977	2075	142	University Avenue	004. Airport Way to Johansen Expressway	2.65	3.47	2003	0.622	26	41.85	41,854,696	2002	19064	4	4766	0.015	0.024	0.125
1977	2075	142	University Avenue	004. Airport Way to Johansen Expressway	2.60	3.47	2004	0.64	27	43.60	43601494.75	2003	19143	4	4785.75	0.015	0.024	0.124
1965	2076	142	University Avenue	005. Johansen Expressway to College Road			1965	0	0	0.00	0	1965	9000	4	2250			
1965	2076	142	University Avenue	005. Johansen Expressway to College Road	3.53	3.97	1998	0.05	33	38.27	38,274,630	1996	16224	4	4056	0.001	0.002	0.011
1965	2076	142	University Avenue	005. Johansen Expressway to College Road	3.53	3.97	1999	0.1	34	39.66	39,655,060	1998	12252	4	3063	0.003	0.003	0.021
1965	2076	142	University Avenue	005. Johansen Expressway to College Road	3.53	3.97	2000	0.22	35	41.27	41,267,995	1999	15128	4	3782	0.005	0.006	0.045
1965	2076	142	University Avenue	005. Johansen Expressway to College Road	3.53	3.97	2001	0.31	36	42.86	42,857,935	2000	17676	4	4419	0.007	0.009	0.061
1965	2076	142	University Avenue	005. Johansen Expressway to College Road			2002	0.35	37	42.86	42,857,935	2001	17424	4	4356	0.008	0.009	0.069
1985	1515	74	Richardson Highway	333. MP 360 to 1st Parks Highway Overcrossing			1985	0	0	42.86	42857935	1985	0	4	0			
1965	2076	142	University Avenue	005. Johansen Expressway to College Road	3.47	3.93	2003	0.45	38	44.16	44,159,160	2002	17752	4	4438	0.010	0.012	0.086
1965	2076	142	University Avenue	005. Johansen Expressway to RR Xing	3.47	3.72	2004	0.46	39	45.79	45785691.25	2003	17825	4	4456.25	0.010	0.012	0.085
1984	2429	206	Chena Ridge/Chena Pump Road	015. Chena Small Tracts to Dartmouth/Geist Rd.			1984	0	0	0.00	0	1984	6900	2	3450			
1984	2429	206	Chena Ridge/Chena Pump Road	015. Chena Small Tracts to Dartmouth/Geist Rd.	12.13	13.02	1998	0.06	14	19.52	19,519,835	1996	7976	2	3988	0.003	0.004	0.026
1984	2429	206	Chena Ridge/Chena Pump Road	015. Chena Small Tracts to Dartmouth/Geist Rd.	12.13	13.02	1999	0.06	15	21.29	21,294,830	1998	9726	2	4863	0.003	0.004	0.024
1984	2429	206	Chena Ridge/Chena Pump Road	015. Chena Small Tracts to Dartmouth/Geist Rd.	12.13	13.02	2000	0.09	16	23.17	23,170,200	1999	9726	2	4863	0.004	0.006	0.033
1984	2429	206	Chena Ridge/Chena Pump Road	015. Chena Small Tracts to Dartmouth/Geist Rd.	12.13	13.02	2001	0.1	17	25.16	25,159,450	2000	10276	2	5138	0.004	0.006	0.033
1984	2429	206	Chena Ridge/Chena Pump Road	015. Chena Small Tracts to Dartmouth/Geist Rd.			2002	0.17	18	26.52	26,517,250	2001	10900	2	5450	0.006	0.009	0.054
1984	2429	206	Chena Ridge/Chena Pump Road	015. Chena Small Tracts to Dartmouth/Geist Rd.	12.13	13.02	2003	0.2	19	27.92	27918850	2002	9300	2	4650	0.007	0.011	0.060
1984	2429	206	Chena Ridge/Chena Pump Road	015. Chena Small Tracts to Dartmouth/Geist Rd.	11.84	12.73	2004	0.21	20	29.67	29670850	2003	9600	2	4800	0.007	0.011	0.060
1981	2909	309	Cushman St.(Fairbanks)	003. 30th Ave.To 28th Ave.			1981	0	0	0.00	0	1981	8000	2	4000			
1981	2909	309	Cushman St.(Fairbanks)	003. 30th Ave.To 28th Ave.	2.00	2.15	1999	0.02	18	30.60	30,600,688	1996	10350	2	5175	0.001	0.001	0.006
1981	2909	309	Cushman St.(Fairbanks)	003. 30th Ave.To 28th Ave.	2.00	2.15	2000	0.05	19	32.48	32,480,438	1998	10050	2	5025	0.002	0.003	0.013
1981	2909	309	Cushman St.(Fairbanks)	003. 30th Ave.To 28th Ave.	2.00	2.15	2001	0.07	20	34.36	34,360,188	1999	9650	2	4825	0.002	0.004	0.017
1981	2909	309	Cushman St.(Fairbanks)	003. 30th Ave.To 28th Ave.			2002	0.17	21	36.32	36,316,588	2001	10300	2	5150	0.005	0.008	0.039

1981	2909	309	Cushman St.(Fairbanks)	003. 30th Ave.To 28th Ave.	2.00	2.15	2003	0.22	22	38.10	38099384.38	2002	13400	2	6700	0.006	0.010	0.049
1980	2909	309	Cushman St.(Fairbanks)	003. 30th Ave.To 27th Ave.	2.00	2.18	2004	0.29	24	40.48	40476446.88	2003	13025	2	6512.5	0.007	0.012	0.060
1987	2933	322	Illinois St.	001. Driveway Rd. to Minnie Street			1987	0	0	0.00	0	1987	13126	2	6563			
1987	2933	322	Illinois St.	001. Driveway Rd. to Minnie Street	0.00	0.23	1999	0.35	12	28.63	28,626,950	1996	12526	2	6263	0.012	0.029	0.103
1987	2933	322	Illinois St.	001. Driveway Rd. to Minnie Street	0.00	0.23	2000	0.36	13	30.97	30,972,075	1998	14450	2	7225	0.012	0.028	0.098
1987	2933	322	Illinois St.	001. Driveway Rd. to Minnie Street	0.00	0.23	2001	0.37	14	33.75	33,746,075	1999	14450	2	7225	0.011	0.026	0.092
1987	2933	322	Illinois St.	001. Driveway Rd. to Minnie Street			2002	0.4	15	36.66	36,658,775	2001	15200	2	7600	0.011	0.027	0.092
1987	2934	322	Illinois St.	002. Minnie St. to College Rd.			2002	0.42	15	24.27	24,272,044	2001	12850	2	6425	0.017	0.028	0.146
1960	2946	328	Minnie/3rd Street (Fairbanks)	003. Steese Expressway to Hamilton St.			1960	0	0	0.00	0	1960	4800	2	2400			
1960	2946	328	Minnie/3rd Street (Fairbanks)	003. Steese Expressway to Hamilton St.	0.61	0.87	1998	0.35	38	38.21	38,210,025	1996	6176	2	3088	0.009	0.009	0.077
1960	2946	328	Minnie/3rd Street (Fairbanks)	003. Steese Expressway to Hamilton St.	0.61	0.87	1999	0.36	39	39.89	39,889,025	1998	5626	2	2813	0.009	0.009	0.076
1960	2946	328	Minnie/3rd Street (Fairbanks)	003. Steese Expressway to Hamilton St.	0.61	0.87	2000	0.38	40	41.61	41,609,270	1999	9200	2	4600	0.009	0.010	0.077
1960	2946	328	Minnie/3rd Street (Fairbanks)	003. Steese Expressway to Hamilton St.	0.61	0.87	2001	0.4	41	43.32	43,324,770	2000	9426	2	4713	0.009	0.010	0.078
1960	2946	328	Minnie/3rd Street (Fairbanks)	003. Steese Expressway to Hamilton St.			2002	0.45	42	44.33	44,328,666	2001	9400	2	4700	0.010	0.011	0.085
1989	3142	378	Steese Expressway (SB)	004. Chena Hot Springs Rd. to mile 4	4.88	4.00	1989	0	0	0.00	0	1989	6200	4	1550			
1989	3142	378	Steese Expressway (SB)	004. Chena Hot Springs Rd. to mile 4	4.88	4.00	2003	0.46	14	13.75	13,748,236	2002	13752	4	3438	0.033	0.033	0.282
1989	3142	378	Steese Expressway (SB)	004. Chena Hot Springs Rd. to mile 4	4.90	4.00	2004	0.47	15	14.95	14,952,736	2003	13200	4	3300	0.031	0.031	0.265
1989	3143	378	Steese Expressway (SB)	005. Mile 4 to Farmers Loop Road	4.00	2.78	1989	0	0	0.00	0	1989	6200	4	1550			
1989	3143	378	Steese Expressway (SB)	005. Mile 4 to Farmers Loop Road	4.00	2.78	2003	0.5	14	13.75	13,748,236	2002	13752	4	3438	0.036	0.036	0.306
1989	3143	378	Steese Expressway (SB)	005. Mile 4 to Farmers Loop Road	4.00	2.78	2004	0.51	15	14.95	14,952,736	2003	13200	4	3300	0.034	0.034	0.287
1989	3146	378	Steese Expressway (SB)	006. Farmers Loop Road to Johansen Expressway			1989	0	0	0.00	-	1989	9960	4	2490			
1989	3146	378	Steese Expressway (SB)	006. Farmers Loop Road to Johansen Expressway			2002	0.31	13	18.12	18,122,761	2001	18176	4	4544	0.017	0.024	0.144
1989	3146	378	Steese Expressway (SB)	006. Farmers Loop Road to Johansen Expressway	2.78	1.99	2003	0.95	14	19.56	19,557,357	2002	19652	4	4913	0.049	0.068	0.409
2004	3146	378	Steese Expressway (SB)	006. Farmers Loop Road to Johansen Expressway	2.78	2.01	2004	0.33	0	21.33	21,327,607	2003	19400	4	4850			
1989	3147	378	Steese Expressway (SB)	007. Johnasen Expressway to Trainer Gate Rd.			1989	0	0	0.00	0	1989	10900	4	2725			
1989	3147	378	Steese Expressway (SB)	007. Johnasen Expressway to Trainer Gate Rd.	1.99	1.33	2003	1.5	14	15.77	15,770,993	2002	12376	4	3094	0.095	0.107	0.801
2004	3147	378	Steese Expressway (SB)	007. Johnasen Expressway to Trainer Gate Rd.	2.01	1.42	2004	0.26	0	17.00	16,998,306	2003	13450	4	3362.5			
1989	3148	378	Steese Expressway (SB)	008. Trainer Gate Road to Chena River			1989	0	0	0.00	-	1989	12480	4	3120			
1989	3148	378	Steese Expressway (SB)	008. Trainer Gate Road to Chena River			2002	0.33	13	20.48	20,482,961	2001	19300	4	4825	0.016	0.025	0.136
1989	3148	378	Steese Expressway (SB)	008. Trainer Gate Road to Chena River	1.33	0.61	2003	0.86	14	22.12	22,116,409	2002	22376	4	5594	0.039	0.061	0.327
2004	3148	378	Steese Expressway (SB)	008. Trainer Gate Road to Chena River	1.42	0.63	2004	0.37	0	24.28	24,283,596	2003	23750	4	5937.5			
1989	3149	378	Steese Expressway (SB)	009. Chena River to Airport Way			1975	0	-14	0.00	0	1975	20000	4	5000			
1989	3149	378	Steese Expressway (SB)	009. Chena River to Airport Way	0.63	0.00	1999	0.22	10	24.26	24,257,900	1996	20460	4	5115	0.009	0.022	0.076
1989	3149	378	Steese Expressway (SB)	009. Chena River to Airport Way	0.63	0.00	2000	0.3	11	26.31	26,308,470	1998	21588	4	5397	0.011	0.027	0.096
1989	3149	378	Steese Expressway (SB)	009. Chena River to Airport Way	0.63	0.00	2001	0.44	12	28.36	28,359,040	1999	21492	4	5373	0.016	0.037	0.131
1989	3149	378	Steese Expressway (SB)	009. Chena River to Airport Way			2002	0.45	13	30.55	30,549,040	2001	22472	4	5618	0.015	0.035	0.124
1989	3149	378	Steese Expressway (SB)	009. Chena River to Airport Way	0.61	0.00	2003	0.47	14	32.30	32,301,040	2002	24000	4	6000	0.015	0.034	0.123
1989	3149	378	Steese Expressway (SB)	009. Chena River to Airport Way	0.63	0.00	2004	0.51	15	34.69	34,687,228	2003	26150	4	6537.5	0.015	0.034	0.124
1985	3382	418	Richardson Highway, SB, Fairbanks/NP	001. Jct. Airport Road to 1st Parks Hwy Overcrossing			1985	0	0	0.00	0	1985	12000	4	3000			
1985	3382	418	Richardson Highway, SB, Fairbanks/NP	001. Jct. Airport Road to 1st Parks Hwy Overcrossing	364.43	363.40	1998	0.29	13	16.96	16,955,893	1996	15676	4	3919	0.017	0.022	0.144
1985	3382	418	Richardson Highway, SB, Fairbanks/NP	001. Jct. Airport Road to 1st Parks Hwy Overcrossing	364.43	363.40	1999	0.3	14	18.53	18,532,328	1998	17924	4	4481	0.016	0.021	0.136
1985	3382	418	Richardson Highway, SB, Fairbanks/NP	001. Jct. Airport Road to 1st Parks Hwy Overcrossing	364.43	363.40	2000	0.31	15	20.18	20,183,953	1999	17276	4	4319	0.015	0.021	0.129
1985	3382	418	Richardson Highway, SB, Fairbanks/NP	001. Jct. Airport Road to 1st Parks Hwy Overcrossing	364.43	363.40	2001	0.32	16	21.87	21,867,333	2000	18100	4	4525	0.015	0.020	0.123
1985	3382	418	Richardson Highway, SB, Fairbanks/NP	001. Jct. Airport Road to MP 361			2002	0.29	17	23.66	23,655,833	2001	18448	4	4612	0.012	0.017	0.103
1985	3382	418	Richardson Highway, SB, Fairbanks/NP	001. Jct. Airport Road to MP 361	364.43	363.35	2003	0.38	18	25.20	25,201,608	2002	19600	4	4900	0.015	0.021	0.127
1985	3382	418	Richardson Highway, SB, Fairbanks/NP	001. Jct. Airport Road to Mitchell Interchange Project	362.98	362.90	2004	0.39	19	27.13	27,133,826	2003	21175	4	5293.75	0.014	0.021	0.121
1985	3383	418	Richardson Highway, SB, Fairbanks/NP	002. 1st Parks Highway Overcrossing to MP 360			1985	0	0	0.00	0	1985	12000	4	3000			
1985	3383	418	Richardson Highway, SB, Fairbanks/NP	002. 1st Parks Highway Overcrossing to MP 360	363.40	362.36	1998	0.31	13	16.96	16,955,893	1996	15676	4	3919	0.018	0.024	0.154
1985	3383	418	Richardson Highway, SB, Fairbanks/NP	002. 1st Parks Highway Overcrossing to MP 360	363.40	362.36	1999	0.31	14	18.53	18,532,328	1998	17924	4	4481	0.017	0.022	0.141
1985	3383	418	Richardson Highway, SB, Fairbanks/NP	002. 1st Parks Highway Overcrossing to MP 360	363.40	362.36	2000	0.32	15	20.18	20,183,953	1999	17276	4	4319	0.016	0.021	0.134
1985	3383	418	Richardson Highway, SB, Fairbanks/NP	002. 1st Parks Highway Overcrossing to MP 360	363.40	362.36	2001	0.39	16	22.27	22,265,548	2000	18100	4	4525	0.018	0.024	0.148
1985	3383	418	Richardson Highway, SB, Fairbanks/NP	002. MP 361 to MP 360			2002	0.4	17	24.37	24,373,788	2001	22812	4	5703	0.016	0.024	0.138
1985	3383	418	Richardson Highway, SB, Fairbanks/NP	002. MP 361 to MP 360	363.35	362.34	2003	0.45	18	26.08	26,082,207	2002	23104	4	5776	0.017	0.025	0.145
1985	3383	418	Richardson Highway, SB, Fairbanks/NP	003. Interchange Project to MP 360	361.78	360.90	2004	0.51	19	28.22	28,217,730	2003	23403	4	5850.75	0.018	0.027	0.152
1985	3384	418	Richardson Highway, SB, Fairbanks/NP	003. MP 360 to MP 359			1985	0	0	0.00	0	1985	16000	4	4000			
1985	3384	418	Richardson Highway, SB, Fairbanks/NP	003. MP 360 to MP 359	362.36	361.35	1998	0.34	13	22.64	22,637,483	1996	21164	4	5291	0.015	0.026	0.126
1985	3384	418	Richardson Highway, SB, Fairbanks/NP	003. MP 360 to MP 359	362.36	361.35	1999	0.34	14	24.64	24,642,063	1998	22516	4	5629	0.014	0.024	0.116
1985	3384	418	Richardson Highway, SB, Fairbanks/NP	003. MP 360 to MP 359	362.36	361.35	2000	0.39	15	26.68	26,684,238	1999	21968	4	5492	0.015	0.026	0.123
1985	3384	418	Richardson Highway, SB, Fairbanks/NP	003. MP 360 to MP 359	362.36	361.35	2001	0.43	16	28.77	28,765,833	2000	22380	4	5595	0.015	0.027	0.126
1985	3384	418	Richardson Highway, SB, Fairbanks/NP	003. MP 360 to MP 359			2002	0.44	17	30.87	30,874,073	2001	22812	4	5703	0.014	0.026	0.120
1985	3384	418	Richardson Highway, SB, Fairbanks/NP	003. MP 360 to MP 359	362.34	361.33	2003	0.45	18	32.58	32,582,492	2002	23104	4	5776	0.014	0.025	0.116
1985	3384	418	Richardson Highway, SB, Fairbanks/NP	004. MP 360 to MP 359	360.90	359.88	2004	0.52	19	34.72	34,718,015	2003	23403	4	5850.75	0.015	0.027	0.126
1985	3385	418	Richardson Highway, SB, Fairbanks/NP	004. MP 359 to MP 358			1985	0	0	0.00	0	1985	16000	4	4000			
1985	3385	418	Richardson Highway, SB, Fairbanks/NP	004. MP 359 to MP 358	361.35	360.39	1998	0.39	13	22.64	22,637,483	1996	21164	4	5291	0.017	0.030	0.145
1985	3385	418	Richardson Highway, SB, Fairbanks/NP	004. MP 359 to MP 358	361.35	360.39	1999	0.39	14	24.64	24,642,063	1998	22516	4	5629	0.016	0.028	0.133
1985	3385	418	Richardson Highway, SB, Fairbanks/NP	004. MP 359 to MP 358	361.35	360.39	2000	0.4	15	26.68	26,684,238	1999	21968	4	5492	0.015	0.027	0.126
1985	3385	418	Richardson Highway, SB, Fairbanks/NP	004. MP 359 to MP 358	361.35	360.39	2001	0.48	16	28.77	28,765,833	2000	22380	4	5595	0.017	0.030	0.141
1985	3385	418	Richardson Highway, SB, Fairbanks/NP	004. MP 359 to MP 358			2002	0.46	17	30.87	30,874,073	2001	22812	4	5703	0.015	0.027	0.125
1985	3385	418	Richardson Highway, SB, Fairbanks/NP	004. MP 359 to MP 358	361.33	360.38	2003	0.55	18	32.58	32,582,492	2002	23104	4	5776	0.017	0.031	0.142
1985	3385	418	Richardson Highway, SB, Fairbanks/NP	005. MP 359 to MP 358	359.88	358.92	2004	0.61	19	34.72	34,718,015	2003	23403	4	5850.75	0.018	0.032	0.148
1985	3386	418	Richardson Highway, SB, Fairbanks/NP	005. MP 358 to Jct. Badger Road			1985	0	0	0.00	0	1985	16000	4	4000			
1985	3386	418	Richardson Highway, SB, Fairbanks/NP	005. MP 358 to Jct. Badger Road	360.39	359.37	1998	0.45	13	22.64	22,637,483	1996	21164	4	5291	0.020	0.035	0.167
1985	3386	418	Richardson Highway, SB, Fairbanks/NP	005. MP 358 to Jct. Badger Road	360.39	359.37	1999	0.45	14	24.64	24,642,063	1998	22516	4	5629	0.018	0.032	0.154
1985	3386	418	Richardson Highway, SB, Fairbanks/NP	005. MP 358 to Jct. Badger Road	360.39	359.37	2000	0.46	15	26.68	26,684,238	1999	21968	4	5492	0.017	0.031	0.145
1985	3386	418	Richardson Highway, SB, Fairbanks/NP	005. MP 358 to Jct. Badger Road	360.39	359.37	2001	0.48	16	28.77	28,767,256	2000	22380	4	5595	0.017	0.030	0.141
1985	3386	418	Richardson Highway, SB, Fairbanks/NP	006. MP 358 to Badger Road Interchange Project	358.92	358.76	2004	0.61	19	35.03	35,033,804	2003	23403	4	5850.75	0.017	0.032	0.147
1985	3387	418	Richardson Highway, SB, Fairbanks/NP	006. Jct. Badger Road to MP 356			1985	0	0	0.00	0	1985	16000	4	4000			
1985	3387	418	Richardson Highway, SB, Fairbanks/NP	006. Jct. Badger Road to MP 356	359.37	358.30	1998	0.48	13	22.64	22,637,483	1996	21164	4	5291	0.021	0.037	0.179
1985	3387	418	Richardson Highway, SB, Fairbanks/NP	006. Jct. Badger Road to MP 356	359.37	358.30	1999	0.48	14	24.64	24,642,063	1998	22516	4	5629	0.019	0.034	0.164

1985	3387	418	Richardson Highway, SB, Fairbanks/NP	006. Jct. Badger Road to MP 356	359.37	358.30	2000	0.49	15	26.68	26,684,238	1999	21968	4	5492	0.018	0.033	0.155
1985	3387	418	Richardson Highway, SB, Fairbanks/NP	006. Jct. Badger Road to MP 356	359.37	358.30	2001	0.5	16	28.73	28,726,413	2000	22380	4	5595	0.017	0.031	0.147
1985	3388	418	Richardson Highway, SB, Fairbanks/NP	007. MP 356 to MP 355			1985	0	0	0.00	0	1985	16000	4	4000			
1985	3388	418	Richardson Highway, SB, Fairbanks/NP	007. MP 356 to MP 355	358.30	357.30	1998	0.44	13	22.64	22,637,483	1996	21164	4	5291	0.019	0.034	0.164
1985	3388	418	Richardson Highway, SB, Fairbanks/NP	007. MP 356 to MP 355	358.30	357.30	1999	0.44	14	24.64	24,642,063	1998	22516	4	5629	0.018	0.031	0.150
1985	3388	418	Richardson Highway, SB, Fairbanks/NP	007. MP 356 to MP 355	358.30	357.30	2000	0.45	15	26.68	26,684,238	1999	21968	4	5492	0.017	0.030	0.142
1985	3388	418	Richardson Highway, SB, Fairbanks/NP	007. MP 356 to MP 355	358.30	357.30	2001	0.49	16	28.06	28,057,368	2000	22380	4	5595	0.017	0.031	0.147
1985	3388	418	Richardson Highway, SB, Fairbanks/NP	007. MP 356 to MP 355	358.30	357.30	2002	0.5	17	29.50	29,499,154	2001	15048	4	3762	0.017	0.029	0.143
1985	3388	418	Richardson Highway, SB, Fairbanks/NP	008. MP 356 to MP 355	356.93	355.90	2004	0.59	19	32.18	32,177,342	2003	14675	4	3668.75	0.018	0.031	0.154
1985	3389	418	Richardson Highway, SB, Fairbanks/NP	008. MP 355 to MP 354	357.32	356.33	1985	0	0	0.00	0	1985	10000	4	2500			
1985	3389	418	Richardson Highway, SB, Fairbanks/NP	008. MP 355 to MP 354	357.32	356.33	2003	0.55	18	21.18	21,179,125	2002	14500	4	3625	0.026	0.031	0.219
1985	3389	418	Richardson Highway, SB, Fairbanks/NP	009. MP 355 to MP 354	355.90	354.91	2004	0.56	19	22.52	22,518,219	2003	14675	4	3668.75	0.025	0.029	0.209
1985	3390	418	Richardson Highway, SB, Fairbanks/NP	009. MP 354 to MP 353	356.33	355.33	1985	0	0	0.00	0	2002	9800	4	2450			
1985	3390	418	Richardson Highway, SB, Fairbanks/NP	009. MP 354 to MP 353	356.33	355.33	2003	0.44	18	21.01	21,014,875	2002	14500	4	3625	0.021	0.024	0.176
1985	3390	418	Richardson Highway, SB, Fairbanks/NP	010. MP 354 to MP 353	354.91	353.91	2004	0.53	19	22.35	22,353,969	2003	14675	4	3668.75	0.024	0.028	0.200
1985	3391	418	Richardson Highway, SB, Fairbanks/NP	010. MP 353 to MP 352	355.33	354.35	1985	0	0	0.00	0	1985	9600	4	2400			
1985	3391	418	Richardson Highway, SB, Fairbanks/NP	010. MP 353 to MP 352	355.33	354.35	2003	0.51	18	20.85	20,850,625	2002	14500	4	3625	0.024	0.028	0.206
1985	3391	418	Richardson Highway, SB, Fairbanks/NP	011. MP 353 to MP 352	353.91	352.93	2004	0.52	19	22.19	22,189,719	2003	14675	4	3668.75	0.023	0.027	0.197
1985	3392	418	Richardson Highway, SB, Fairbanks/NP	011. MP 352 to MP 351	354.35	353.35	1985	0	0	0.00	0	1985	9200	4	2300			
1985	3392	418	Richardson Highway, SB, Fairbanks/NP	011. MP 352 to MP 351	354.35	353.35	2003	0.34	18	19.25	19,248,713	2002	13076	4	3269	0.018	0.019	0.149
1985	3392	418	Richardson Highway, SB, Fairbanks/NP	012. MP 352 to MP 351	352.93	351.94	2004	0.39	19	20.22	20,222,807	2003	10675	4	2668.75	0.019	0.021	0.162
1985	3393	418	Richardson Highway, SB, Fairbanks/NP	012. MP 351 to Badger Road Overpass	353.35	351.70	1985	0	0	0.00	0	1985	8800	4	2200			
1985	3393	418	Richardson Highway, SB, Fairbanks/NP	012. MP 351 to Badger Road Overpass	353.35	351.70	2003	0.3	18	18.92	18,920,213	2002	13076	4	3269	0.016	0.017	0.134
1985	3393	418	Richardson Highway, SB, Fairbanks/NP	013. MP 351 to Badger Road Overpass	351.94	350.29	2004	0.33	19	19.89	19,894,307	2003	10675	4	2668.75	0.017	0.017	0.140
1987	3788	537	Airport Way EB (Fairbanks)	004. University Ave. to Peger Road			1987	0	0	0.00	0	1987	18448	4	4612			
1987	3788	537	Airport Way EB (Fairbanks)	004. University Ave. to Peger Road	3.13	2.13	2000	0.17	13	26.28	26,275,620	1996	23752	4	5938	0.006	0.013	0.054
1987	3788	537	Airport Way EB (Fairbanks)	004. University Ave. to Peger Road	3.13	2.13	2001	0.27	14	28.40	28,399,555	1998	24452	4	6113	0.010	0.019	0.080
1987	3788	537	Airport Way EB (Fairbanks)	004. University Ave. to Peger Road			2002	0.21	15	30.70	30,696,865	2001	23276	4	5819	0.007	0.014	0.058
1987	3788	537	Airport Way EB (Fairbanks)	004. University Ave. to Peger Road	3.16	2.15	2003	0.25	16	32.20	32,200,779	2002	25176	4	6294	0.008	0.016	0.065
1987	3788	537	Airport Way EB (Fairbanks)	004. University Ave. to Peger Road	3.15	2.16	2004	0.26	17	34.21	34,205,998	2003	21975	4	5493.75	0.008	0.015	0.064
1987	3789	537	Airport Way EB (Fairbanks)	005. Peger Road to W. Cowles St.			1987	0	0	0.00	0	1987	26572	4	6643			
1987	3789	537	Airport Way EB (Fairbanks)	005. Peger Road to W. Cowles St.	2.13	0.95	2000	0.17	13	29.78	29,782,723	1996	24752	4	6188	0.006	0.013	0.048
1987	3789	537	Airport Way EB (Fairbanks)	005. Peger Road to W. Cowles St.	2.13	0.95	2001	0.32	14	31.99	31,988,783	1998	25100	4	6275	0.010	0.023	0.084
1987	3789	537	Airport Way EB (Fairbanks)	005. Peger Road to W. Cowles St.			2002	0.27	15	34.27	34,274,778	2001	24176	4	6044	0.008	0.018	0.066
1987	3789	537	Airport Way EB (Fairbanks)	005. Peger Road to W. Cowles St.	2.15	0.98	2003	0.29	16	35.97	35,972,028	2002	25052	4	6263	0.008	0.018	0.068
1987	3789	537	Airport Way EB (Fairbanks)	005. Peger Road to W. Cowles St.	2.16	0.99	2004	0.3	17	38.24	38,235,028	2003	24800	4	6200	0.008	0.018	0.066
1987	3790	537	Airport Way EB (Fairbanks)	006. W. Cowles St. to Richardson Hwy.			1987	0	0	0.00	0	1987	21400	4	5350			
1987	3790	537	Airport Way EB (Fairbanks)	006. W. Cowles St. to Richardson Hwy.	0.95	0.00	2000	0.04	13	23.84	23,843,260	1996	18672	4	4668	0.002	0.003	0.014
1987	3790	537	Airport Way EB (Fairbanks)	006. W. Cowles St. to Richardson Hwy.	0.95	0.00	2001	0.24	14	25.76	25,761,700	1998	22524	4	5631	0.009	0.017	0.078
1987	3790	537	Airport Way EB (Fairbanks)	006. W. Cowles St. to Richardson Hwy.			2002	0.21	15	27.72	27,721,385	2001	21024	4	5256	0.008	0.014	0.064
1987	3790	537	Airport Way EB (Fairbanks)	006. W. Cowles St. to Richardson Hwy.	0.98	0.00	2003	0.25	16	29.24	29,244,119	2002	21476	4	5369	0.009	0.016	0.072
1987	3790	537	Airport Way EB (Fairbanks)	006. W. Cowles St. to Richardson Hwy.	0.99	0.00	2004	0.26	17	31.27	31,274,432	2003	22250	4	5562.5	0.008	0.015	0.070
1987	1968	615	Geist Road, Fairbanks	001. University Avenue to Fairbanks Street			1987	0	0	0.00	-	1987	9600	4	2400			
1987	1968	615	Geist Road, Fairbanks	001. University Avenue to Fairbanks Street			2002	0.79	15	21.06	21,055,025	2001	18752	4	4688	0.038	0.053	0.316
1987	1968	615	Geist Road, Fairbanks	001. University Avenue to Fairbanks Street	0.00	0.51	2003	0.8	16	22.38	22,376,325	2002	18100	4	4525	0.036	0.050	0.301
1987	1968	615	Geist Road, Fairbanks	001. University Avenue to Fairbanks Street	0.00	0.49	2004	0.87	17	23.66	23,661,125	2003	17600	4	4400	0.037	0.051	0.310
1997	1970	615	Geist Road, Fairbanks	005. begin interchange project to Dartmouth Dr.			1997	0	0	0.00	-	1997	13760	4	3440			
1997	1970	615	Geist Road, Fairbanks	005. begin interchange project to Dartmouth Dr.			2002	0.12	5	1.18	1,184,352	2001	16224	4	4056	0.101	0.024	0.853
1997	1970	615	Geist Road, Fairbanks	005. begin interchange project to Dartmouth Dr.	1.14	1.75	2003	0.16	6	2.47	2,465,648	2002	17552	4	4388	0.065	0.027	0.546
1997	1970	615	Geist Road, Fairbanks	004. begin interchange project to Dartmouth Dr.	1.12	1.73	2004	0.16	7	3.71	3,710,298	2003	17050	4	4262.5	0.043	0.023	0.363
1997	1971	616	Geist Road (EB), Fairbanks	002. Dartmouth Rd. to end interchange project			1997	0	0	0.00	-	1997	13360	4	3340			
1997	1971	616	Geist Road (EB), Fairbanks	002. Dartmouth Rd. to end interchange project			2002	0.12	5	1.18	1,184,352	2001	16224	4	4056	0.101	0.024	0.853
1997	1971	616	Geist Road (EB), Fairbanks	002. Dartmouth Rd. to end interchange project	1.77	1.14	2003	0.14	6	2.47	2,465,648	2002	17552	4	4388	0.057	0.023	0.478
1997	1971	616	Geist Road (EB), Fairbanks	001. Dartmouth Rd. to end interchange project	1.73	1.20	2004	0.18	7	3.71	3,710,298	2003	17050	4	4262.5	0.049	0.026	0.409
1987	1973	616	Geist Road (EB), Fairbanks	006. Fairbanks St. to University Avenue			1987	0	0	0.00	-	1987	11700	4	2925			
1987	1973	616	Geist Road (EB), Fairbanks	006. Fairbanks St. to University Avenue	0.51	0.00	1998	0.14	11	1.14	1,135,880	1996	15560	4	3890	0.123	0.013	1.038
1987	1973	616	Geist Road (EB), Fairbanks	006. Fairbanks St. to University Avenue	0.51	0.00	1999	0.15	12	2.63	2,630,628	1998	20476	4	5119	0.057	0.013	0.480
1987	1973	616	Geist Road (EB), Fairbanks	006. Fairbanks St. to University Avenue	0.51	0.00	2000	0.4	13	4.16	4,161,876	1999	20976	4	5244	0.096	0.031	0.809
1987	1973	616	Geist Road (EB), Fairbanks	006. Fairbanks St. to University Avenue	0.51	0.00	2001	0.41	14	5.41	5,408,424	2000	17076	4	4269	0.076	0.029	0.638
1987	1973	616	Geist Road (EB), Fairbanks	006. Fairbanks St. to University Avenue			2002	0.44	15	6.78	6,777,320	2001	18752	4	4688	0.065	0.029	0.547
1987	1973	616	Geist Road (EB), Fairbanks	006. Fairbanks St. to University Avenue	0.52	0.00	2003	0.48	16	8.10	8,098,620	2002	18100	4	4525	0.059	0.030	0.499
1987	1973	616	Geist Road (EB), Fairbanks	004. Fairbanks St. to University Avenue	0.51	0.00	2004	0.49	17	9.38	9,383,420	2003	17600	4	4400	0.052	0.029	0.440

64 Sections

42
Max.

0.016	0.020	0.139
0.001	0.001	0.006
0.123	0.107	1.038
0.017	0.011	0.144
0.034	0.032	0.283
0.045	0.039	0.375
0.056	0.047	0.468
234	233	233

APPENDIX D

DATA FOR SOUTHEAST REGION TYPE II HOT-MIX ASPHALT PAVEMENT

SOUTHEAST REGION TYPE II (3/4" minus, dense graded) ASPHALT CONCRETE, TRAFFIC, AGE AND RUTTING DATA

RoadID	SecCode	FromY	SecID	Name	Description	Condition. Year	RutDepth	Traffic. Year	AADT	Traffic Lanes	Age Years	Accum. Traffic	Accum Traffic (mil)	Rut/Mil	Rut/year	Rut/100K studded tire passes	Rut/Mil	Rut/year	Rut/mil studded tire passes
35	291400_1	1992	1	South Tongass	001. Bryant St. to start Overlay section	1999	0.35	1999	9747	2	7	24,065,804	24.07	0.0145	0.0500	0.061			
35	291400_1	1992	1	South Tongass	001. Bryant St. to start Overlay section	2003	1.16	2002	8216	2	11	37,178,794	37.18	0.0312	0.1055	0.131	0.031	0.105	0.131
35	291400_5	1999	38	South Tongass	002. Overlay section, ends at First St.	1999	0.02	1999	9045	2	0	0	-						
35	291400_5	1999	38	South Tongass	002. Overlay section, ends at First St.	2003	0.41	2002	9211	2	4	13,326,880	13.33	0.0308	0.1025	0.130	0.031	0.103	0.130
35	291400_7	1992	39	South Tongass	003. First Ave. to end tunnel	1999	0.45	1999	9623	2	7	23,759,642	23.76	0.0189	0.0643	0.080			
35	291400_7	1992	39	South Tongass	003. First Ave. to end tunnel	2003	0.88	2002	8855	2	11	37,248,582	37.25	0.0236	0.0800	0.099	0.024	0.080	0.099
35	291400	1992	49	South Tongass	004. end tunnel to Bawden Street	1999	0.24	1999	8318	2	7	20,537,536	20.54	0.0117	0.0343	0.049			
35	291400	1992	49	South Tongass	004. end tunnel to Bawden Street	2003	0.67	2002	9175	2	11	33,307,426	33.31	0.0201	0.0609	0.085	0.020	0.061	0.085
35	291400	1999	54	South Tongass	005. Bawden St. to CG Base Rd. (incl. Cr. St. Bridge)	1999	0.05	1999	5789	2	0	0	-						
35	291400_37	1999	54	South Tongass	005. Bawden St. to CG Base Rd. (incl. Cr. St. Bridge)	2003	0.34	2002	5464	2	4	8,214,690	8.21	0.0414	0.0850	0.174	0.041	0.085	0.174
35	291400	1999	55	South Tongass	006. Coast Guard Base Rd. to MP 2	1999	0.11	1999	3111	2	0	0	-						
35	291400_39	1999	55	South Tongass	006. Coast Guard Base Rd. to MP 2	2003	0.2	2002	2943	2	4	4,419,420	4.42	0.0453	0.0500	0.191	0.045	0.050	0.191
36	291500_1	1992	2	North Tongass	001. Bryant St. to Carlanna Creek Bridge	1999	0.2	1999	5841	2	7	14,421,705	14.42	0.0139	0.0286	0.058			
36	291500_1	1992	2	North Tongass	001. Bryant St. to Carlanna Creek Bridge	2003	0.56	2002	5932	2	11	23,015,995	23.02	0.0243	0.0509	0.102	0.024	0.051	0.102
36	291500_3	1992	3	North Tongass	002. Carlanna Cr. Bridge to Pavement change	1999	0.3	1999	4691	2	7	11,582,301	11.58	0.0259	0.0429	0.109			
36	291500_3	1992	3	North Tongass	002. Carlanna Cr. Bridge to Pavement change	2003	0.48	2002	4775	2	11	18,492,481	18.49	0.0260	0.0436	0.109	0.026	0.044	0.109
42	295400_9	1985	130	Halibut Point Road	005. Harbor Mountain Rd to MP 3	1999	0.08	1999	3568	2	14	17,047,031	17.05	0.0047	0.0057	0.020			
42	295400_9	1985	130	Halibut Point Road	005. Harbor Mountain Rd to MP 3	2003	0.32	2002	3743	2	18	22,384,061	22.38	0.0143	0.0178	0.060	0.014	0.018	0.060
42	295400_	1985	131	Halibut Point Road	006. MP 3 to pvt. Change (incl. Cascade Ck. Brg.)	1999	0.1	1999	3568	2	14	17,047,031	17.05	0.0059	0.0071	0.025			
42	295400	1985	131	Halibut Point Road	006. MP 3 to pvt. Change (incl. Cascade Ck. Brg.)	2003	0.37	2002	3743	2	18	22,384,061	22.38	0.0165	0.0206	0.070	0.017	0.021	0.070
42	295400	1993	132	Halibut Point Road	007. 1993 Project Area	1999	0.06	1999	5072	2	6	10,785,809	10.79	0.0056	0.0100	0.023			
42	295400_13	1993	132	Halibut Point Road	007. 1993 Project Area	2003	0.26	2002	4469	2	10	17,750,739	17.75	0.0146	0.0260	0.062	0.015	0.026	0.062
42	295400	1998	136	Halibut Point Road	008. End 1993 Project to Peterson Ave.	1999	0.11	1999	6696	2	1	2,431,941	2.43	0.0452	0.1100	0.190			
42	295400_21	1998	136	Halibut Point Road	008. End 1993 Project to Peterson Ave.	2003	0.32	2002	4921	2	5	10,912,351	10.91	0.0293	0.0640	0.123	0.029	0.064	0.123
42	295400	1998	137	Halibut Point Road	009. Peterson Ave. Sawmill Cr. Rd. turnoff	1999	0.1	1999	5603	2	1	2,034,971	2.03	0.0491	0.1000	0.207			
42	295400_23	1998	137	Halibut Point Road	009. Peterson Ave. Sawmill Cr. Rd. turnoff	2003	0.39	2002	6487	2	5	10,860,671	10.86	0.0359	0.0780	0.151	0.036	0.078	0.151
42	295400	1998	138	Halibut Point Road	010. Sawmill Cr. Rd. to begin Japonski Is. Brge.	1999	0.05	1999	5351	2	1	1,943,446	1.94	0.0257	0.0500	0.108			
42	295400	1998	138	Halibut Point Road	010. Sawmill Cr. Rd. to begin Japonski Is. Brge.	2003	0.16	2002	4273	2	5	8,968,966	8.97	0.0178	0.0320	0.075	0.018	0.032	0.075
43	295500_1	1993	149	Sawmill Creek Blvd.	001. Lake St to Jeff Davis St. (incl Indian R. Bridge)	1999	0.13	1999	3795	2	6	8,070,218	8.07	0.0161	0.0217	0.068			
43	295500_1	1993	149	Sawmill Creek Blvd.	001. Lake St to Jeff Davis St. (incl Indian R. Bridge)	2003	0.39	2002	3502	2	10	13,397,028	13.40	0.0291	0.0390	0.123	0.029	0.039	0.123
43	295500_3	1985	150	Sawmill Creek Blvd.	002. Jeff Davis St. to Jarvis St. Project	1999	0.07	1999	4583	2	14	21,896,453	21.90	0.0032	0.0050	0.013			
43	295500_3	1985	150	Sawmill Creek Blvd.	002. Jeff Davis St. to Jarvis St. Project	2003	0.76	2002	4699	2	18	28,672,313	28.67	0.0265	0.0422	0.112	0.027	0.042	0.112
48	296011_1	1997	261	Thane Road	003. Main St. to Ferry Terminal	1999	0.03	1999	4046	2	2	2,924,481	2.92	0.0103	0.0150	0.043			
48	296011_1	1997	261	Thane Road	003. Main St. to Ferry Terminal	2003	0.26	2002	3722	2	6	8,595,121	8.60	0.0302	0.0433	0.127	0.030	0.043	0.127
49	296400_1	1995	264	Mendenhall Loop Road	001. Egan Drive to Atlin Ave	1999	0.25	1999	5737	4	4	8,212,605	8.21	0.0304	0.0625	0.128			
49	296400_1	1995	264	Mendenhall Loop Road	001. Egan Drive to Atlin Ave	2003	0.34	2002	5604	4	8	16,491,535	16.49	0.0206	0.0425	0.087	0.021	0.043	0.087
49	296400_3	1995	265	Mendenhall Loop Road	002. Atlin Ave to James Blvd	1999	0.35	1999	5381	4	4	7,702,986	7.70	0.0454	0.0875	0.191			
49	296400_3	1995	265	Mendenhall Loop Road	002. Atlin Ave to James Blvd	2003	0.42	2002	5638	4	8	15,746,856	15.75	0.0267	0.0525	0.112	0.027	0.053	0.112
49	296400_5	1995	266	Mendenhall Loop Road	003. James Blvd to begin 3 lane	1999	0.3	1999	4579	4	4	6,554,910	6.55	0.0458	0.0750	0.193			
49	296400_5	1995	266	Mendenhall Loop Road	003. James Blvd to begin 3 lane	2003	0.44	2002	4472	4	8	13,162,140	13.16	0.0334	0.0550	0.141	0.033	0.055	0.141
49	296400_9	1995	268	Mendenhall Loop Road	004. begin 3-lane road to Stephen Richards Dr.	1999	0.33	1999	9159	3	4	13,111,252	13.11	0.0252	0.0825	0.106			
49	296400_9	1995	268	Mendenhall Loop Road	004. begin 3-lane road to Stephen Richards Dr.	2003	0.67	2002	5963	3	8	24,150,312	24.15	0.0277	0.0838	0.117	0.028	0.084	0.117
49	296400	1995	270	Mendenhall Loop Road	005. Stephan Richards Dr. to Mendenhall Blvd.	1999	0.28	1999	6894	3	4	9,868,869	9.87	0.0284	0.0700	0.119			
49	296400_13	1995	270	Mendenhall Loop Road	005. Stephan Richards Dr. to Mendenhall Blvd.	2003	0.58	2002	4517	3	8	18,198,899	18.20	0.0319	0.0725	0.134	0.032	0.073	0.134
49	296400	1995	273	Mendenhall Loop Road	006. Mendenhall Blvd to Back Loop Rd.	1999	0.15	1999	4402	3	4	6,301,532	6.30	0.0238	0.0375	0.100			
49	296400_19	1995	273	Mendenhall Loop Road	006. Mendenhall Blvd to Back Loop Rd.	2003	0.28	2002	2556	3	8	11,380,872	11.38	0.0246	0.0350	0.104	0.025	0.035	0.104
56	296000	1995	356	Egan Drive SB (Juneau)	001. Brotherhood Bridge to Riverside Drive	1999	0.13	1999	6221	4	4	8,905,459	8.91	0.0146	0.0325	0.061			
56	296000_24	1995	356	Egan Drive SB (Juneau)	001. Brotherhood Bridge to Riverside Drive	2003	0.5	2002	3585	4	8	16,063,839	16.06	0.0311	0.0625	0.131	0.031	0.063	0.131
56	296000	1995	357	Egan Drive SB (Juneau)	002. Riverside Drive to Mendenhall Loop Road	1999	0.15	1999	7526	4	4	10,773,587	10.77	0.0139	0.0375	0.059			
56	296000_22	1995	357	Egan Drive SB (Juneau)	002. Riverside Drive to Mendenhall Loop Road	2003	0.32	2002	3927	4	8	19,134,277	19.13	0.0167	0.0400	0.070	0.017	0.040	0.070
56	296000_4	1997	8171	Egan Drive SB (Juneau)	011. 10th St. to Whittier St. (incl. Gold Cr. Bridge)	1999	0.1	1999	3584	4	2	2,590,544	2.59	0.0386	0.0500	0.163			
56	296000_4	1997	8171	Egan Drive SB (Juneau)	011. 10th St. to Whittier St. (incl. Gold Cr. Bridge)	2003	0.44	2002	3746	4	6	7,941,444	7.94	0.0554	0.0733	0.233	0.055	0.073	0.233
56	296000_2	1997	8170	Egan Drive SB (Juneau)	012. Whittier Street to Main St.	1999	0.1	1999	3459	4	2	2,500,193	2.50	0.0400	0.0500	0.168			
56	296000_2	1997	8170	Egan Drive SB (Juneau)	012. Whittier Street to Main St.	2003	0.38	2002	3318	4	6	7,447,403	7.45	0.0510	0.0633	0.215	0.051	0.063	0.215
57	296000_1	1997	257	Glacier Hwy./Egan Drive	001. Main St. to Whittier Street	1999	0.1	1999	3584	4	2	2,590,544	2.59	0.0386	0.0500	0.163			
57	296000_1	1997	257	Glacier Hwy./Egan Drive	001. Main St. to Whittier Street	2003	0.42	2002	3318	4	6	7,629,004	7.63	0.0551	0.0700	0.232	0.055	0.070	0.232
57	296000_3	1997	258	Glacier Hwy./Egan Drive	002. Whittier St. to 10th St. (incl. Gold Cr. Bridge)	1999	0.1	1999	3459	4	2	2,500,193	2.50	0.0400	0.0500	0.168			
57	296000_3	1997	258	Glacier Hwy./Egan Drive	002. Whittier St. to 10th St. (incl. Gold Cr. Bridge)	2003	0.45	2002	3570	4	6	7,631,363	7.63	0.0590	0.0750	0.248	0.059	0.075	0.248
57	296000	1995	374	Glacier Hwy./Egan Drive	011. Mendenhall Loop Rd to Riverside Drive	1999	0.26	1999	6221	4	4	8,905,459	8.91	0.0292	0.0650	0.123			
57	296000_21	1995	374	Glacier Hwy./Egan Drive	011. Mendenhall Loop Rd to Riverside Drive	2003	0.22	2002	3927	4	8	16,313,499	16.31	0.0135	0.0275	0.057	0.013	0.028	0.057
57	296000	1995	375	Glacier Hwy./Egan Drive	012. Riverside Drive to Brotherhood Bridge	1999	0.15	1999	6221	4	4	8,905,459	8.91	0.0168	0.0375	0.071			
57	296000_23	1995	375	Glacier Hwy./Egan Drive	012. Riverside Drive to Brotherhood Bridge	2003	0.36	2002	3585	4	8	16,063,839	16.06	0.0224	0.0450	0.094	0.022	0.045	0.094
57	296000_	1995	355	Glacier Hwy./Egan Drive	015. Brotherhood Bridge to Sherwood Lane	1999	0.1	1999	6221	2	4	8,905,459	8.91	0.0112	0.0250	0.047			
57	296000_25	1995	355	Glacier Hwy./Egan Drive	015. Brotherhood Bridge to Sherwood Lane	2003	0.65	2002	5908	2	8	17,759,629	17.76	0.0366	0.0813	0.154	0.037	0.081	0.154
57	296000	1995	354	Glacier Hwy./Egan Drive	016. Sherwood Lane to Enginners Cut Off	1999	0.1	1999	5872	2	4	8,405,860	8.41	0.0119	0.0250	0.050			
57	296000_27	1995	354	Glacier Hwy./Egan Drive	016. Sherwood Lane to Enginners Cut Off	2003	0.39	2002	5908	2	8	17,005,260	17.01	0.0229	0.0488	0.097	0.023	0.049	0.097
57	296000	1995	353	Glacier Hwy./Egan Drive	017. Enginners Cut Off to MP 11	1999	0.1	1999	5872	2	4	8,405,860	8.41	0.0119	0.0250	0.050			

SOUTHEAST REGION TYPE II (3/4" minus, dense graded) ASPHALT CONCRETE, TRAFFIC, AGE AND RUTTING DATA

RoadID	SecCode	FromY	SecID	Name	Description	Condition. Year	RutDepth	Traffic. Year	AADT	Traffic Lanes	Age Years	Accum. Traffic	Accum Traffic (mil)	Rut/Mil	Rut/year	Rut/100K studded tire passes	Rut/Mil	Rut/year	Rut/mil studded tire passes
57	296000_29	1995	353	Glacier Hwy./Egan Drive	017. Enginners Cut Off to MP 11	2003	0.42	2002	5667	2	8	16,829,330	16.83	0.0250	0.0525	0.105	0.025	0.053	0.105
57	296000	1995	352	Glacier Hwy./Egan Drive	018. M.P. 11 to Fritz Cove Road	1999	0.1	1999	5872	2	4	8,405,860	8.41	0.0119	0.0250	0.050			
57	296000_31	1995	352	Glacier Hwy./Egan Drive	018. M.P. 11 to Fritz Cove Road	2003	0.39	2002	5667	2	8	16,829,330	16.83	0.0232	0.0488	0.098	0.023	0.049	0.098
57	296000	1999	351	Glacier Hwy./Egan Drive	019. Fritz Cove Rd. to jct Back Loop Road	1999	0.05	1999	3842	2	0	-	-						
57	296000_33	1999	351	Glacier Hwy./Egan Drive	019. Fritz Cove Rd. to jct Back Loop Road	2003	0.25	2002	3789	2	4	5,570,630	5.57	0.0449	0.0625	0.189	0.045	0.063	0.189
57	296000	1999	350	Glacier Hwy./Egan Drive	020. Jct. Back Loop Road to Seaview Ave.	1999	0.04	1999	2730	2	0	-	-						
57	296000_35	1999	350	Glacier Hwy./Egan Drive	020. Jct. Back Loop Road to Seaview Ave.	2003	0.18	2002	2680	2	4	3,949,300	3.95	0.0456	0.0450	0.192	0.046	0.045	0.192
57	296000	1998	349	Glacier Hwy./Egan Drive	021. Seaview Ave. to MP 13	1999	0.02	1999	2730	2	1	991,517	0.99	0.0202	0.0200	0.085			
57	296000_37	1998	349	Glacier Hwy./Egan Drive	021. Seaview Ave. to MP 13	2003	0.28	2002	2680	2	5	4,940,817	4.94	0.0567	0.0560	0.239	0.057	0.056	0.239
57	296000	1998	348	Glacier Hwy./Egan Drive	022. MP 13 to MP 14	1999	0.02	1999	1993	2	1	723,844	0.72	0.0276	0.0200	0.116			
57	296000_39	1998	348	Glacier Hwy./Egan Drive	022. MP 13 to MP 14	2003	0.19	2002	2075	2	5	3,693,484	3.69	0.0514	0.0380	0.217	0.051	0.038	0.217
145	296110_1	1980	3957	Douglas Highway	001. Egan Dr. to Douglas Hwy. Jcts. (Gastineau Bridge)	1999	0.534208	1999	7167	2	19	45,422,211	45.42	0.0118	0.0281	0.050			
145	296110_1	1980	3957	Douglas Highway	001. Egan Dr. to Douglas Hwy. Jcts. (Gastineau Bridge)	2003	0.68	2002	6781	2	23	55,604,251	55.60	0.0122	0.0296	0.051	0.012	0.030	0.051
145	296110_3	1995	2085	Douglas Highway	002. N. Douglas to John Street	1999	0.11	1999	5866	2	4	8,397,271	8.40	0.0131	0.0275	0.055			
145	296110_3	1995	2085	Douglas Highway	002. N. Douglas to John Street	2003	0.53	2002	5668	2	8	16,817,091	16.82	0.0315	0.0663	0.133	0.032	0.066	0.133
145	296110_5	1995	2086	Douglas Highway	003. John Street to Lawson Creek Bridge	1999	0.15	1999	4447	2	4	6,365,950	6.37	0.0236	0.0375	0.099			
145	296110_5	1995	2086	Douglas Highway	003. John Street to Lawson Creek Bridge	2003	0.47	2002	4232	2	8	12,701,620	12.70	0.0370	0.0588	0.156	0.037	0.059	0.156
145	296110_7	1995	2087	Douglas Highway	004. Lawson Creek Bridge to I Street (Juneau)	1999	0.15	1999	4447	2	4	6,365,950	6.37	0.0236	0.0375	0.099			
145	296110_7	1995	2087	Douglas Highway	004. Lawson Creek Bridge to I Street (Juneau)	2003	0.29	2002	2972	2	8	11,781,820	11.78	0.0246	0.0363	0.104	0.025	0.036	0.104
145	296110_9	1995	2088	Douglas Highway	005. I Street (Juneau) to B Street (Juneau)	1999	0.1	1999	2909	2	4	4,164,279	4.16	0.0240	0.0250	0.101			
145	296110_9	1995	2088	Douglas Highway	005. I Street (Juneau) to B Street (Juneau)	2003	0.2	2002	2507	2	8	8,117,959	8.12	0.0246	0.0250	0.104	0.025	0.025	0.104
56	296000_20	1995	358	Egan Drive SB (Juneau)	003. Mendenhall Loop Road to Glacier Hwy (Nugget Mall)	1995	0	1996	3728	4	0								
56	296000_20	1995	358	Egan Drive SB (Juneau)	003. Mendenhall Loop Road to Glacier Hwy (Nugget Mall)	2000	0.5	2000	6731	4	5	9,543,838	9.54				0.052	0.100	0.22
56	296000_18	1995	359	Egan Drive SB (Juneau)	004. Glacier Hwy (Nugget Mall) to 4" Overlay Section	1995	0	1996	7050	4	0	-							
56	296000_18	1995	359	Egan Drive SB (Juneau)	004. Glacier Hwy (Nugget Mall) to 4" Overlay Section	2000	0.5	2000	6804	4	5	12,641,775	12.64				0.040	0.100	0.17
56	296000_16	1995	360	Egan Drive SB (Juneau)	005. 4" Overlay Section	1995	0	1996	7050	4	0	-							
56	296000_16	1995	360	Egan Drive SB (Juneau)	005. 4" Overlay Section	2000	0.7	2000	6804	4	5	12,641,775	12.64				0.055	0.140	0.23
56	296000_14	1995	361	Egan Drive SB (Juneau)	006. 4" Overlay section to Vanderbilt	1995	0	1996	5500	4	0	-							
56	296000_14	1995	361	Egan Drive SB (Juneau)	006. 4" Overlay section to Vanderbilt	2000	0.7	2000	6301	4	5	10,768,413	10.77				0.065	0.140	0.27
56	296000_12	1995	362	Egan Drive SB (Juneau)	007. Vanderbilt lights to Channel Dr.	1995	0	1996	5950	4	0	-							
56	296000_12	1995	362	Egan Drive SB (Juneau)	007. Vanderbilt lights to Channel Dr.	2000	0.7	2000	6084	4	5	10,981,025	10.98				0.064	0.140	0.27
56	296000_10	1995	363	Egan Drive SB (Juneau)	008. Channel Dr. to MP 3	1995	0	1996	6050	4	0	-							
56	296000_10	1995	363	Egan Drive SB (Juneau)	008. Channel Dr. to MP 3	2000	0.8	2000	6084	4	5	11,072,275	11.07				0.072	0.160	0.30
56	296000_8	1995	364	Egan Drive SB (Juneau)	009. MP 3 to Highland Drive	1995	0	1996	6000	4	0	-							
56	296000_8	1995	364	Egan Drive SB (Juneau)	009. MP 3 to Highland Drive	2000	0.9	2000	5948	4	5	10,902,550	10.90				0.083	0.180	0.35
56	296000_6	1995	365	Egan Drive SB (Juneau)	010. Highland Drive to 10th Street	1995	0	1996	6125	4	0	-							
56	296000_6	1995	365	Egan Drive SB (Juneau)	010. Highland Drive to 10th Street	2000	1	2000	5948	4	5	11,016,613	11.02				0.091	0.200	0.38
57	296000_5	1995	366	Glacier Hwy./Egan Drive	003. 10th Street to MP 2	1995	0	1996	6125	4	0	-							
57	296000_5	1995	366	Glacier Hwy./Egan Drive	003. 10th Street to MP 2	2000	1	2000	5948	4	5	11,016,613	11.02				0.091	0.200	0.38
57	296000_7	1995	367	Glacier Hwy./Egan Drive	004. MP 2 to MP 2.8 (4" overlay section)	1995	0	1996	6000	4	0	-							
57	296000_7	1995	367	Glacier Hwy./Egan Drive	004. MP 2 to MP 2.8 (4" overlay section)	2000	0.9	2000	5948	4	5	10,902,550	10.90				0.083	0.180	0.35
57	296000_9	1995	368	Glacier Hwy./Egan Drive	005. 4" overlay section (MP 2.8 to 3.2)	1995	0	1996	6050	4	0	-							
57	296000_9	1995	368	Glacier Hwy./Egan Drive	005. 4" overlay section (MP 2.8 to 3.2)	2000	0.8	2000	5920	4	5	10,922,625	10.92				0.073	0.160	0.31
57	296000_11	1995	369	Glacier Hwy./Egan Drive	006. MP 3.2 to MP 4	1995	0	1996	5950	4	0	-							
57	296000_11	1995	369	Glacier Hwy./Egan Drive	006. MP 3.2 to MP 4	2000	0.8	2000	6084	4	5	10,981,025	10.98				0.073	0.160	0.31
57	296000_13	1995	370	Glacier Hwy./Egan Drive	007. MP 4 to Vanderbilt/Lemon Rd.	1995	0	1996	5500	4	0	-							
57	296000_13	1995	370	Glacier Hwy./Egan Drive	007. MP 4 to Vanderbilt/Lemon Rd.	2000	0.8	2000	6084	4	5	10,570,400	10.57				0.076	0.160	0.32
57	296000_15	1995	371	Glacier Hwy./Egan Drive	008. Vanderbilt/Lemon Rd. to MP 6.4, beg. 4" overlay	1995	0	1996	7050	4	0	-							
57	296000_15	1995	371	Glacier Hwy./Egan Drive	008. Vanderbilt/Lemon Rd. to MP 6.4, beg. 4" overlay	2000	0.7	2000	6804	4	5	12,641,775	12.64				0.055	0.140	0.23
57	296000_17	1995	372	Glacier Hwy./Egan Drive	009. 4" overlay section - MP 6.4 MP 9.1	1995	0	1996	7050	4	0	-							
57	296000_17	1995	372	Glacier Hwy./Egan Drive	009. 4" overlay section - MP 6.4 MP 9.1	2000	0.6	2000	6804	4	5	12,641,775	12.64				0.047	0.120	0.20
57	296000_19	1995	373	Glacier Hwy./Egan Drive	010. MP 9.1 to Mendenhall Loop Rd	1995	0	1996	3728	4	0	-							
57	296000_19	1995	373	Glacier Hwy./Egan Drive	010. MP 9.1 to Mendenhall Loop Rd	2000	0.6	2000	6731	4	5	9,543,838	9.54				0.063	0.120	0.26

60 Sections

				Rit/mil	Rut/yr	Rut/Mil
Average	0.027	0.048	0.113	0.041	0.080	0.172
Min.			0.0032	0.0050	0.0135	0.0122
Max.			0.0590	0.1100	0.2483	0.0908
Stdev			0.013305	0.023864	0.056023	0.021006
Count						60

APPENDIX E

DATA FOR JUNEAU SUPERPAVE HOT-MIX ASPHALT PAVEMENT

SOUTHEAST REGION - SUPER PAVE (19 mm minus) SECTIONS

RoadID	SecCode	FromY	SecID	Name	Description	Condition. Year	Age (yrs.)	RutDepth (meas)	Rut Depth (fro analysis)	Traffic. Year	AADT	Traffic Lanes	Accum. Traffic	Accum. Traffic (Mil)	Rut/Mil	Rut/Year	Rut/Mil ST
50	296229_13	2001	299	Lemon Road	005. Sunny Point Access Rd. to Northwood Dr.	2001	0	0.04	0	2001	6539	2	0	0.00			
50	296229_13	2001	299	Lemon Road	005. Sunny Point Access Rd. to Northwood Dr.	2003	2	0.06	0.06	2002	6434	2	4735145	4.74	0.013	0.03	0.053
50	296229_17	2001	301	Lemon Road	006. Northwood Dr to Davis Ave	2001	0	0.05	0	2001	5974	2	0	0.00			
50	296229_17	2001	301	Lemon Road	006. Northwood Dr to Davis Ave	2003	2	0.07	0.07	2002	5879	2	4326345	4.33	0.016	0.035	0.068
50	296229_21	2001	303	Lemon Road	007. Davis Ave to Twin Lakes Dr.	2001	0	0.06	0	2001	4472	2	0	0.00			
50	296229_21	2001	303	Lemon Road	007. Davis Ave to Twin Lakes Dr.	2003	2	0.07	0.07	2002	4400	2	3238280	3.24	0.022	0.035	0.091
56	296000_20	2000	358	Egan Drive SB (Juneau)	003. Mendenhall Loop Road to Glacier Hwy (Nugget Mall)	2000	0	0.01	0	2000	6731	4	0	0.00			
56	296000_20	2000	358	Egan Drive SB (Juneau)	003. Mendenhall Loop Road to Glacier Hwy (Nugget Mall)	2003	3	0.09	0.09	2002	6704	4	7355663	7.36	0.012	0.03	0.052
56	296000_18	2000	359	Egan Drive SB (Juneau)	004. Glacier Hwy (Nugget Mall) to 4" Overlay Section	2000	0	0.01	0	2000	6804	4	0	0.00			
56	296000_18	2000	359	Egan Drive SB (Juneau)	004. Glacier Hwy (Nugget Mall) to 4" Overlay Section	2003	3	0.1	0.1	2002	6704	4	7395630	7.40	0.014	0.033	0.057
56	296000_16	2000	360	Egan Drive SB (Juneau)	005. 4" Overlay Section	2000	0	0.05	0	2000	6804	4	0	0.00			
56	296000_16	2000	360	Egan Drive SB (Juneau)	005. 4" Overlay Section	2003	3	0.2	0.2	2002	6675	4	7379753	7.38	0.027	0.067	0.114
56	296000_14	2000	361	Egan Drive SB (Juneau)	006. 4" Overlay section to Vanderbilt	2000	0	0.05	0	2000	6301	4	0	0.00			
56	296000_14	2000	361	Egan Drive SB (Juneau)	006. 4" Overlay section to Vanderbilt	2003	3	0.18	0.18	2002	5031	4	6204270	6.20	0.029	0.06	0.122
56	296000_12	2000	362	Egan Drive SB (Juneau)	007. Vanderbilt lights to Channel Dr.	2000	0	0.04	0	2000	6084	4	0	0.00			
56	296000_12	2000	362	Egan Drive SB (Juneau)	007. Vanderbilt lights to Channel Dr.	2003	3	0.22	0.22	2002	6200	4	6725490	6.73	0.033	0.073	0.138
56	296000_10	2000	363	Egan Drive SB (Juneau)	008. Channel Dr. to MP 3	2000	0	0.05	0	2000	6084	4	0	0.00			
56	296000_10	2000	363	Egan Drive SB (Juneau)	008. Channel Dr. to MP 3	2003	3	0.19	0.19	2002	5909	4	6566168	6.57	0.029	0.063	0.122
56	296000_8	2000	364	Egan Drive SB (Juneau)	009. MP 3 to Highland Drive	2000	0	0.04	0	2000	5948	4	0	0.00			
56	296000_8	2000	364	Egan Drive SB (Juneau)	009. MP 3 to Highland Drive	2003	3	0.16	0.16	2002	5920	4	6497730	6.50	0.025	0.053	0.104
56	296000_6	2000	365	Egan Drive SB (Juneau)	010. Highland Drive to 10th Street	2000	0	0.01	0	2000	5948	4	0	0.00			
56	296000_6	2000	365	Egan Drive SB (Juneau)	010. Highland Drive to 10th Street	2003	3	0.12	0.12	2002	5020	4	6004980	6.00	0.020	0.04	0.084
57	296000_5	2000	366	Glacier Hwy./Egan Drive	003. 10th Street to MP 2	2000	0	0.07	0	2000	5948	4	0	0.00			
57	296000_5	2000	366	Glacier Hwy./Egan Drive	003. 10th Street to MP 2	2003	3	0.17	0.17	2002	5920	4	6497730	6.50	0.026	0.057	0.110
57	296000_7	2000	367	Glacier Hwy./Egan Drive	004. MP 2 to MP 2.8 (4" overlay section)	2000	0	0.06	0	2000	5948	4	0	0.00			
57	296000_7	2000	367	Glacier Hwy./Egan Drive	004. MP 2 to MP 2.8 (4" overlay section)	2003	3	0.21	0.21	2002	5920	4	6497730	6.50	0.032	0.07	0.136
57	296000_9	2000	368	Glacier Hwy./Egan Drive	005. 4" overlay section (MP 2.8 to 3.2)	2000	0	0.04	0	2000	5920	4	0	0.00			
57	296000_9	2000	368	Glacier Hwy./Egan Drive	005. 4" overlay section (MP 2.8 to 3.2)	2003	3	0.18	0.18	2002	5909	4	6476378	6.48	0.028	0.06	0.117
57	296000_11	2000	369	Glacier Hwy./Egan Drive	006. MP 3.2 to MP 4	2000	0	0.02	0	2000	6084	4	0	0.00			
57	296000_11	2000	369	Glacier Hwy./Egan Drive	006. MP 3.2 to MP 4	2003	3	0.15	0.15	2002	5879	4	6549743	6.55	0.023	0.05	0.096
57	296000_13	2000	370	Glacier Hwy./Egan Drive	007. MP 4 to Vanderbilt/Lemon Rd.	2000	0	0.04	0	2000	6084	4	0	0.00			
57	296000_13	2000	370	Glacier Hwy./Egan Drive	007. MP 4 to Vanderbilt/Lemon Rd.	2003	3	0.2	0.2	2002	6200	4	6725490	6.73	0.030	0.067	0.125
57	296000_15	2000	371	Glacier Hwy./Egan Drive	008. Vanderbilt/Lemon Rd. to MP 6.4, beg. 4" overlay	2000	0	0.02	0	2000	6804	4	0	0.00			
57	296000_15	2000	371	Glacier Hwy./Egan Drive	008. Vanderbilt/Lemon Rd. to MP 6.4, beg. 4" overlay	2003	3	0.13	0.13	2002	6675	4	7379753	7.38	0.018	0.043	0.074
57	296000_17	2000	372	Glacier Hwy./Egan Drive	009. 4" overlay section - MP 6.4 MP 9.1	2000	0	0.04	0	2000	6804	4	0	0.00			
57	296000_17	2000	372	Glacier Hwy./Egan Drive	009. 4" overlay section - MP 6.4 MP 9.1	2003	3	0.2	0.2	2002	6675	4	7379753	7.38	0.027	0.067	0.114
57	296000_19	2000	373	Glacier Hwy./Egan Drive	010. MP 9.1 to Mendenhall Loop Rd	2000	0	0.04	0	2000	6731	4	0	0.00			
57	296000_19	2000	373	Glacier Hwy./Egan Drive	010. MP 9.1 to Mendenhall Loop Rd	2003	3	0.15	0.15	2002	6704	4	7355663	7.36	0.020	0.05	0.086
163	296331_1	2001	2158	Glacier Highway Nugget	001. Egan Dr. to Egan Dr. @ Mendenhall Lp.	2001	0	0.01	0	2001	7436	2	0	0.00			
163	296331_1	2001	2158	Glacier Highway Nugget	001. Egan Dr. to Egan Dr. @ Mendenhall Lp.	2003	2	0.1	0.1	2002	7436	2	5428280	5.43	0.018	0.05	0.078

	Rut/Mil	Rut/Year	Rut/Mil ST
Average	0.023	0.052	0.097
Min.	0.012	0.030	0.052
Max.	0.033	0.073	0.138
Stdev	0.006	0.014	0.027
Count(	20	20	20

APPENDIX F

DATA FOR ANCHORAGE SMA WITH AC-5 WEARING COURSES

CENTRAL REGION STONE MASTIC ASPHALT WITH AC-5 (PG52-28) TRAFFIC AND RUT MEASURMENT DATA ARTERIALS

Const. Year	RoadID	Road Name	Section Description	Condition Year	Rut Depth (in.)	Age at Condition Year (yrs)	Traffic Yr.	AADT	Lanes	Growth Rate	Lane ADT	Accumulated ADT	Accumulated Traffic/10^6	Rut per 10^6 Traffic Passes (in.)	Rut per 10^6 Studded Tire passes (in.)	Rut/year (in.)
1994	77	5th Avenue (Anchorage)	001. Airport Heights to Medfra Street	1994	0	0	1994	38000	4		9500	-	0.00			
1994	77	5th Avenue (Anchorage)	001. Airport Heights to Medfra Street	1998	0.15	4	1998	38435	4	0.003	9609	13,959,311	13.96	0.011	0.045	0.04
1994	77	5th Avenue (Anchorage)	001. Airport Heights to Medfra Street	1999	0.18	5	1999	39972	4	0.040	9993	17,571,693	17.57	0.010	0.043	0.04
1994	77	5th Avenue (Anchorage)	001. Airport Heights to Medfra Street	2000	0.32	6	2000	43499	4	0.088	10875	21,460,517	21.46	0.015	0.063	0.05
1994	77	5th Avenue (Anchorage)	001. Airport Heights to Medfra Street	2001	0.33	7	2001	43942	4	0.010	10986	25,460,119	25.46	0.013	0.055	0.05
1994	77	5th Avenue (Anchorage)	001. Airport Heights to Medfra Street	2002	0.34	8	2002	45237	4	0.029	11309	29,558,453	29.56	0.012	0.048	0.04
1994	77	5th Avenue (Anchorage)	001. Airport Heights to Medfra Street	2003	0.69	9	2003	46782	4	0.034	11695	33,792,050	33.79	0.020	0.086	0.08
1994	77	5th Avenue (Anchorage)	002. Medfra Street to Gambell Street	1994	0	0	1994	24965	3		8322	-	0.00			
1994	77	5th Avenue (Anchorage)	002. Medfra Street to Gambell Street	1998	0.17	4	1998	25160	3		8387	12,203,015	12.20	0.014	0.059	0.04
1994	77	5th Avenue (Anchorage)	002. Medfra Street to Gambell Street	2000	0.25	6	2000	28694	3		9565	15,586,625	15.59	0.016	0.068	0.04
1994	77	5th Avenue (Anchorage)	002. Medfra Street to Gambell Street	2001	0.27	7	2001	27137	3		9046	18,935,653	18.94	0.014	0.060	0.04
1994	77	5th Avenue (Anchorage)	002. Medfra Street to Gambell Street	2002	0.39	8	2002	27368	3		9123	22,258,400	22.26	0.018	0.074	0.05
1994	78	6th Avenue (Anchorage)	002. Gambell Street to Jct. 5th Avenue	1994	0	0	1994	38600	5		7720	-	0.00			
1994	78	6th Avenue (Anchorage)	002. Gambell Street to Jct. 5th Avenue	1998	0.08	4	1998	17980	2		8990	12,314,188	12.31	0.006	0.027	0.02
1994	78	6th Avenue (Anchorage)	002. Gambell Street to Jct. 5th Avenue	1999	0.25	5	1999	19054	2		9527	15,742,541	15.74	0.016	0.067	0.05
1994	78	6th Avenue (Anchorage)	002. Gambell Street to Jct. 5th Avenue	2000	0.26	6	2000	20515	2		10258	19,419,871	19.42	0.013	0.056	0.04
1994	78	6th Avenue (Anchorage)	002. Gambell Street to Jct. 5th Avenue	2001	0.27	7	2001	19883	2		9942	23,077,353	23.08	0.012	0.049	0.04
1994	78	6th Avenue (Anchorage)	002. Gambell Street to Jct. 5th Avenue	2002	0.28	8	2002	20461	2		10231	26,785,114	26.79	0.010	0.044	0.04
1998	93	Abbott Road	004. Lake Otis Parkway to E. 88th Avenue	1998	0.01	0	1998	14234	4		3559	-	0.00			
1998	93	Abbott Road	004. Lake Otis Parkway to E. 88th Avenue	1999	0.15	1	1999	14589	4	0.025	3647	1,323,148	1.32			
1998	93	Abbott Road	004. Lake Otis Parkway to E. 88th Avenue	2000	0.18	2	2000	16673	4	0.143	4168	2,889,112	2.89	0.062	0.262	0.09
1998	93	Abbott Road	004. Lake Otis Parkway to E. 88th Avenue	2001	0.23	3	2001	17324	4	0.039	4331	4,447,753	4.45	0.052	0.218	0.08
1998	93	Abbott Road	004. Lake Otis Parkway to E. 88th Avenue	2002	0.39	4	2002	17000	4	-0.019	4250	6,843,111	6.84	0.057	0.240	0.10
1998	93	Abbott Road	004. Lake Otis Parkway to E. 88th Avenue	2003	0.42	5	2003	29334	4	0.726	7334	9,519,839	9.52	0.044	0.186	0.08
1998	93	Abbott Road	004. Lake Otis Parkway to E. 88th Avenue	2004	0.47	6	2004	29921	4	0.183	7480	12,250,101	12.25	0.038	0.162	0.08
1998	93	Abbott Road	005. E. 88th Avenue to New Seward Highway	1998	0	0	1998	22653	4		5663		0.00			
1998	93	Abbott Road	005. E. 88th Avenue to New Seward Highway	1999	0.1	1	1999	23844	4	0.053	5961	1,964,635	1.96			
1998	93	Abbott Road	005. E. 88th Avenue to New Seward Highway	2000	0.13	2	2000	20759	4	-0.129	5190	4,204,572	4.20	0.031	0.130	0.07
1998	93	Abbott Road	005. E. 88th Avenue to New Seward Highway	2001	0.3	3	2001	25810	4	0.243	6453	6,856,616	6.86	0.044	0.184	0.10
1998	93	Abbott Road	005. E. 88th Avenue to New Seward Highway	2002	0.39	4	2002	30148	4	0.168	7537	9,607,621	9.61	0.041	0.171	0.10
1998	93	Abbott Road	005. E. 88th Avenue to New Seward Highway	2003	0.41	5	2003	28996	4	-0.038	7249	12,253,506	12.25	0.033	0.141	0.08
1998	93	Abbott Road	005. E. 88th Avenue to New Seward Highway	2004	0.42	6	2004	30715	4	0.059	7679	15,056,225	15.06	0.028	0.117	0.07
1995	65	Debarr Road	002. Airport Heights to Bragaw St.	1995	0	0	1995	21969	4		5492	-	0.00			
1995	65	Debarr Road	002. Airport Heights to Bragaw St.	1998	0.05	3	1998	23224	4	0.019	5806	4,629,384	4.63	0.011	0.045	0.02
1995	65	Debarr Road	002. Airport Heights to Bragaw St.	1999	0.07	4	1999	23645	4	0.018	5911	6,777,386	6.78	0.010	0.043	0.02
1995	65	Debarr Road	002. Airport Heights to Bragaw St.	2000	0.1	5	2000	24240	4	0.025	6060	8,975,712	8.98	0.011	0.047	0.02
1995	65	Debarr Road	002. Airport Heights to Bragaw St.	2001	0.33	6	2001	22678	4	-0.064	5670	11,080,713	11.08	0.030	0.125	0.06
1995	65	Debarr Road	002. Airport Heights to Bragaw St.	2002	0.48	7	2002	25739	4	0.135	6435	13,359,568	13.36	0.036	0.151	0.07
1995	65	Debarr Road	002. Airport Heights to Bragaw St.	2003	0.49	8	2003	26140	4	0.016	6535	15,735,695	15.74	0.031	0.131	0.06
1995	65	Debarr Road	002. Airport Heights to Bragaw St.	2004	0.48	9	2004	26817	4	0.026	6704	18,167,271	18.17	0.026	0.111	0.05
1995	65	Debarr Road	003. Bragaw St. to Boniface Parkway	1995	0	0	1995	21400	4		5350	-	0.00			
1995	65	Debarr Road	003. Bragaw St. to Boniface Parkway	1998	0.1	3	1998	23224	4	0.028	5806	4,564,482	4.56	0.022	0.092	0.03
1995	65	Debarr Road	003. Bragaw St. to Boniface Parkway	1999	0.15	4	1999	23645	4	0.018	5911	6,712,484	6.71	0.022	0.094	0.04
1995	65	Debarr Road	003. Bragaw St. to Boniface Parkway	2000	0.16	5	2000	24240	4	0.025	6060	8,910,811	8.91	0.018	0.076	0.03
1995	65	Debarr Road	003. Bragaw St. to Boniface Parkway	2001	0.32	6	2001	21570	4	-0.110	5393	10,939,983	10.94	0.029	0.123	0.05
1995	65	Debarr Road	003. Bragaw St. to Boniface Parkway	2002	0.45	7	2002	25739	4	0.193	6435	13,193,561	13.19	0.034	0.144	0.06
1995	65	Debarr Road	003. Bragaw St. to Boniface Parkway	2003	0.5	8	2003	26140	4	0.016	6535	15,569,688	15.57	0.032	0.135	0.06
1995	65	Debarr Road	003. Bragaw St. to Boniface Parkway	2004	0.54	9	2004	26882	4	0.028	6721	18,005,773	18.01	0.030	0.126	0.06
1995	65	Debarr Road	004. Boniface Parkway to Beaver Place	1995	0	0	1995	21400	4		5350	-	0.00			
1995	65	Debarr Road	004. Boniface Parkway to Beaver Place	1998	0.1	3	1998	22824	4	0.022	5706	4,527,907	4.53	0.022	0.093	0.03
1995	65	Debarr Road	004. Boniface Parkway to Beaver Place	1999	0.2	4	1999	23340	4	0.023	5835	6,645,911	6.65	0.030	0.127	0.05
1995	65	Debarr Road	004. Boniface Parkway to Beaver Place	2000	0.23	5	2000	21588	4	-0.075	5397	8,655,783	8.66	0.027	0.112	0.05
1995	65	Debarr Road	004. Boniface Parkway to Beaver Place	2001	0.25	6	2001	21570	4	-0.001	5393	10,624,456	10.62	0.024	0.099	0.04
1995	65	Debarr Road	004. Boniface Parkway to Beaver Place	2002	0.33	7	2002	23340	4	0.082	5835	12,713,853	12.71	0.026	0.109	0.05
1995	65	Debarr Road	004. Boniface Parkway to Beaver Place	2003	0.4	8	2003	22750	4	-0.025	5688	14,803,250	14.80	0.027	0.114	0.05
1995	65	Debarr Road	004. Boniface Parkway to Beaver Place	2004	0.41	9	2004	22847	4	0.004	5712	16,885,849	16.89	0.024	0.102	0.05
1995	65	Debarr Road	005. Beaver Place to Turpin St.	1995	0	0	1995	18900	4		4725	-	0.00			
1995	65	Debarr Road	005. Beaver Place to Turpin St.	1998	0.19	3	1998	21046	4	0.038	5262	4,080,175	4.08	0.047	0.196	0.06
1995	65	Debarr Road	005. Beaver Place to Turpin St.	1999	0.28	4	1999	21520	4	0.023	5380	6,033,062	6.03	0.046	0.195	0.07
1995	65	Debarr Road	005. Beaver Place to Turpin St.	2000	0.29	5	2000	21460	4	-0.003	5365	7,992,656	7.99	0.036	0.153	0.06
1995	65	Debarr Road	005. Beaver Place to Turpin St.	2001	0.3	6	2001	18558	4	-0.135	4640	9,752,275	9.75	0.031	0.130	0.05
1995	65	Debarr Road	005. Beaver Place to Turpin St.	2002	0.35	7	2002	20080	4	0.082	5020	11,549,854	11.55	0.030	0.128	0.05
1995	65	Debarr Road	005. Beaver Place to Turpin St.	2003	0.39	8	2003	20390	4	0.015	5098	13,403,370	13.40	0.029	0.123	0.05
1995	65	Debarr Road	005. Beaver Place to Turpin St.	2004	0.43	9	2004	20457	4	0.003	5114	15,268,564	15.27	0.028	0.119	0.05

CENTRAL REGION STONE MASTIC ASPHALT WITH AC-5 (PG52-28) TRAFFIC AND RUT MEASURMENT DATA ARTERIALS

Const. Year	RoadID	Road Name	Section Description	Condition Year	Rut Depth (in.)	Age at Condition Year (yrs)	Traffic Yr.	AADT	Lanes	Growth Rate	Lane ADT	Accumulated ADT	Accumulated Traffic/10^6	Rut per 10^6 Traffic Passes (in.)	Rut per 10^6 Studded Tire passes (in.)	Rut/year (in.)
1995	65	Debarr Road	006. Turpin St. to Patterson St.	1995	0	0	1995	14983.5	4		3746	-	0.00			
1995	65	Debarr Road	006. Turpin St. to Patterson St.	1998	0.05	3	1998	17370	4	0.053	4343	3,297,325	3.30	0.015	0.064	0.02
1995	65	Debarr Road	006. Turpin St. to Patterson St.	1999	0.09	4	1999	15320	4	-0.118	3830	4,742,040	4.74	0.019	0.080	0.02
1995	65	Debarr Road	006. Turpin St. to Patterson St.	2000	0.1	5	2000	15280	4	-0.003	3820	6,137,253	6.14	0.016	0.069	0.02
1995	65	Debarr Road	006. Turpin St. to Patterson St.	2001	0.2	6	2001	15270	4	-0.001	3818	7,530,869	7.53	0.027	0.112	0.03
1995	65	Debarr Road	006. Turpin St. to Patterson St.	2002	0.29	7	2002	17521	4	0.147	4380	9,078,309	9.08	0.032	0.135	0.04
1995	65	Debarr Road	006. Turpin St. to Patterson St.	2003	0.32	8	2003	17790	4	0.015	4448	10,695,510	10.70	0.030	0.126	0.04
1995	65	Debarr Road	006. Turpin St. to Patterson St.	2004	0.39	9	2004	18070	4	0.016	4518	12,338,038	12.34	0.032	0.133	0.04
1995	65	Debarr Road	007. Patterson St to Muldoon Rd.	1995	0	0	1995	12800	4		3200	-	0.00			
1995	65	Debarr Road	007. Patterson St to Muldoon Rd.	1998	0.13	3	1998	12850	4	0.001	3213	2,634,972	2.63	0.049	0.208	0.04
1995	65	Debarr Road	007. Patterson St to Muldoon Rd.	1999	0.16	4	1999	13010	4	0.012	3253	3,818,484	3.82	0.042	0.176	0.04
1995	65	Debarr Road	007. Patterson St to Muldoon Rd.	2000	0.17	5	2000	13173	4	0.013	3293	5,016,802	5.02	0.034	0.143	0.03
1995	65	Debarr Road	007. Patterson St to Muldoon Rd.	2001	0.18	6	2001	13260	4	0.007	3315	6,224,793	6.22	0.029	0.122	0.03
1995	65	Debarr Road	007. Patterson St to Muldoon Rd.	2002	0.23	7	2002	14350	4	0.082	3588	7,509,364	7.51	0.031	0.129	0.03
1995	65	Debarr Road	007. Patterson St to Muldoon Rd.	2003	0.25	8	2003	15872	4	0.106	3968	8,922,964	8.92	0.028	0.118	0.03
1995	65	Debarr Road	007. Patterson St to Muldoon Rd.	2004	0.27	9	2004	16457	4	0.037	4114	10,411,321	10.41	0.026	0.109	0.03
1998	96	Gamble Street	002. 5th Avenue to 15th Avenue	1998	0	0	1998	25190	3		8397					
1998	96	Gamble Street	002. 5th Avenue to 15th Avenue	2002	0.56	4	2002	25689	3	0.005	8563	12,380,557	12.38	0.045	0.190	0.14
1998	96	Gamble Street	002. 5th Avenue to 15th Avenue	2003	0.67	5	2003	25517	3	-0.007	8506	15,490,357	15.49	0.043	0.182	0.13
1998	96	Gamble Street	003. 6th Avenue to 15th Avenue	2004	0.73	6	2004	25517	3	-0.001	8506	18,594,925	18.59	0.039	0.165	0.12
1998	96	Gamble Street	003. 15th Ave. to 20th Ave.	1998	0	0	1998	25190	4		6298					
1998	96	Gamble Street	003. 15th Ave. to 20th Ave.	2002	0.34	4	2002	25689	4	0.005	6422	9,285,418	9.29	0.037	0.154	0.09
1998	96	Gamble Street	003. 15th Ave. to 20th Ave.	2003	0.44	5	2003	25517	4		6379	11,617,768	11.62	0.038	0.159	0.09
1998	96	Gamble Street	004. 15th Ave. to 20th Ave.	2004	0.49	6	2004	25517	4		6379	13,946,194	13.95	0.035	0.148	0.08
1994	61	Glenn Highway	001. Airport Heights to Bragaw Street	1994	0	0	1994	35900	4		8975	-	0.00			
1994	61	Glenn Highway	001. Airport Heights to Bragaw Street	1998	0.2	4	1998	36534	4	0.004	9134	13,219,205	13.22	0.015	0.064	0.05
1994	61	Glenn Highway	001. Airport Heights to Bragaw Street	1999	0.27	5	1999	37572	4	0.028	9393	16,623,971	16.62	0.016	0.068	0.05
1994	61	Glenn Highway	001. Airport Heights to Bragaw Street	2000	0.28	6	2000	39180	4	0.043	9795	20,162,463	20.16	0.014	0.058	0.05
1994	61	Glenn Highway	001. Airport Heights to Bragaw Street	2001	0.34	7	2001	42544	4	0.086	10636	23,967,862	23.97	0.014	0.060	0.05
1994	61	Glenn Highway	001. Airport Heights to Bragaw Street	2002	0.43	8	2002	43230	4	0.016	10808	27,896,950	27.90	0.015	0.065	0.05
1994	61	Glenn Highway	001. Airport Heights to Bragaw Street	2003	0.81	9	2003	44765.61	4	0.036	11191	31,946,781	31.95	0.025	0.107	0.09
1996	79	I Street (Anchorage)	001. 15th Avenue to 5th Avenue	1996	0	0	1996	12600	3		4200		0.00			
1996	79	I Street (Anchorage)	001. 15th Avenue to 5th Avenue	2002	0.34	6	2002	15305	3	0.036	5102	10,185,325	10.19	0.033	0.141	0.06
1996	79	I Street (Anchorage)	001. 15th Avenue to 5th Avenue	2003	0.38	7	2003	15531	3		5177	12,068,056	12.07	0.031	0.133	0.05
1996	79	I Street (Anchorage)	001. 15th Avenue to 5th Avenue	2004	0.47	8	2004	15757	3		5252	13,978,283	13.98	0.034	0.142	0.06
1998	76	Ingra Street	001. 20th Avenue to 15th Avenue	1998	0	0	1998	27510	3		9170	-	0.00			
1998	76	Ingra Street	001. 20th Avenue to 15th Avenue	1999	0.08	1	1999	27045	3	-0.017	9015	3,304,619	3.30			
1998	76	Ingra Street	001. 20th Avenue to 15th Avenue	2000	0.21	2	2000	27067	3	0.001	9022	6,597,101	6.60	0.032	0.134	0.11
1998	76	Ingra Street	001. 20th Avenue to 15th Avenue	2001	0.29	3	2001	27407	3	0.013	9136	9,921,278	9.92	0.029	0.123	0.10
1998	76	Ingra Street	001. 20th Avenue to 15th Avenue	2002	0.33	4	2002	28117	3	0.026	9372	13,320,584	13.32	0.025	0.104	0.08
1998	76	Ingra Street	001. 20th Avenue to 15th Avenue	2003	0.46	5	2003	27672	3	-0.016	9224	16,700,879	16.70	0.028	0.116	0.09
1998	76	Ingra Street	001. 20th Avenue to 15th Avenue	2004	0.47	6	2004	27906	3		9302	20,089,016	20.09	0.023	0.099	0.08
1998	76	Ingra Street	002. 15th Avenue to 5th Avenue	1998	0	0	1998	19180	3		6393	-	0.00			
1998	76	Ingra Street	002. 15th Avenue to 5th Avenue	1999	0.14	1	1999	19190	3	0.001	6397	2,334,479	2.33			
1998	76	Ingra Street	002. 15th Avenue to 5th Avenue	2000	0.28	2	2000	19019	3	-0.009	6340	4,653,659	4.65	0.060	0.253	0.14
1998	76	Ingra Street	002. 15th Avenue to 5th Avenue	2001	0.34	3	2001	20873	3	0.097	6958	7,136,815	7.14	0.048	0.201	0.11
1998	76	Ingra Street	002. 15th Avenue to 5th Avenue	2002	0.52	4	2002	19478	3	-0.067	6493	9,549,069	9.55	0.054	0.229	0.13
1998	76	Ingra Street	002. 15th Avenue to 5th Avenue	2003	0.68	5	2003	21833	3	0.006	7278	12,133,786	12.13	0.056	0.236	0.14
1998	76	Ingra Street	002. 15th Avenue to 5th Avenue	2004	0.66	6	2004	21802	3		7267	14,787,315	14.79	0.045	0.188	0.11
1996	80	L Street (Anchorage)	002. 5th Avenue to Jct. Minnesota Drive	1996	0	0	1996	17916	3		5972					
1996	80	L Street (Anchorage)	002. 5th Avenue to Jct. Minnesota Drive	2002	0.52	6	2002	20039	3	0.012	6680	13,853,575	13.85	0.038	0.158	0.09
1996	80	L Street (Anchorage)	002. 5th Avenue to Jct. Minnesota Drive	2003	0.61	7	2003	20379	3		6793	16,322,678	16.32	0.037	0.157	0.09
1996	80	L Street (Anchorage)	002. 5th Avenue to Jct. Minnesota Drive	2004	0.62	8	2004	20719	3		6906	18,833,148	18.83	0.033	0.139	0.08
1998	118	Lake Otis Parkway	003. Tudor Road to Dowling Road	1998	0	0	1998	27998	4		7000		0.00			
1998	118	Lake Otis Parkway	003. Tudor Road to Dowling Road	2002	0.37	4	2002	34730	4	0.060	8683	11,447,860	11.45	0.032	0.136	0.09
1998	118	Lake Otis Parkway	003. Tudor Road to pvmt. Change near Dowling Road	2003	0.48	5	2003	36100	4		9025	13,918,454	13.92	0.034	0.145	0.10
1998	118	Lake Otis Parkway	003. Tudor Road to pvmt. Change near Dowling Road	2004	0.6	6	2004	36500	4		9125	16,416,423	16.42	0.037	0.154	0.10
1998	118	Lake Otis Parkway	004. Dowling Road to 68th Avenue	1998	0	0	1998	25065	4		6266		0.00			
1998	118	Lake Otis Parkway	004. Dowling Road to 68th Avenue	2002	0.37	4	2002	28745	4	0.037	7186	9,820,325	9.82	0.038	0.159	0.09
1998	118	Lake Otis Parkway	004. Pvmt. Change near Dowling Road to 68th Avenue	2003	0.48	5	2003	29732	4		7433	11,855,109	11.86	0.040	0.170	0.10
1998	118	Lake Otis Parkway	005. Pvmt. Change near Dowling Road to 68th Avenue	2004	0.53	6	2004	30000	4		7500	13,908,234	13.91	0.038	0.160	0.09
1996	67	Minnesota Drive (NB)	008. Tudor Road to Spenard Road	1996	0	0	1996	36178	6		6029.667					
1996	67	Minnesota Drive (NB)	008. Tudor Road to Spenard Road	1998	0.11	2	1998	38200	6	0.028	6366.667	3,367,520	3.37	0.033	0.138	0.06

CENTRAL REGION STONE MASTIC ASPHALT WITH AC-5 (PG52-28) TRAFFIC AND RUT MEASURMENT DATA ARTERIALS

Const. Year	RoadID	Road Name	Section Description	Condition Year	Rut Depth (in.)	Age at Condition Year (yrs)	Traffic Yr.	AADT	Lanes	Growth Rate	Lane ADT	Accumulated ADT	Accumulated Traffic/10^6	Rut per 10^6 Traffic Passes (in.)	Rut per 10^6 Studded Tire passes (in.)	Rut/year (in.)
1996	67	Minnesota Drive (NB)	008. Tudor Road to Spenard Road	1999	0.19	3	1999	37630	6	-0.015	6271.667	5,665,347	5.67	0.034	0.141	0.06
1996	67	Minnesota Drive (NB)	008. Tudor Road to Spenard Road	2000	0.25	4	2000	38360	6	0.019	6393.333	7,987,812	7.99	0.031	0.132	0.06
1996	67	Minnesota Drive (NB)	008. Tudor Road to Spenard Road	2001	0.36	5	2001	39372	6	0.026	6562	10,367,551	10.37	0.035	0.146	0.07
1996	67	Minnesota Drive (NB)	008. Tudor Road to Spenard Road	2002	0.44	6	2002	42871	6	0.089	7145.167	12,922,323	12.92	0.034	0.143	0.07
1996	67	Minnesota Drive (NB)	008. Tudor Road to Spenard Road	2003	0.54	7	2003	44660	6	0.030	7443.333	15,611,932	15.61	0.035	0.146	0.08
1996	67	Minnesota Drive (NB)	008. Tudor Road to Spenard Road	2004	0.57	8	2004	44828.71	6		7471.5	18,336,446	18.34	0.031	0.131	0.07
1996	67	Minnesota Drive (NB)	009. Spenard Road to Northern Lights Blvd.	1996	0	0	1996	36968	6		6161.333					
1996	67	Minnesota Drive (NB)	009. Spenard Road to Northern Lights Blvd.	1998	0.11	2	1998	44601	6	0.103	7433.5	3,611,076	3.61	0.030	0.128	0.06
1996	67	Minnesota Drive (NB)	009. Spenard Road to Northern Lights Blvd.	1999	0.2	3	1999	36042	6	-0.192	6007	5,933,799	5.93	0.034	0.142	0.07
1996	67	Minnesota Drive (NB)	009. Spenard Road to Northern Lights Blvd.	2000	0.3	4	2000	38018	6	0.055	6336.333	8,216,509	8.22	0.037	0.154	0.08
1996	67	Minnesota Drive (NB)	009. Spenard Road to Northern Lights Blvd.	2001	0.41	5	2001	42231	6	0.111	7038.5	10,721,488	10.72	0.038	0.161	0.08
1996	67	Minnesota Drive (NB)	009. Spenard Road to Northern Lights Blvd.	2002	0.48	6	2002	42118	6	-0.003	7019.667	13,285,385	13.29	0.036	0.152	0.08
1996	67	Minnesota Drive (NB)	009. Spenard Road to Northern Lights Blvd.	2003	0.6	7	2003	43880	6	0.015	7313.333	15,927,955	15.93	0.038	0.159	0.09
1996	67	Minnesota Drive (NB)	009. Spenard Road to Northern Lights Blvd.	2004	0.64	8	2004	43032	6		7171.989	18,558,629	18.56	0.034	0.145	0.08
1996	67	Minnesota Drive (NB)	010. Northern Lights Blvd. To 15th Avenue	1996	0	0	1996	29000	6		4833.333		0.00			
1996	67	Minnesota Drive (NB)	010. Northern Lights Blvd. To 15th Avenue	1998	0.11	2	1998	29889.5	6	0.015	4981.583	2,677,042	2.68	0.041	0.173	0.06
1996	67	Minnesota Drive (NB)	010. Northern Lights Blvd. To 15th Avenue	1999	0.22	3	1999	30779	6	0.030	5129.833	4,535,903	4.54	0.049	0.204	0.07
1996	67	Minnesota Drive (NB)	010. Northern Lights Blvd. To 15th Avenue	2000	0.29	4	2000	32803	6	0.066	5467.167	6,500,637	6.50	0.045	0.188	0.07
1996	67	Minnesota Drive (NB)	010. Northern Lights Blvd. To 15th Avenue	2001	0.42	5	2001	32367	6	-0.013	5394.5	8,476,261	8.48	0.050	0.209	0.08
1996	67	Minnesota Drive (NB)	010. Northern Lights Blvd. To 15th Avenue	2002	0.5	6	2002	34872	6	0.077	5812	10,559,544	10.56	0.047	0.199	0.08
1996	67	Minnesota Drive (NB)	010. Northern Lights Blvd. To 15th Avenue	2003	0.6	7	2003	35739	6	0.035	5956.5	12,720,481	12.72	0.047	0.199	0.09
1996	67	Minnesota Drive (NB)	010. Northern Lights Blvd. To 15th Avenue	2004	0.62	8	2004	36908.7	6		6151.45	14,947,971	14.95	0.041	0.175	0.08
1996	229	Minnesota Drive (SB)	001. L Street to Northern Lts. Blvd.	1996	0	0	1996	29000	6		4833.333		0.00			
1996	229	Minnesota Drive (SB)	001. L Street to Northern Lts. Blvd.	1998	0.16	2	1998	29889.5	6	0.015	4981.583	2,677,042	2.68	0.060	0.252	0.08
1996	229	Minnesota Drive (SB)	001. L Street to Northern Lts. Blvd.	1999	0.17	3	1999	30779	6	0.030	5129.833	4,535,903	4.54	0.037	0.158	0.06
1996	229	Minnesota Drive (SB)	001. L Street to Northern Lts. Blvd.	2000	0.21	4	2000	32803	6	0.066	5467.167	6,500,637	6.50	0.032	0.136	0.05
1996	229	Minnesota Drive (SB)	001. L Street to Northern Lts. Blvd.	2001	0.28	5	2001	32367	6	-0.013	5394.5	8,476,261	8.48	0.033	0.139	0.06
1996	229	Minnesota Drive (SB)	001. L Street to Northern Lts. Blvd.	2002	0.49	6	2002	34872	6	0.077	5812	10,559,544	10.56	0.046	0.195	0.08
1996	229	Minnesota Drive (SB)	001. L Street to Northern Lts. Blvd.	2003	0.55	7	2003	35739	6	0.035	5956.5	12,720,481	12.72	0.043	0.182	0.08
1996	229	Minnesota Drive (SB)	001. L Street to Northern Lts. Blvd.	2004	0.62	8	2004	37698	6		6283	14,983,983	14.98	0.041	0.174	0.08
1996	229	Minnesota Drive (SB)	002. Northern Lts. Blvd. To Spenard Road	1996	0	0	1996	36968	6		6161		0.00			
1996	229	Minnesota Drive (SB)	002. Northern Lts. Blvd. To Spenard Road	1998	0.16	2	1998	44601	6	0.103	7433.5	3,611,076	3.61	0.044	0.187	0.08
1996	229	Minnesota Drive (SB)	002. Northern Lts. Blvd. To Spenard Road	1999	0.2	3	1999	36042	6	-0.192	6007	5,933,799	5.93	0.034	0.142	0.07
1996	229	Minnesota Drive (SB)	002. Northern Lts. Blvd. To Spenard Road	2000	0.26	4	2000	38018	6	0.055	6336.333	8,216,509	8.22	0.032	0.133	0.07
1996	229	Minnesota Drive (SB)	002. Northern Lts. Blvd. To Spenard Road	2001	0.52	5	2001	42231	6	0.111	7038.5	10,721,488	10.72	0.049	0.204	0.10
1996	229	Minnesota Drive (SB)	002. Northern Lts. Blvd. To Spenard Road	2002	0.56	6	2002	42118	6	-0.003	7019.667	13,285,385	13.29	0.042	0.177	0.09
1996	229	Minnesota Drive (SB)	002. Northern Lts. Blvd. To Spenard Road	2003	0.61	7	2003	43880	6	0.015	7313.333	15,927,955	15.93	0.038	0.161	0.09
1996	229	Minnesota Drive (SB)	002. Northern Lts. Blvd. To Spenard Road	2004	0.66	8	2004	46390.6	6		7731.767	18,711,868	18.71	0.035	0.149	0.08
1996	229	Minnesota Drive (SB)	003. Spenard Road to pvt. Change	1996	0	0	1996	36178	6		6029.667		0.00			
1996	229	Minnesota Drive (SB)	003. Spenard Road to pvt. Change	1998	0.14	2	1998	38200	6	0.028	6366.667	3,367,520	3.37	0.042	0.175	0.07
1996	229	Minnesota Drive (SB)	003. Spenard Road to pvt. Change	1999	0.2	3	1999	37630	6	-0.015	6271.667	5,665,347	5.67	0.035	0.149	0.07
1996	229	Minnesota Drive (SB)	003. Spenard Road to pvt. Change	2000	0.28	4	2000	38360	6	0.019	6393.333	7,987,812	7.99	0.035	0.148	0.07
1996	229	Minnesota Drive (SB)	003. Spenard Road to pvt. Change	2001	0.32	5	2001	39372	6	0.026	6562	10,367,551	10.37	0.031	0.130	0.06
1996	229	Minnesota Drive (SB)	003. Spenard Road to pvt. Change	2002	0.44	6	2002	42871	6	0.089	7145.167	12,922,323	12.92	0.034	0.143	0.07
1996	229	Minnesota Drive (SB)	003. Spenard Road to pvt. Change	2003	0.62	7	2003	44660	6	0.030	7443.333	15,611,932	15.61	0.040	0.167	0.09
1996	229	Minnesota Drive (SB)	003. Spenard Road to pvt. Change	2004	0.68	8	2004	45085.67	6		7514.278	18,348,169	18.35	0.037	0.156	0.09
1993	64	Muldoon Road	002. E. 36th Ave. to Northern Lights Blvd.	1993	0	0	1993	23850	4		5962.5	-	0.00			
1993	64	Muldoon Road	002. E. 36th Ave. to Northern Lights Blvd.	1998	0.3	5	1998	25575	4	0.014	6394	11,275,078	11.28	0.027	0.112	0.06
1993	64	Muldoon Road	002. E. 36th Ave. to Northern Lights Blvd.	1999	0.33	6	1999	25830	4	0.010	6458	13,042,819	13.04	0.025	0.107	0.06
1993	64	Muldoon Road	002. E. 36th Ave. to Northern Lights Blvd.	2000	0.35	7	2000	27364	4	0.059	6841	14,915,543	14.92	0.023	0.099	0.05
1993	64	Muldoon Road	002. E. 36th Ave. to Northern Lights Blvd.	2001	0.36	8	2001	27400	4	0.001	6850	16,790,730	16.79	0.021	0.090	0.05
1993	64	Muldoon Road	002. E. 36th Ave. to Northern Lights Blvd.	2002	0.48	9	2002	27390	4	0.000	6848	18,665,233	18.67	0.026	0.108	0.05
1993	64	Muldoon Road	002. E. 36th Ave. to Northern Lights Blvd.	2003	0.56	10	2003	27880	4	0.017	6970	20,573,271	20.57	0.027	0.115	0.06
1993	64	Muldoon Road	002. E. 36th Ave. to Northern Lights Blvd.	2004	0.58	11	2004	28530.6	4		7133	22,525,834	22.53	0.026	0.108	0.05
1993	64	Muldoon Road	003. Northern Lights Blvd. to Debarr Rd.	1993	0	0	1993	28000	4		7000	-	0.00			
1993	64	Muldoon Road	003. Northern Lights Blvd. to Debarr Rd.	1998	0.37	5	1998	29830	4	0.013	7458	13,192,469	13.19	0.028	0.118	0.07
1993	64	Muldoon Road	003. Northern Lights Blvd. to Debarr Rd.	1999	0.41	6	1999	31183	4	0.045	7796	15,326,555	15.33	0.027	0.113	0.07
1993	64	Muldoon Road	003. Northern Lights Blvd. to Debarr Rd.	2000	0.5	7	2000	31410	4	0.007	7853	17,476,177	17.48	0.029	0.120	0.07
1993	64	Muldoon Road	003. Northern Lights Blvd. to Debarr Rd.	2001	0.62	8	2001	31460	4	0.002	7865	19,629,221	19.63	0.032	0.133	0.08
1993	64	Muldoon Road	003. Northern Lights Blvd. to Debarr Rd.	2002	0.65	9	2002	33252	4	0.057	8313	21,904,905	21.90	0.030	0.125	0.07
1993	64	Muldoon Road	003. Northern Lights Blvd. to Debarr Rd.	2003	0.85	10	2003	33850	4	0.025	8463	24,221,514	24.22	0.035	0.148	0.09
1993	64	Muldoon Road	003. Northern Lights Blvd. to Debarr Rd.	2004	0.9	11	2004	34466.53	4		8617	26,580,317	26.58	0.034	0.143	0.08
1993	64	Muldoon Road	004. Debarr Rd. to Glenn Hwy. Overpass	1993	0	0	1993	32200	4		8050	-	0.00			
1993	64	Muldoon Road	004. Debarr Rd. to Glenn Hwy. Overpass	1998	0.4	5	1998	33026	4	0.005	8257	14,879,681	14.88	0.027	0.113	0.08

CENTRAL REGION STONE MASTIC ASPHALT WITH AC-5 (PG52-28) TRAFFIC AND RUT MEASURMENT DATA ARTERIALS

Const. Year	RoadID	Road Name	Section Description	Condition Year	Rut Depth (in.)	Age at Condition Year (yrs)	Traffic Yr.	AADT	Lanes	Growth Rate	Lane ADT	Accumulated ADT	Accumulated Traffic/10^6	Rut per 10^6 Traffic Passes (in.)	Rut per 10^6 Studded Tire passes (in.)	Rut/year (in.)
1993	64	Muldoon Road	004. Debarr Rd. to Glenn Hwy. Overpass	1999	0.42	6	1999	33497	4	0.014	8374	17,172,132	17.17	0.024	0.103	0.07
1993	64	Muldoon Road	004. Debarr Rd. to Glenn Hwy. Overpass	2000	0.6	7	2000	33740	4	0.007	8435	19,481,213	19.48	0.031	0.130	0.09
1993	64	Muldoon Road	004. Debarr Rd. to Glenn Hwy. Overpass	2001	0.74	8	2001	36153	4	0.072	9038	21,955,434	21.96	0.034	0.142	0.09
1993	64	Muldoon Road	004. Debarr Rd. to Glenn Hwy. Overpass	2002	0.98	9	2002	35543	4	-0.017	8886	24,387,908	24.39	0.040	0.169	0.11
1993	64	Muldoon Road	004. Debarr Rd. to Glenn Hwy. Overpass	2003	0.96	10	2003	36118	4	0.016	9030	26,859,734	26.86	0.036	0.150	0.10
1993	64	Muldoon Road	004. Debarr Rd. to Glenn Hwy. Overpass	2004	1.05	11	2004	37080.6	4		9270	29,397,438	29.40	0.036	0.150	0.10
1997	98	Northern Lights Blvd.	001. Muldoon Road to Patterson Street	1997	0	0	1997	15399	4		3850		0.00			
1997	98	Northern Lights Blvd.	001. Muldoon Road to Patterson Street	1998	0.02	1	1998	16246	4	0.055	4062	1,463,125	1.46			
1997	98	Northern Lights Blvd.	001. Muldoon Road to Patterson Street	1999	0.11	2	1999	15931	4	-0.019	3983	2,924,015	2.92	0.038	0.158	0.06
1997	98	Northern Lights Blvd.	001. Muldoon Road to Patterson Street	2000	0.13	3	2000	15294	4	-0.040	3824	4,334,124	4.33	0.030	0.126	0.04
1997	98	Northern Lights Blvd.	001. Muldoon Road to Patterson Street	2001	0.28	4	2001	16128	4	0.055	4032	5,786,778	5.79	0.048	0.204	0.07
1997	98	Northern Lights Blvd.	001. Muldoon Road to Patterson Street	2002	0.31	5	2002	17125	4	0.062	4281	7,326,691	7.33	0.042	0.178	0.06
1997	98	Northern Lights Blvd.	001. Muldoon Road to Patterson Street	2003	0.35	6	2003	17130	4	0.022	4283	8,889,689	8.89	0.039	0.166	0.06
1997	98	Northern Lights Blvd.	001. Muldoon Road to Patterson Street	2004	0.41	7	2004	17590.3	4		4398	10,484,303	10.48	0.039	0.165	0.06
1997	98	Northern Lights Blvd.	002. Patterson Street to Boniface Parkway	1997	0	0	1997	20332	4		5083	-				
1997	98	Northern Lights Blvd.	002. Patterson Street to Boniface Parkway	1998	0.1	1	1998	21005	4	0.033	5251	1,901,353	1.90			
1997	98	Northern Lights Blvd.	002. Patterson Street to Boniface Parkway	1999	0.13	2	1999	21031	4	0.001	5258	3,819,839	3.82	0.034	0.143	0.07
1997	98	Northern Lights Blvd.	002. Patterson Street to Boniface Parkway	2000	0.16	3	2000	21640	4	0.029	5410	5,780,596	5.78	0.028	0.117	0.05
1997	98	Northern Lights Blvd.	002. Patterson Street to Boniface Parkway	2001	0.27	4	2001	21900	4	0.012	5475	7,773,040	7.77	0.035	0.146	0.07
1997	98	Northern Lights Blvd.	002. Patterson Street to Boniface Parkway	2002	0.36	5	2002	22178	4	0.013	5545	9,790,441	9.79	0.037	0.155	0.07
1997	98	Northern Lights Blvd.	002. Patterson Street to Boniface Parkway	2003	0.43	6	2003	22180	4	0.018	5545	11,814,320	11.81	0.036	0.153	0.07
1997	98	Northern Lights Blvd.	002. Patterson Street to Boniface Parkway	2004	0.45	7	2004	22718	4		5679	13,875,055	13.88	0.032	0.137	0.06
1997	98	Northern Lights Blvd.	003. Boniface Parkway to Bragaw Street	1997	0	0	1997	24800	4		6200	-				
1997	98	Northern Lights Blvd.	003. Boniface Parkway to Bragaw Street	1998	0.08	1	1998	27031	4	0.090	6758	2,415,684	2.42			
1997	98	Northern Lights Blvd.	003. Boniface Parkway to Bragaw Street	1999	0.09	2	1999	26459	4	-0.021	6615	4,843,117	4.84	0.019	0.078	0.05
1997	98	Northern Lights Blvd.	003. Boniface Parkway to Bragaw Street	2000	0.1	3	2000	25489	4	-0.037	6372	7,191,116	7.19	0.014	0.059	0.03
1997	98	Northern Lights Blvd.	003. Boniface Parkway to Bragaw Street	2001	0.17	4	2001	24943	4	-0.021	6236	9,479,620	9.48	0.018	0.076	0.04
1997	98	Northern Lights Blvd.	003. Boniface Parkway to Bragaw Street	2002	0.28	5	2002	27926	4	0.120	6982	11,959,818	11.96	0.023	0.099	0.06
1997	98	Northern Lights Blvd.	003. Boniface Parkway to Bragaw Street	2003	0.33	6	2003	27930	4	0.026	6983	14,508,339	14.51	0.023	0.096	0.06
1997	98	Northern Lights Blvd.	003. Boniface Parkway to Bragaw Street	2004	0.41	7	2004	27749	4		6937	17,044,555	17.04	0.024	0.101	0.06
1997	98	Northern Lights Blvd.	004. Bragaw Street to Lake Otis Parkway	1997	0	0	1997	32275	4		8069					
1997	98	Northern Lights Blvd.	004. Bragaw Street to Lake Otis Parkway	1998	0.1	1	1998	34210	4	0.060	8553	3,077,520	3.08			
1997	98	Northern Lights Blvd.	004. Bragaw Street to Lake Otis Parkway	1999	0.14	2	1999	35603	4	0.041	8901	6,294,516	6.29	0.022	0.094	0.07
1997	98	Northern Lights Blvd.	004. Bragaw Street to Lake Otis Parkway	2000	0.15	3	2000	32087	4	-0.099	8022	9,302,664	9.30	0.016	0.068	0.05
1997	98	Northern Lights Blvd.	004. Bragaw Street to Lake Otis Parkway	2001	0.2	4	2001	32470	4	0.012	8118	12,256,814	12.26	0.016	0.069	0.05
1997	98	Northern Lights Blvd.	004. Bragaw Street to Lake Otis Parkway	2002	0.36	5	2002	36036	4	0.110	9009	15,463,750	15.46	0.023	0.098	0.07
1997	98	Northern Lights Blvd.	004. Bragaw Street to Lake Otis Parkway	2003	0.41	6	2003	39758	4	0.025	9940	19,006,759	19.01	0.022	0.091	0.07
1997	98	Northern Lights Blvd.	004. Bragaw Street to Lake Otis Parkway	2004	0.48	7	2004	37915	4		9479	22,508,566	22.51	0.021	0.090	0.07
1996	63	Tudor Road	005. Old Seward Hwy to New Seward Hwy	1996	0	0	1996	40449	4		10112	-	0.00			
1996	63	Tudor Road	005. Old Seward Hwy to New Seward Hwy	1998	0.2	2	1998	40280	4	-0.002	10070	5,576,769	5.58	0.036	0.151	0.10
1996	63	Tudor Road	005. Old Seward Hwy to New Seward Hwy	1999	0.24	3	1999	41500	4	0.030	10375	9,555,269	9.56	0.025	0.106	0.08
1996	63	Tudor Road	005. Old Seward Hwy to New Seward Hwy	2000	0.36	4	2000	44300	4	0.067	11075	13,690,240	13.69	0.026	0.111	0.09
1996	63	Tudor Road	005. Old Seward Hwy to New Seward Hwy	2001	0.38	5	2001	45653	4	0.031	11413	17,766,081	17.77	0.021	0.090	0.08
1996	63	Tudor Road	005. Old Seward Hwy to New Seward Hwy	2002	0.54	6	2002	44338	4	-0.029	11085	22,014,215	22.01	0.025	0.103	0.09
1996	63	Tudor Road	005. Old Seward Hwy to New Seward Hwy	2003	0.62	7	2003	45140	4	0.019	11285	26,339,192	26.34	0.024	0.099	0.09
1996	63	Tudor Road	005. Old Seward Hwy to New Seward Hwy	2004	0.67	8	2004	46951.87	4		11738	30,837,767	30.84	0.022	0.091	0.08
1996	63	Tudor Road	006. New Seward Hwy to Lake Otis Parkway	1996	0	0	1996	46093	4		11523	-	0.00			
1996	63	Tudor Road	006. New Seward Hwy to Lake Otis Parkway	1998	0.3	2	1998	45009	4	-0.012	11252	6,008,290	6.01	0.050	0.210	0.15
1996	63	Tudor Road	006. New Seward Hwy to Lake Otis Parkway	1999	0.39	3	1999	41500	4	-0.078	10375	10,001,641	10.00	0.039	0.164	0.13
1996	63	Tudor Road	006. New Seward Hwy to Lake Otis Parkway	2000	0.4	4	2000	44517	4	0.073	11129	14,414,833	14.41	0.028	0.117	0.10
1996	63	Tudor Road	006. New Seward Hwy to Lake Otis Parkway	2001	0.71	5	2001	49646	4	0.115	12412	18,943,251	18.94	0.037	0.158	0.14
1996	63	Tudor Road	006. New Seward Hwy to Lake Otis Parkway	2002	0.82	6	2002	49620	4	-0.001	12405	23,697,468	23.70	0.035	0.146	0.14
1996	63	Tudor Road	006. New Seward Hwy to Lake Otis Parkway	2003	0.99	7	2003	50273	4	0.020	12568	28,514,249	28.51	0.035	0.146	0.14
1996	63	Tudor Road	006. New Seward Hwy to Lake Otis Parkway	2004	1.15	8	2004	52341.73	4		13085	33,529,242	33.53	0.034	0.144	0.14
1996	63	Tudor Road	007. Lake Otis Parkway to Bragaw St.	1998	0	0	1996	41785	4		10446	-	0.00			
1996	63	Tudor Road	007. Lake Otis Parkway to Bragaw St.	1998	0.2	2	1998	41279	4	-0.006	10320	5,676,540	5.68	0.035	0.148	0.10
1996	63	Tudor Road	007. Lake Otis Parkway to Bragaw St.	1999	0.25	3	1999	41688	4	0.010	10422	9,500,896	9.50	0.026	0.111	0.08
1996	63	Tudor Road	007. Lake Otis Parkway to Bragaw St.	2000	0.37	4	2000	41985	4	0.007	10496	13,336,202	13.34	0.028	0.117	0.09
1996	63	Tudor Road	007. Lake Otis Parkway to Bragaw St.	2001	0.52	5	2001	42046	4	0.001	10512	17,171,531	17.17	0.030	0.128	0.10
1996	63	Tudor Road	007. Lake Otis Parkway to Bragaw St.	2002	0.65	6	2002	42026	4	0.000	10507	21,198,147	21.20	0.031	0.129	0.11
1996	63	Tudor Road	007. Lake Otis Parkway to Bragaw St.	2003	0.69	7	2003	42775	4	0.002	10694	25,296,527	25.30	0.027	0.115	0.10
1996	63	Tudor Road	007. Lake Otis Parkway to Bragaw St.	2004	0.78	8	2004	42822	4		10706	29,399,410	29.40	0.027	0.112	0.10
1996	63	Tudor Road	008. Bragaw St. to Boniface Pkway	1996	0	0	1996	29380	4		7345	-	0.00			
1996	63	Tudor Road	008. Bragaw St. to Boniface Pkway	1998	0.2	2	1998	31450	4	0.035	7863	4,225,404	4.23	0.047	0.199	0.10

CENTRAL REGION STONE MASTIC ASPHALT WITH AC-5 (PG52-28) TRAFFIC AND RUT MEASURMENT DATA ARTERIALS

Const. Year	RoadID	Road Name	Section Description	Condition Year	Rut Depth (in.)	Age at Condition Year (yrs)	Traffic Yr.	AADT	Lanes	Growth Rate	Lane ADT	Accumulated ADT	Accumulated Traffic/10^6	Rut per 10^6 Traffic Passes (in.)	Rut per 10^6 Studded Tire passes (in.)	Rut/year (in.)
1996	63	Tudor Road	008. Bragaw St. to Boniface Pkway	1999	0.26	3	1999	29590	4	-0.059	7398	6,929,119	6.93	0.038	0.158	0.09
1996	63	Tudor Road	008. Bragaw St. to Boniface Pkway	2000	0.31	4	2000	29643	4	0.002	7411	9,637,259	9.64	0.032	0.135	0.08
1996	63	Tudor Road	008. Bragaw St. to Boniface Pkway	2001	0.52	5	2001	29690	4	0.002	7423	12,345,788	12.35	0.042	0.177	0.10
1996	63	Tudor Road	008. Bragaw St. to Boniface Pkway	2002	0.66	6	2002	29680	4	0.000	7420	15,189,503	15.19	0.043	0.183	0.11
1996	63	Tudor Road	008. Bragaw St. to Boniface Pkway	2003	0.83	7	2003	29770	4	-0.004	7443	18,041,841	18.04	0.046	0.194	0.12
1996	63	Tudor Road	008. Bragaw St. to Boniface Pkway	2004	0.92	8	2004	29162.2	4		7291	20,835,944	20.84	0.044	0.186	0.12
1996	63	Tudor Road	009. Boniface Pkway to WIM slab	1996	0	0	1996	23539	4		5885	-	0.00			
1996	63	Tudor Road	009. Boniface Pkway to WIM slab	1998	0.2	2	1998	24159	4	0.013	6040	3,320,455	3.32	0.060	0.254	0.10
1996	63	Tudor Road	009. Boniface Pkway to WIM slab	1999	0.27	3	1999	24359	4	0.008	6090	5,580,034	5.58	0.048	0.204	0.09
1996	63	Tudor Road	009. Boniface Pkway to WIM slab	2000	0.3	4	2000	24897	4	0.022	6224	7,875,359	7.88	0.038	0.160	0.08
1996	63	Tudor Road	009. Boniface Pkway to WIM slab	2001	0.43	5	2001	25240	4	0.014	6310	10,149,765	10.15	0.042	0.178	0.09
1996	63	Tudor Road	009. Boniface Pkway to WIM slab	2002	0.53	6	2002	24820	4	-0.017	6205	12,527,831	12.53	0.042	0.178	0.09
1996	63	Tudor Road	009. Boniface Pkway to WIM slab	2003	0.62	7	2003	25270	4	0.008	6318	14,949,013	14.95	0.041	0.175	0.09
1996	63	Tudor Road	009. Boniface Pkway to WIM slab	2004	0.69	8	2004	25518.93	4		6380	17,394,046	17.39	0.040	0.167	0.09
1998	60	Seward Highway	115. 36th Avenue to Benson Blvd.	1998	0.12	0	1998	55025	6		9171		0.00			
1998	60	Seward Highway	115. 36th Avenue to Benson Blvd.	1999	0.17	1	1999	47888	6		7981	3,021,729	3.02			
1998	60	Seward Highway	115. 36th Avenue to Benson Blvd.	2000	0.29	2	2000	51186	6		8531	6,085,386	6.09	0.048	0.201	0.15
1998	60	Seward Highway	115. 36th Avenue to Benson Blvd.	2001	0.31	3	2001	51487	6		8581	9,212,935	9.21	0.034	0.142	0.10
1998	60	Seward Highway	115. 36th Avenue to Benson Blvd.	2002	0.29	4	2002	48504	6		8084	12,208,961	12.21	0.024	0.100	0.07
1998	60	Seward Highway	116. Benson Blvd. To Fireweed Lane	1998	0.2	0	1998	53325	6		8888		0.00			
1998	60	Seward Highway	116. Benson Blvd. To Fireweed Lane	1999	0.23	1	1999	55980	6		9330	3,365,072	3.37			
1998	60	Seward Highway	116. Benson Blvd. To Fireweed Lane	2000	0.29	2	2000	56360	6		9393	6,787,859	6.79	0.043	0.180	0.15
1998	60	Seward Highway	116. Benson Blvd. To Fireweed Lane	2001	0.33	3	2001	53000	6		8833	10,063,126	10.06	0.033	0.138	0.11
1998	60	Seward Highway	116. Benson Blvd. To Fireweed Lane	2002	0.72	4	2002	53800	6		8967	13,323,793	13.32	0.054	0.228	0.18
1998	60	Seward Highway	117. Fireweed Lane to 20th Avenue	1998	0.1	0	1998	53325	6		8888	-	0.00			
1998	60	Seward Highway	117. Fireweed Lane to 20th Avenue	1999	0.15	1	1999	55980	6	0.050	9330	3,365,072	3.37			
1998	60	Seward Highway	117. Fireweed Lane to 20th Avenue	2000	0.22	2	2000	56360	6	0.007	9393	6,787,859	6.79	0.032	0.136	0.11
1998	60	Seward Highway	117. Fireweed Lane to 20th Avenue	2001	0.23	3	2001	53000	6	-0.060	8833	10,063,126	10.06	0.023	0.096	0.08
1998	60	Seward Highway	117. Fireweed Lane to 20th Avenue	2002	0.54	4	2002	53800	6	0.015	8967	13,323,793	13.32	0.041	0.171	0.14
1998	60	Seward Highway	117. Fireweed Lane to 20th Avenue	2003	0.55	5	2003	54140	6	0.003	9023	16,612,139	16.61	0.033	0.139	0.11
1998	60	Seward Highway	117. Fireweed Lane to 20th Avenue	2004	0.57	6	2004	53851.67	6		8975	19,892,500	19.89	0.029	0.121	0.10
1998	232	Seward Highway (SB in Anchorage)	001. 20th Ave. to Fireweed Lane	1998	0	0	1998	53325	6		8888	-	0.00			
1998	232	Seward Highway (SB in Anchorage)	001. 20th Ave. to Fireweed Lane	1999	0.21	1	1999	55980	6	0.050	9330	3,365,072	3.37			
1998	232	Seward Highway (SB in Anchorage)	001. 20th Ave. to Fireweed Lane	2000	0.22	2	2000	56360	6	0.007	9393	6,787,859	6.79	0.032	0.136	0.11
1998	232	Seward Highway (SB in Anchorage)	001. 20th Ave. to Fireweed Lane	2001	0.6	3	2001	53000	6	-0.060	8833	10,063,126	10.06	0.060	0.251	0.20
1998	232	Seward Highway (SB in Anchorage)	001. 20th Ave. to Fireweed Lane	2002	0.59	4	2002	53800	6	0.015	8967	13,323,793	13.32	0.044	0.186	0.15
1998	232	Seward Highway (SB in Anchorage)	001. 20th Ave. to Fireweed Lane	2003	0.88	5	2003	54140	6	0.003	9023	16,612,139	16.61	0.053	0.223	0.18
1998	232	Seward Highway (SB in Anchorage)	001. 20th Ave. to Fireweed Lane	2004	0.96	6	2004	53851.67	6		8975	19,892,500	19.89	0.048	0.203	0.16
1998	232	Seward Highway (SB in Anchorage)	002. Fireweed Lane to Benson Blvd.	1998	0.11	0	1998	53325	6		8888		0.00			
1998	232	Seward Highway (SB in Anchorage)	002. Fireweed Lane to Benson Blvd.	1999	0.3	1	1999	55980	6		9330	3,365,072	3.37			
1998	232	Seward Highway (SB in Anchorage)	002. Fireweed Lane to Benson Blvd.	2000	0.4	2	2000	56360	6		9393	6,787,859	6.79	0.059	0.248	0.20
1998	232	Seward Highway (SB in Anchorage)	002. Fireweed Lane to Benson Blvd.	2001	0.63	3	2001	53000	6		8833	10,063,126	10.06	0.063	0.264	0.21
1998	232	Seward Highway (SB in Anchorage)	002. Fireweed Lane to Benson Blvd.	2002	0.71	4	2002	53800	6		8967	13,323,793	13.32	0.053	0.224	0.18
1998	232	Seward Highway (SB in Anchorage)	003. Benson Blvd. To 36th Avenue	1998	0.05	0	1998	55025	6		9171		0.00			
1998	232	Seward Highway (SB in Anchorage)	003. Benson Blvd. To 36th Avenue	1999	0.23	1	1999	47888	6		7981	3,021,729	3.02			
1998	232	Seward Highway (SB in Anchorage)	003. Benson Blvd. To 36th Avenue	2000	0.25	2	2000	51186	6		8531	6,085,386	6.09	0.041	0.173	0.13
1998	232	Seward Highway (SB in Anchorage)	003. Benson Blvd. To 36th Avenue	2001	0.53	3	2001	51487	6		8581	9,212,935	9.21	0.058	0.242	0.18
1998	232	Seward Highway (SB in Anchorage)	003. Benson Blvd. To 36th Avenue	2002	0.57	4	2002	48504	6		8084	12,208,961	12.21	0.047	0.197	0.14

Avg.	0.03	0.14	0.08

CENTRAL REGION STONE MASTIC ASPHALT WITH AC-5 (PG52-28) TRAFFIC AND RUT MEASURMENT DATA FREEWAYS

Const. Year	RoadID	Road Name	Section Description	Condition Year	Rut Depth (in.)	Age at Condition Year (yrs)	Traffic Yr.	AADT	Lanes	Growth Rate	Lane ADT	Accumulated ADT	Accumulated Traffic/10^6	Rut per 10^6 Traffic Passes (in.)	Rut per 10^6 Studded Tire passes (in.)	Rut/year (in.)
1994	61	Glenn Highway	003. Bragaw St. to McCarrey St. overpass	1994	0	0	1994	40900	4		10225	-	0.00			
1994	61	Glenn Highway	003. Bragaw St. to McCarrey St. overpass	1998	0.15	4	1998	43375	4	0.015	10844	15,380,188	15.38	0.010	0.041	0.04
1994	61	Glenn Highway	003. Bragaw St. to McCarrey St. overpass	1999	0.2	5	1999	45390	4	0.046	11348	19,476,058	19.48	0.010	0.043	0.04
1994	61	Glenn Highway	003. Bragaw St. to McCarrey St. overpass	2000	0.25	6	2000	40465	4	-0.109	10116	23,280,841	23.28	0.011	0.045	0.04
1994	61	Glenn Highway	003. Bragaw St. to McCarrey St. overpass	2001	0.4	7	2001	46148	4	0.140	11537	27,362,202	27.36	0.015	0.062	0.06
1994	61	Glenn Highway	003. Bragaw St. to McCarrey St. overpass	2002	0.35	8	2002	46890	4	0.016	11723	31,623,988	31.62	0.011	0.047	0.04
1994	61	Glenn Highway	003. Bragaw St. to McCarrey St. overpass	2003	0.74	9	2003	47918	4	0.022	11979	35,973,043	35.97	0.021	0.087	0.08
1994	61	Glenn Highway	005. McCarrey St. Overpass to Boniface Rd. overpass	1994	0	0	1994	40900	6		6817	-	0.00			
1994	61	Glenn Highway	005. McCarrey St. Overpass to Boniface Rd. overpass	1998	0.1	4	1998	43375	6		7229	10,253,458	10.25	0.010	0.041	0.03
1994	61	Glenn Highway	005. McCarrey St. Overpass to Boniface Rd. overpass	1999	0.11	5	1999	45390	6		7565	12,984,039	12.98	0.008	0.036	0.02
1994	61	Glenn Highway	005. McCarrey St. Overpass to Boniface Rd. overpass	2000	0.19	6	2000	40465	6		6744	15,520,560	15.52	0.012	0.052	0.03
1994	61	Glenn Highway	005. McCarrey St. Overpass to Boniface Rd. overpass	2001	0.33	7	2001	46148	6		7691	18,241,468	18.24	0.018	0.076	0.05
1994	61	Glenn Highway	007. Boniface Rd. overpass to Muldoon Road (EOP)	1994	0	0	1994	40900	6		6817	-	0.00			
1994	61	Glenn Highway	007. Boniface Rd. overpass to Muldoon Road (EOP)	1998	0.16	4	1998	44763	6		7461	10,422,332	10.42	0.015	0.065	0.04
1994	61	Glenn Highway	007. Boniface Rd. overpass to Muldoon Road (EOP)	1999	0.18	5	1999	45390	6		7565	13,174,021	13.17	0.014	0.058	0.04
1994	61	Glenn Highway	007. Boniface Rd. overpass to Muldoon Road (EOP)	2000	0.19	6	2000	53880	6		8980	16,322,602	16.32	0.012	0.049	0.03
1994	61	Glenn Highway	007. Boniface Rd. overpass to Muldoon Road (EOP)	2001	0.27	7	2001	55413	6		9236	19,670,245	19.67	0.014	0.058	0.04
1994	61	Glenn Highway	007. Boniface Rd. overpass to Muldoon Road (EOP)	2002	0.31	8	2002	56310	6		9385	23,082,129	23.08	0.013	0.057	0.04
1995	61	Glenn Highway	009. Muldoon Road overpass to Arctic Valley Rd.	1995	0	0	1995	49002	6		8167	-	0.00			
1995	61	Glenn Highway	009. Muldoon Road overpass to Arctic Valley Rd.	1998	0.32	3	1998	53363	6		8894	9,340,806	9.34	0.034	0.144	0.11
1995	61	Glenn Highway	009. Muldoon Road overpass to Arctic Valley Rd.	1999	0.42	4	1999	54190	6		9032	12,624,787	12.62	0.033	0.140	0.11
1995	61	Glenn Highway	009. Muldoon Road overpass to Arctic Valley Rd.	2000	0.44	5	2000	53880	6		8980	15,907,202	15.91	0.028	0.116	0.09
1995	61	Glenn Highway	009. Muldoon Road overpass to Arctic Valley Rd.	2001	0.61	6	2001	55413	6		9236	19,254,845	19.25	0.032	0.133	0.10
1995	61	Glenn Highway	011. Arctic Valley Rd. to Fort Richardson overpass	1995	0	0	1995	44650	6		7442	-	0.00			
1995	61	Glenn Highway	011. Arctic Valley Rd. to Fort Richardson overpass	1998	0.36	3	1998	50719	6		8453	8,702,421	8.70	0.041	0.174	0.12
1995	61	Glenn Highway	011. Arctic Valley Rd. to Fort Richardson overpass	1999	0.4	4	1999	50950	6		8492	11,798,366	11.80	0.034	0.143	0.10
1995	61	Glenn Highway	011. Arctic Valley Rd. to Fort Richardson overpass	2000	0.43	5	2000	52140	6		8690	14,952,119	14.95	0.029	0.121	0.09
1995	61	Glenn Highway	011. Arctic Valley Rd. to Fort Richardson overpass	2001	0.84	6	2001	53200	6		8867	18,172,331	18.17	0.046	0.195	0.14
1995	61	Glenn Highway	013. Fort Richardson mile 7	1995	0	0	1995	42483	6		7080	-	0.00			
1995	61	Glenn Highway	013. Fort Richardson mile 7	1998	0.35	3	1998	47167	6		7861	8,180,517	8.18	0.043	0.180	0.12
1995	61	Glenn Highway	013. Fort Richardson mile 7	1999	0.48	4	1999	47383	6		7897	11,059,698	11.06	0.043	0.183	0.12
1995	61	Glenn Highway	013. Fort Richardson mile 7	2000	0.5	5	2000	47111	6		7852	13,929,754	13.93	0.036	0.151	0.10
1995	61	Glenn Highway	013. Fort Richardson mile 7	2001	0.51	6	2001	48066	6		8011	16,839,245	16.84	0.030	0.128	0.09
1995	61	Glenn Highway	015. Mile 7 to mile 8	1995	0	0	1995	42483	6		7080	-	0.00			
1995	61	Glenn Highway	015. Mile 7 to mile 8	1998	0.35	3	1998	47167	6		7861	8,180,517	8.18	0.043	0.180	0.12
1995	61	Glenn Highway	015. Mile 7 to mile 8	1999	0.48	4	1999	47383	6		7897	11,059,698	11.06	0.043	0.183	0.12
1995	61	Glenn Highway	015. Mile 7 to mile 8	2000	0.5	5	2000	47111	6		7852	13,929,754	13.93	0.036	0.151	0.10
1995	61	Glenn Highway	015. Mile 7 to mile 8	2001	0.53	6	2001	48066	6		8011	16,839,245	16.84	0.031	0.133	0.09
1995	61	Glenn Highway	017. Mile 8 to Scalehouse	1995	0	0	1995	42483	6		7080	-	0.00			
1995	61	Glenn Highway	017. Mile 8 to Scalehouse	1998	0.35	3	1998	47167	6		7861	8,180,517	8.18	0.043	0.180	0.12
1995	61	Glenn Highway	017. Mile 8 to Scalehouse	1999	0.4	4	1999	47383	6		7897	11,059,698	11.06	0.036	0.152	0.10
1995	61	Glenn Highway	017. Mile 8 to Scalehouse	2000	0.47	5	2000	47111	6		7852	13,929,754	13.93	0.034	0.142	0.09
1995	61	Glenn Highway	017. Mile 8 to Scalehouse	2001	0.5	6	2001	48066	6		8011	16,839,245	16.84	0.030	0.125	0.08
1995	61	Glenn Highway	021. Scalehouse entrance to Highland Dr.	1995	0	0	1995	33850	6		5642	-	0.00			
1995	61	Glenn Highway	021. Scalehouse entrance to Highland Dr.	1998	0.2	3	1998	38025	6		6338	6,558,594	6.56	0.030	0.128	0.07
1995	61	Glenn Highway	021. Scalehouse entrance to Highland Dr.	1999	0.22	4	1999	38200	6		6367	8,879,766	8.88	0.025	0.104	0.06
1995	61	Glenn Highway	021. Scalehouse entrance to Highland Dr.	2000	0.29	5	2000	39090	6		6515	11,244,205	11.24	0.026	0.109	0.06
1995	61	Glenn Highway	021. Scalehouse entrance to Highland Dr.	2001	0.38	6	2001	39880	6		6647	13,658,224	13.66	0.028	0.117	0.06
1995	104	Glenn Highway SB	044. Highland Dr. SB On-Ramp to Scalehouse entrance	1995	0	0	1995	33850	6		5642	-	0.00			
1995	104	Glenn Highway SB	044. Highland Dr. SB On-Ramp to Scalehouse entrance	1998	0.15	3	1998	38025	6		6338	6,558,594	6.56	0.023	0.096	0.05
1995	104	Glenn Highway SB	044. Highland Dr. SB On-Ramp to Scalehouse entrance	1999	0.2	4	1999	38200	6		6367	8,879,766	8.88	0.023	0.095	0.05
1995	104	Glenn Highway SB	044. Highland Dr. SB On-Ramp to Scalehouse entrance	2000	0.25	5	2000	39090	6		6515	11,244,205	11.24	0.022	0.094	0.05
1995	104	Glenn Highway SB	044. Highland Dr. SB On-Ramp to Scalehouse entrance	2001	0.6	6	2001	39880	6		6647	13,658,224	13.66	0.044	0.185	0.10
1995	104	Glenn Highway SB	046. Scalehouse entrance to mile 9	1995	0	0	1995	42483	6		7080	-	0.00			
1995	104	Glenn Highway SB	046. Scalehouse entrance to mile 9	1998	0.3	3	1998	47167	6		7861	8,180,517	8.18	0.037	0.154	0.10
1995	104	Glenn Highway SB	046. Scalehouse entrance to mile 9	1999	0.32	4	1999	47383	6		7897	11,059,698	11.06	0.029	0.122	0.08
1995	104	Glenn Highway SB	046. Scalehouse entrance to mile 9	2000	0.35	5	2000	47111	6		7852	13,929,754	13.93	0.025	0.106	0.07
1995	104	Glenn Highway SB	046. Scalehouse entrance to mile 9	2001	0.82	6	2001	48066	6		8011	16,839,245	16.84	0.049	0.205	0.14
1995	104	Glenn Highway SB	048. Mile 9 to mile 8	1995	0	0	1995	42483	6		7080	-	0.00			
1995	104	Glenn Highway SB	048. Mile 9 to mile 8	1998	0.2	3	1998	47167	6		7861	8,180,517	8.18	0.024	0.103	0.07
1995	104	Glenn Highway SB	048. Mile 9 to mile 8	1999	0.29	4	1999	47383	6		7897	11,059,698	11.06	0.026	0.110	0.07
1995	104	Glenn Highway SB	048. Mile 9 to mile 8	2000	0.35	5	2000	47111	6		7852	13,929,754	13.93	0.025	0.106	0.07
1995	104	Glenn Highway SB	048. Mile 9 to mile 8	2001	0.76	6	2001	48066	6		8011	16,839,245	16.84	0.045	0.190	0.13
1995	104	Glenn Highway SB	050. Mile 8 to mile 7	1995	0	0	1995	42483	6		7080	-	0.00			
1995	104	Glenn Highway SB	050. Mile 8 to mile 7	1998	0.3	3	1998	47167	6		7861	8,180,517	8.18	0.037	0.154	0.10
1995	104	Glenn Highway SB	050. Mile 8 to mile 7	1999	0.34	4	1999	47383	6		7897	11,059,698	11.06	0.031	0.129	0.09
1995	104	Glenn Highway SB	050. Mile 8 to mile 7	2000	0.38	5	2000	47111	6		7852	13,929,754	13.93	0.027	0.115	0.08
1995	104	Glenn Highway SB	050. Mile 8 to mile 7	2001	0.77	6	2001	48066	6		8011	16,839,245	16.84	0.046	0.193	0.13
1995	104	Glenn Highway SB	052. Mile 7 to Fort Richardson overpass	1995	0	0	1995	42483	6		7080	-	0.00			
1995	104	Glenn Highway SB	052. Mile 7 to Fort Richardson overpass	1998	0.2	3	1998	47167	6		7861	8,180,517	8.18	0.024	0.103	0.07
1995	104	Glenn Highway SB	052. Mile 7 to Fort Richardson overpass	1999	0.29	4	1999	47383	6		7897	11,059,698	11.06	0.026	0.110	0.07

CENTRAL REGION STONE MASTIC ASPHALT WITH AC-5 (PG52-28) TRAFFIC AND RUT MEASURMENT DATA FREEWAYS

Const. Year	RoadID	Road Name	Section Description	Condition Year	Rut Depth (in.)	Age at Condition Year (yrs)	Traffic Yr.	AADT	Lanes	Growth Rate	Lane ADT	Accumulated ADT	Accumulated Traffic/10^6	Rut per 10^6 Traffic Passes (in.)	Rut per 10^6 Studded Tire passes (in.)	Rut/year (in.)
1995	104	Glenn Highway SB	052. Mile 7 to Fort Richardson overpass	2000	0.35	5	2000	47111	6		7852	13,929,754	13.93	0.025	0.106	0.07
1995	104	Glenn Highway SB	052. Mile 7 to Fort Richardson overpass	2001	0.91	6	2001	48066	6		8011	16,839,245	16.84	0.054	0.228	0.15
1995	104	Glenn Highway SB	054. Fort Richardson overpass to Ship Cr. Bridge	1995	0	0	1995	44650	6		7442	-	0.00			
1995	104	Glenn Highway SB	054. Fort Richardson overpass to Ship Cr. Bridge	1998	0.3	3	1998	50719	6		8453	8,702,421	8.70	0.034	0.145	0.10
1995	104	Glenn Highway SB	054. Fort Richardson overpass to Ship Cr. Bridge	1999	0.41	4	1999	50950	6		8492	11,798,366	11.80	0.035	0.146	0.10
1995	104	Glenn Highway SB	054. Fort Richardson overpass to Ship Cr. Bridge	2000	0.5	5	2000	52140	6		8690	14,952,119	14.95	0.033	0.141	0.10
1995	104	Glenn Highway SB	054. Fort Richardson overpass to Ship Cr. Bridge	2001	0.98	6	2001	53200	6		8867	18,172,331	18.17	0.054	0.227	0.16
1995	104	Glenn Highway SB	056. Ship Cr. Bridge to pvmt. break near Muldoon Rd.	1995	0	0	1995	49002	6		8167	-	0.00			
1995	104	Glenn Highway SB	056. Ship Cr. Bridge to pvmt. break near Muldoon Rd.	1998	0.2	3	1998	53363	6		8894	9,340,806	9.34	0.021	0.090	0.07
1995	104	Glenn Highway SB	056. Ship Cr. Bridge to pvmt. break near Muldoon Rd.	1999	0.26	4	1999	54190	6		9032	12,624,787	12.62	0.021	0.087	0.07
1995	104	Glenn Highway SB	056. Ship Cr. Bridge to pvmt. break near Muldoon Rd.	2000	0.3	5	2000	53880	6		8980	15,907,202	15.91	0.019	0.079	0.06
1995	104	Glenn Highway SB	056. Ship Cr. Bridge to pvmt. break near Muldoon Rd.	2001	0.87	6	2001	55413	6		9236	19,254,845	19.25	0.045	0.190	0.15
1994	104	Glenn Highway SB	058. Muldoon Road to Boniface Rd. overpass	1994	0	0	1994	40900	6		6817	-	0.00			
1994	104	Glenn Highway SB	058. Muldoon Road to Boniface Rd. overpass	1998	0.3	4	1998	44763	6		7461	10,422,332	10.42	0.029	0.121	0.08
1994	104	Glenn Highway SB	058. Muldoon Road to Boniface Rd. overpass	1999	0.34	5	1999	45390	6		7565	13,174,021	13.17	0.026	0.109	0.07
1994	104	Glenn Highway SB	058. Muldoon Road to Boniface Rd. overpass	2000	0.37	6	2000	53880	6		8980	16,322,602	16.32	0.023	0.095	0.06
1994	104	Glenn Highway SB	058. Muldoon Road to Boniface Rd. overpass	2001	0.63	7	2001	55413	6		9236	19,670,245	19.67	0.032	0.135	0.09
1994	104	Glenn Highway SB	060. Boniface Rd. overpass to McCarrey St.	1994	0	0	1994	40900	6		6817	-	0.00			
1994	104	Glenn Highway SB	060. Boniface Rd. overpass to McCarrey St.	1998	0.15	4	1998	43375	6		7229	10,253,458	10.25	0.015	0.062	0.04
1994	104	Glenn Highway SB	060. Boniface Rd. overpass to McCarrey St.	1999	0.21	5	1999	45390	6		7565	12,984,039	12.98	0.016	0.068	0.04
1994	104	Glenn Highway SB	060. Boniface Rd. overpass to McCarrey St.	2000	0.25	6	2000	40465	6		6744	15,520,560	15.52	0.016	0.068	0.04
1994	104	Glenn Highway SB	060. Boniface Rd. overpass to McCarrey St.	2001	0.42	7	2001	46148	6		7691	18,241,468	18.24	0.023	0.097	0.06
1994	104	Glenn Highway SB	062. McCarrey St. overpass to Bragaw Street	1994	0	0	1994	40900	5		8180	-	0.00			
1994	104	Glenn Highway SB	062. McCarrey St. overpass to Bragaw Street	1998	0.2	4	1998	43375	5	0.015	8675	12,304,150	12.30	0.016	0.068	0.05
1994	104	Glenn Highway SB	062. McCarrey St. overpass to Bragaw Street	1999	0.22	5	1999	45390	5	0.046	9078	15,580,846	15.58	0.014	0.059	0.04
1994	104	Glenn Highway SB	062. McCarrey St. overpass to Bragaw Street	2000	0.28	6	2000	40465	5	-0.109	8093	18,624,673	18.62	0.015	0.063	0.05
1994	104	Glenn Highway SB	062. McCarrey St. overpass to Bragaw Street	2001	0.39	7	2001	46148	5	0.140	9230	21,889,762	21.89	0.018	0.075	0.06
1994	104	Glenn Highway SB	062. McCarrey St. overpass to Bragaw Street	2002	0.48	8	2002	46890	5	0.016	9378	25,299,190	25.30	0.019	0.080	0.06
1994	104	Glenn Highway SB	062. McCarrey St. overpass to Bragaw Street	2003	0.5	9	2003	47918	5	0.022	9584	28,778,434	28.78	0.017	0.073	0.06
1994	104	Glenn Highway SB	064. Bragaw St. to Airport Heights	1994	0	0	1994	35900	4		8975	-	0.00			
1994	104	Glenn Highway SB	064. Bragaw St. to Airport Heights	1998	0.2	4	1998	36534	4	0.004	9134	13,219,205	13.22	0.015	0.064	0.05
1994	104	Glenn Highway SB	064. Bragaw St. to Airport Heights	1999	0.25	5	1999	37572	4	0.028	9393	16,623,971	16.62	0.015	0.063	0.05
1994	104	Glenn Highway SB	064. Bragaw St. to Airport Heights	2000	0.3	6	2000	39180	4	0.043	9795	20,162,463	20.16	0.015	0.063	0.05
1994	104	Glenn Highway SB	064. Bragaw St. to Airport Heights	2001	0.35	7	2001	42544	4	0.086	10636	23,967,862	23.97	0.015	0.061	0.05
1994	104	Glenn Highway SB	064. Bragaw St. to Airport Heights	2002	0.55	8	2002	43230	4	0.016	10808	27,896,950	27.90	0.020	0.083	0.07
1994	104	Glenn Highway SB	064. Bragaw St. to Airport Heights	2003	0.6	9	2003	44766	4	0.036	11191	31,946,781	31.95	0.019	0.079	0.07
1996	60	Seward Highway	109. Start 1996 SMA to Huffman Road overpass	1996	0	0	1996	26832	4		6708	-				
1996	60	Seward Highway	109. Start 1996 SMA to Huffman Road overpass	1998	0.1	2	1998	27775	4	0.018	6943.75	2,512,957	2.51	0.040	0.168	0.05
1996	60	Seward Highway	109. Start 1996 SMA to Huffman Road overpass	1999	0.14	3	1999	27076	4	-0.025	6769	5,057,896	5.06	0.028	0.117	0.05
1996	60	Seward Highway	109. Start 1996 SMA to Huffman Road overpass	2000	0.18	4	2000	28161	4	0.040	7040.25	7,550,527	7.55	0.024	0.100	0.05
1996	60	Seward Highway	109. Start 1996 SMA to Huffman Road overpass	2001	0.28	5	2001	27035	4	-0.040	6758.75	10,128,339	10.13	0.028	0.116	0.06
1996	60	Seward Highway	109. Start 1996 SMA to Huffman Road overpass	2002	0.49	6	2002	28655	4	0.060	7163.75	12,873,847	12.87	0.038	0.160	0.08
1996	60	Seward Highway	109. Start 1996 SMA to Huffman Road overpass	2003	0.51	7	2003	28955	4	0.010	7238.849198	15,648,136	15.65	0.033	0.137	0.07
1996	60	Seward Highway	110. Huffman Road overpass to O'Malley Road overpass	1996	0	0	1996	35300	4		8825					
1996	60	Seward Highway	110. Huffman Road overpass to O'Malley Road overpass	1998	0.15	2	1998	38980	4	0.052	9745	3,472,975	3.47	0.043	0.182	0.08
1996	60	Seward Highway	110. Huffman Road overpass to O'Malley Road overpass	1999	0.21	3	1999	40130	4	0.030	10032.5	7,151,263	7.15	0.029	0.124	0.07
1996	60	Seward Highway	110. Huffman Road overpass to O'Malley Road overpass	2000	0.22	4	2000	40370	4	0.006	10092.5	10,566,955	10.57	0.021	0.088	0.06
1996	60	Seward Highway	110. Huffman Road overpass to O'Malley Road overpass	2001	0.23	5	2001	36453	4	-0.097	9113.25	13,997,453	14.00	0.016	0.069	0.05
1996	60	Seward Highway	110. Huffman Road overpass to O'Malley Road overpass	2002	0.54	6	2002	37975	4	0.042	9493.75	17,635,933	17.64	0.031	0.129	0.09
1996	60	Seward Highway	110. Huffman Road overpass to O'Malley Road overpass	2003	0.68	7	2003	38221	4	0.006	9555	21,297,941	21.30	0.032	0.134	0.10
1996	60	Seward Highway	111. O'Malley Road overpass to Dimond Blvd overpass	1996	0	0	1996	49002	4		12251		0.00			
1996	60	Seward Highway	111. O'Malley Road overpass to Dimond Blvd overpass	1998	0.28	2	1998	52074	4	0.031	13019	4,681,673	4.68	0.060	0.252	0.14
1996	60	Seward Highway	111. O'Malley Road overpass to Dimond Blvd overpass	1999	0.33	3	1999	54662	4	0.050	13666	9,610,541	9.61	0.034	0.145	0.11
1996	60	Seward Highway	111. O'Malley Road overpass to Dimond Blvd overpass	2000	0.34	4	2000	55031	4	0.007	13758	14,623,702	14.62	0.023	0.098	0.09
1996	60	Seward Highway	111. O'Malley Road overpass to Dimond Blvd overpass	2001	0.35	5	2001	57929	4	0.053	14482	19,843,613	19.84	0.018	0.074	0.07
1996	60	Seward Highway	111. O'Malley Road overpass to Dimond Blvd. Project	2002	0.82	6	2002	55896	4		13974	24,990,501	24.99	0.033	0.138	0.14
1996	60	Seward Highway	113. Dowling Rd. overpass to Tudor Rd. overcrossing	1996	0	0	1996	54299	4		13575		0.00			
1996	60	Seward Highway	113. Dowling Rd. overpass to Tudor Rd. overcrossing	1998	0.28	2	1998	60475	4		15119	5,377,454	5.38	0.052	0.219	0.14
1996	60	Seward Highway	113. Dowling Rd. overpass to Tudor Rd. overcrossing	1999	0.36	3	1999	60510	4		15128	10,898,193	10.90	0.033	0.139	0.12
1996	60	Seward Highway	113. Dowling Rd. overpass to Tudor Rd. overcrossing	2000	0.37	4	2000	60920	4		15230	16,447,790	16.45	0.022	0.095	0.09
1996	60	Seward Highway	113. Dowling Rd. overpass to Tudor Rd. overcrossing	2001	0.71	5	2001	59827	4		14957	21,931,938	21.93	0.032	0.136	0.14
1996	60	Seward Highway	113. Dowling Rd. overpass to Tudor Rd. overcrossing	2002	0.86	6	2002	60942	4		15236	27,467,459	27.47	0.031	0.132	0.14
1996	60	Seward Highway	114. Tudor Rd. overcrossing to 36th Avenue	1996	0	0	1996	49756	5		9951		0.00			
1996	60	Seward Highway	114. Tudor Rd. overcrossing to 36th Avenue	1998	0.2	2	1998	55025	5		11005	3,920,666	3.92	0.051	0.215	0.10
1996	60	Seward Highway	114. Tudor Rd. overcrossing to 36th Avenue	1999	0.24	3	1999	52938	5		10588	7,823,228	7.82	0.031	0.129	0.08
1996	60	Seward Highway	114. Tudor Rd. overcrossing to 36th Avenue	2000	0.25	4	2000	51674	5		10335	11,618,498	11.62	0.022	0.091	0.06
1996	60	Seward Highway	114. Tudor Rd. overcrossing to 36th Avenue	2001	0.34	5	2001	52195	5		10439	15,419,224	15.42	0.022	0.093	0.07
1996	60	Seward Highway	114. Tudor Rd. overcrossing to 36th Avenue	2002	0.58	6	2002	53623	5		10725	19,307,642	19.31	0.030	0.126	0.10
1996	232	Seward Highway (SB in Anchorage)	004. 36th Avenue to Tudor Road Overcrossing	1996	0	0	1996	49756	5		9951		0.00			
1996	232	Seward Highway (SB in Anchorage)	004. 36th Avenue to Tudor Road Overcrossing	1998	0.25	2	1998	55025	5		11005	7,745,172	7.75	0.032	0.136	0.13
1996	232	Seward Highway (SB in Anchorage)	004. 36th Avenue to Tudor Road Overcrossing	1999	0.29	3	1999	52938	5		10588	11,647,734	11.65	0.025	0.105	0.10

CENTRAL REGION STONE MASTIC ASPHALT WITH AC-5 (PG52-28) TRAFFIC AND RUT MEASURMENT DATA FREEWAYS

Const. Year	RoadID	Road Name	Section Description	Condition Year	Rut Depth (in.)	Age at Condition Year (yrs)	Traffic Yr.	AADT	Lanes	Growth Rate	Lane ADT	Accumulated ADT	Accumulated Traffic/10^6	Rut per 10^6 Traffic Passes (in.)	Rut per 10^6 Studded Tire passes (in.)	Rut/year (in.)
1996	232	Seward Highway (SB in Anchorage)	004. 36th Avenue to Tudor Road Overcrossing	2000	0.38	4	2000	51674	5		10335	15,443,004	15.44	0.025	0.104	0.10
1996	232	Seward Highway (SB in Anchorage)	004. 36th Avenue to Tudor Road Overcrossing	2001	0.66	5	2001	52195	5		10439	19,243,731	19.24	0.034	0.144	0.13
1996	232	Seward Highway (SB in Anchorage)	004. 36th Avenue to Tudor Road Overcrossing	2002	0.77	6	2002	53623	5		10725	23,132,149	23.13	0.033	0.140	0.13
1996	232	Seward Highway (SB in Anchorage)	005. Tudor Road Overcrossing to Dowling Rd. Overpass	1996	0	0	1996	54299	4		13575		0.00			
1996	232	Seward Highway (SB in Anchorage)	005. Tudor Road Overcrossing to Dowling Rd. Overpass	1998	0.28	2	1998	60475	4		15119	10,614,018	10.61	0.026	0.111	0.14
1996	232	Seward Highway (SB in Anchorage)	005. Tudor Road Overcrossing to Dowling Rd. Overpass	1999	0.37	3	1999	60510	4		15128	16,134,757	16.13	0.023	0.097	0.12
1996	232	Seward Highway (SB in Anchorage)	005. Tudor Road Overcrossing to Dowling Rd. Overpass	2000	0.46	4	2000	60920	4		15230	21,684,353	21.68	0.021	0.089	0.12
1996	232	Seward Highway (SB in Anchorage)	005. Tudor Road Overcrossing to Dowling Rd. Overpass	2001	0.76	5	2001	59827	4		14957	27,168,501	27.17	0.028	0.118	0.15
1996	232	Seward Highway (SB in Anchorage)	005. Tudor Road Overcrossing to Dowling Rd. Overpass	2002	1.07	6	2002	60942	4		15236	32,704,023	32.70	0.033	0.138	0.18
1996	232	Seward Highway (SB in Anchorage)	006. Dowling Rd. Overpass to Dimond Blvd. Overpass	1996	0	0	1996	54299	4		13575	-	0.00			
1996	232	Seward Highway (SB in Anchorage)	006. Dowling Rd. Overpass to Dimond Blvd. Overpass	1998	0.29	2	1998	60475	4		15119	8,290,458	8.29	0.035	0.147	0.15
1996	232	Seward Highway (SB in Anchorage)	006. Dowling Rd. Overpass to Dimond Blvd. Overpass	1999	0.39	3	1999	60510	4		15128	13,840,055	13.84	0.028	0.119	0.13
1996	232	Seward Highway (SB in Anchorage)	006. Dowling Rd. Overpass to Dimond Blvd. Overpass	2000	0.41	4	2000	60920	4		15230	19,394,214	19.39	0.021	0.089	0.10
1996	232	Seward Highway (SB in Anchorage)	006. Dowling Rd. Overpass to Dimond Blvd. Overpass	2001	0.72	5	2001	60850	4		15213	25,224,405	25.22	0.029	0.120	0.14
1996	232	Seward Highway (SB in Anchorage)	006. Dowling Rd. Overpass to Dimond Blvd. Overpass	2002	0.89	6	2002	61430	4		15358	31,110,167	31.11	0.029	0.120	0.15
1996	232	Seward Highway (SB in Anchorage)	007. Dimond Blvd. Overpass to O'Malley Rd. Overpass	1996	0	0	1996	49002	4		12251		0.00			
1996	232	Seward Highway (SB in Anchorage)	007. Dimond Blvd. Overpass to O'Malley Rd. Overpass	1998	0.23	2	1998	52074	4	0.031	13019	4,681,673	4.68	0.049	0.207	0.12
1996	232	Seward Highway (SB in Anchorage)	007. Dimond Blvd. Overpass to O'Malley Rd. Overpass	1999	0.29	3	1999	54662	4	0.050	13666	9,610,541	9.61	0.030	0.127	0.10
1996	232	Seward Highway (SB in Anchorage)	007. Dimond Blvd. Overpass to O'Malley Rd. Overpass	2000	0.33	4	2000	55031	4	0.007	13758	14,623,702	14.62	0.023	0.095	0.08
1996	232	Seward Highway (SB in Anchorage)	007. Dimond Blvd. Overpass to O'Malley Rd. Overpass	2001	0.4	5	2001	57929	4	0.053	14482	19,843,613	19.84	0.020	0.085	0.08
1996	232	Seward Highway (SB in Anchorage)	007. Dimond Blvd. Overpass to O'Malley Rd. Overpass	2002	0.63	6	2002	55896	4		13974	24,990,501	24.99	0.025	0.106	0.11
1996	232	Seward Highway (SB in Anchorage)	008. O'Malley Rd. Overpass to Huffman Rd. Overpass	1996	0	0	1996	35300	4		8825					
1996	232	Seward Highway (SB in Anchorage)	008. O'Malley Rd. Overpass to Huffman Rd. Overpass	1998	0.1	2	1998	38980	4	0.052	9745	3,472,975	3.47	0.029	0.121	0.05
1996	232	Seward Highway (SB in Anchorage)	008. O'Malley Rd. Overpass to Huffman Rd. Overpass	1999	0.13	3	1999	40130	4	0.030	10032.5	7,151,263	7.15	0.018	0.077	0.04
1996	232	Seward Highway (SB in Anchorage)	008. O'Malley Rd. Overpass to Huffman Rd. Overpass	2000	0.22	4	2000	40370	4	0.006	10092.5	10,566,955	10.57	0.021	0.088	0.06
1996	232	Seward Highway (SB in Anchorage)	008. O'Malley Rd. Overpass to Huffman Rd. Overpass	2001	0.32	5	2001	36453	4	-0.097	9113.25	13,997,453	14.00	0.023	0.096	0.06
1996	232	Seward Highway (SB in Anchorage)	008. O'Malley Rd. Overpass to Huffman Rd. Overpass	2002	0.36	6	2002	37975	4	0.042	9493.75	17,635,933	17.64	0.020	0.086	0.06
1996	232	Seward Highway (SB in Anchorage)	008. O'Malley Rd. Overpass to Huffman Rd. Overpass	2003	0.57	7	2003	38221	4	0.006	9555	21,297,941	21.30	0.027	0.113	0.08
1996	232	Seward Highway (SB in Anchorage)	009. Huffman Rd. Overpass to end '96 SMA	1996	0	0	1996	26832	4		6708					
1996	232	Seward Highway (SB in Anchorage)	009. Huffman Rd. Overpass to end '96 SMA	1998	0.1	2	1998	27775	4	0.018	6943.75	2,512,957	2.51	0.040	0.168	0.05
1996	232	Seward Highway (SB in Anchorage)	009. Huffman Rd. Overpass to end '96 SMA	1999	0.12	3	1999	27076	4	-0.025	6769	5,057,896	5.06	0.024	0.100	0.04
1996	232	Seward Highway (SB in Anchorage)	009. Huffman Rd. Overpass to end '96 SMA	2000	0.15	4	2000	28161	4	0.040	7040.25	7,550,527	7.55	0.020	0.084	0.04
1996	232	Seward Highway (SB in Anchorage)	009. Huffman Rd. Overpass to end '96 SMA	2001	0.28	5	2001	27035	4	-0.040	6758.75	10,128,339	10.13	0.028	0.116	0.06
1996	232	Seward Highway (SB in Anchorage)	009. Huffman Rd. Overpass to end '96 SMA	2002	0.29	6	2002	28655	4	0.060	7163.75	12,873,847	12.87	0.023	0.095	0.05
1996	232	Seward Highway (SB in Anchorage)	009. Huffman Rd. Overpass to end '96 SMA	2003	0.51	7	2003	28955	4	0.010	7238.849198	15,648,136	15.65	0.033	0.137	0.07
													Avg.	0.028	0.116	0.083

APPENDIX G

DATA FOR ANCHORAGE SMA WITH PG58-28 WEARING COURSES

CENTRAL REGION STONE MASTIC ASPHALT WITH POLYMER MODIFIED (PG58-28) ASPHALT TRAFFIC, AGE AND RUT MEASURMENT DATA - ARTERIALS

RoadID	SecCode	FromY	SecID	Name	Description	Condition. Year	Rut Depth (in.)	Age at condition year	Traffic.Year	Total AADT	AADT	Traffic Lanes	Accum. Traffic	Accum. Traffic (mil.)	Rut/mil	Rut/year	Rut/Million Studded Tire Passes
75	133800_5	1998	1778	International Airport Road	004. Laona Drive to Arctic Blvd.	1998	0.01	0	1998	16788	4197	4	0	0.00			
75	133800_5	1998	1778	International Airport Road	004. Laona Drive to Arctic Blvd.	1999	0.02	1	1999	15496	3874	4	1520079	1.52			
75	133800_5	1998	1778	International Airport Road	004. Laona Drive to Arctic Blvd.	2000	0.14	2	2000	20380	5095	4	3268338	3.27	0.043	0.07	0.180
75	133800_5	1998	1778	International Airport Road	004. Laona Drive to Arctic Blvd.	2001	0.15	3	2001	21260	5315	4	5188238	5.19	0.029	0.05	0.122
75	133800_5	1998	1778	International Airport Road	004. Laona Drive to Arctic Blvd.	2002	0.24	4	2002	23228	5807	4	7262898	7.26	0.033	0.06	0.139
75	133800_5	1998	1778	International Airport Road	004. Laona Drive to Arctic Blvd.	2003	0.36	5	2003	23230	5808	4	9488577	9.49	0.038	0.07	0.160
75	133800_5	1998	1778	International Airport Road	004. Laona Drive to Arctic Blvd.	2004	0.31	6	2004	25692	6423	4	11894046	11.89	0.026	0.05	0.110
75	133800_7	1998	1779	International Airport Road	005. Arctic Blvd. To C Street	1998	0.02	0	1998	14312	3578	4	0	0.00			
75	133800_7	1998	1779	International Airport Road	005. Arctic Blvd. To C Street	1999	0.05	1	1999	13904	3476	4	1343346	1.34			
75	133800_7	1998	1779	International Airport Road	005. Arctic Blvd. To C Street	2000	0.16	2	2000	20380	5095	4	3055287	3.06	0.052	0.08	0.220
75	133800_7	1998	1779	International Airport Road	005. Arctic Blvd. To C Street	2001	0.17	3	2001	19160	4790	4	4831469	4.83	0.035	0.06	0.148
75	133800_7	1998	1779	International Airport Road	005. Arctic Blvd. To C Street	2002	0.28	4	2002	20440	5110	4	6667419	6.67	0.042	0.07	0.177
75	133800_7	1998	1779	International Airport Road	005. Arctic Blvd. To C Street	2003	0.49	5	2003	21365	5341	4	8693351	8.69	0.056	0.10	0.237
75	133800_7	1998	1779	International Airport Road	005. Arctic Blvd. To C Street	2004	0.46	6	2004	23544.4	5886	4	10792060	10.79	0.043	0.08	0.179
75	133800_9	1998	1780	International Airport Road	006. C Street to Old Seward Highway	1998	0.01	0	1998	14312	3578	4	0	0.00			
75	133800_9	1998	1780	International Airport Road	006. C Street to Old Seward Highway	1999	0.03	1	1999	13904	3476	4	1343346	1.34			
75	133800_9	1998	1780	International Airport Road	006. C Street to Old Seward Highway	2000	0.14	2	2000	14744	3686	4	2669574	2.67	0.052	0.07	0.221
75	133800_9	1998	1780	International Airport Road	006. C Street to Old Seward Highway	2001	0.15	3	2001	15384	3846	4	4058764	4.06	0.037	0.05	0.156
75	133800_9	1998	1780	International Airport Road	006. C Street to Old Seward Highway	2002	0.23	4	2002	15778	3945	4	5489518	5.49	0.042	0.06	0.176
75	133800_9	1998	1780	International Airport Road	006. C Street to Old Seward Highway	2003	0.35	5	2003	15780	3945	4	7001394	7.00	0.050	0.07	0.210
75	133800_9	1998	1780	International Airport Road	006. C Street to Old Seward Highway	2004	0.36	6	2004	16043	4011	4	8532538	8.53	0.042	0.06	0.178
77	134440_5	1999	1786	5th Avenue (Anchorage)	003. Gambell Street to L Street	1999	0.05	0	1999	17541	5847	3	0	0.00			
77	134440_5	1999	1786	5th Avenue (Anchorage)	003. Gambell Street to L Street	2000	0.19	1	2000	18816	6272	3	2357207	2.36			
77	134440_5	1999	1786	5th Avenue (Anchorage)	003. Gambell Street to L Street	2001	0.19	2	2001	22923	7641	3	5021250	5.02	0.038	0.10	0.159
77	134440_5	1999	1786	5th Avenue (Anchorage)	003. Gambell Street to L Street	2002	0.29	3	2002	19578	6526	3	7504984	7.50	0.039	0.10	0.163
77	134440_5	1999	1786	5th Avenue (Anchorage)	003. Gambell Street to L Street	2003	0.31	4	2003	19720	6573	3	10019895	10.02	0.031	0.08	0.130
77	134440_5	1999	1786	5th Avenue (Anchorage)	003. Gambell Street to C Street	2004	0.46	5	2004	21252	7084	3	12688201	12.69	0.036	0.09	0.153
78	134600_1	1999	8202	6th Avenue (Anchorage)	001. L Street to C Street	1999	0.06	0	1999	10119	3373	3	0	0.00			
78	134600_1	1999	8202	6th Avenue (Anchorage)	001. L Street to C Street	2000	0.1	1	2000	11100	3700	3	1382219	1.38			
78	134600_1	1999	8202	6th Avenue (Anchorage)	001. L Street to C Street	2001	0.25	2	2001	12393	4131	3	2850705	2.85	0.088	0.13	0.369
78	134600_1	1999	8202	6th Avenue (Anchorage)	001. L Street to C Street	2002	0.34	3	2002	13075	4358	3	4420752	4.42	0.077	0.11	0.324
78	134600_1	1999	8202	6th Avenue (Anchorage)	001. L Street to C Street	2003	0.39	4	2003	13038	4346	3	6087482	6.09	0.064	0.10	0.270
78	134600_1	1999	8202	6th Avenue (Anchorage)	001. L Street to C Street	2004	0.41	5	2004	14289	4763	3	7874841	7.87	0.052	0.08	0.219
78	134600_3	1999	1787	6th Avenue (Anchorage)	002. C Street the Gambell Street	1999	0.06	0	1999	12819	4273	3	0	0.00			
78	134600_3	1999	1787	6th Avenue (Anchorage)	002. C Street the Gambell Street	2000	0.1	1	2000	13200	4400	3	1672394	1.67			
78	134600_3	1999	1787	6th Avenue (Anchorage)	002. C Street the Gambell Street	2001	0.25	2	2001	14460	4820	3	3393369	3.39	0.074	0.13	0.310
78	134600_3	1999	1787	6th Avenue (Anchorage)	002. C Street the Gambell Street	2002	0.34	3	2002	15579	5193	3	5254777	5.25	0.065	0.11	0.272
78	134600_3	1999	1787	6th Avenue (Anchorage)	002. C Street the Gambell Street	2003	0.47	4	2003	16154	5385	3	7300961	7.30	0.064	0.12	0.271
78	134600_3	1999	1787	6th Avenue (Anchorage)	002. C Street the Gambell Street	2004	0.5	5	2004	17157.1	5719	3	9462270	9.46	0.053	0.10	0.222
82	134341_3	1999	1794	C Street (Anchorage)	003. Port Access Bridge to 6th Avenue	1999	0.06	0	1999	17181	5727	3	0	0.00			
82	134341_3	1999	1794	C Street (Anchorage)	003. Port Access Bridge to 6th Avenue	2000	0.09	1	2000	17949	5983	3	2264953	2.26			
82	134341_3	1999	1794	C Street (Anchorage)	003. Port Access Bridge to 6th Avenue	2001	0.17	2	2001	18510	6170	3	4499939	4.50	0.038	0.09	0.159
82	134341_3	1999	1794	C Street (Anchorage)	003. Port Access Bridge to 6th Avenue	2002	0.24	3	2002	16654	5551	3	6582629	6.58	0.036	0.08	0.154
82	134341_3	1999	1794	C Street (Anchorage)	003. Port Access Bridge to 6th Avenue	2003	0.28	4	2003	16470	5490	3	8692268	8.69	0.032	0.07	0.136
82	134341_3	1999	1794	C Street (Anchorage)	003. Port Access Bridge to 6th Avenue	2004	0.29	5	2004	16538	5513	3	10802900	10.80	0.027	0.06	0.113
75	133800_3	2000	1777	International Airport Road	002. Jewel Lake Road to Northwood Drive	2000	0.06	0	2000	30432	7608	4	0	0.00			
75	133800_3	2000	1777	International Airport Road	002. Jewel Lake Road to Northwood Drive	2001	0.19	1	2001	31312	7828	4	2975991	2.98			
75	133800_3	2000	1777	International Airport Road	002. Jewel Lake Road to Northwood Drive	2002	0.28	2	2002	32110	8028	4	5887824	5.89	0.048	0.14	0.200
75	133800_3	2000	1777	International Airport Road	002. Jewel Lake Road to Northwood Drive	2003	0.18	3	2003	32120	8030	4	8965094	8.97	0.020	0.06	0.085
75	133800_3	2000	1777	International Airport Road	002. Jewel Lake Road to Northwood Drive	2004	0.52	4	2004	32959	6592	5	11622637	11.62	0.045	0.13	0.188
75	133800_4	2000	3004	International Airport Road	003. Northwood Dr. to Laona Drive (2 bridges)	2000	0.05	0	2000	20380	5095	4	0	0.00			
75	133800_4	2000	3004	International Airport Road	003. Northwood Dr. to Laona Drive (2 bridges)	2001	0.23	1	2001	29596	7399	4	2583379	2.58			
75	133800_4	2000	3004	International Airport Road	003. Northwood Dr. to Laona Drive (2 bridges)	2002	0.3	2	2002	36148	9037	4	5732416	5.73	0.052	0.15	0.220
75	133800_4	2000	3004	International Airport Road	003. Northwood Dr. to Laona Drive (2 bridges)	2003	0.25	3	2003	36150	9038	4	9195993	9.20	0.027	0.08	0.114
75	133800_4	2000	3004	International Airport Road	003. Northwood Dr. to Laona Drive (2 bridges)	2004	0.44	4	2004	36500	9125	4	12685164	12.69	0.035	0.11	0.146
119	134503_3	2001	1916	15th Avenue, Anchorage	002. I Street to C Street	2001	0.08	0	2001	9900	2475	4	0	0.00			
119	134503_3	2001	1916	15th Avenue, Anchorage	002. I Street to C Street	2002	0.17	1	2002	9635	2409	4	930408	0.93			
119	134503_3	2001	1916	15th Avenue, Anchorage	002. I Street to C Street	2003	0.17	2	2003	9790	2448	4	1864876	1.86	0.091	0.09	0.384
119	134503_3	2001	1916	15th Avenue, Anchorage	002. I Street to C Street	2004	0.2	3	2004	9665	2416	4	2793756	2.79	0.072	0.07	0.301
119	134503_5	2001	3221	15th Avenue, Anchorage	003. C Street to Gambell Street	2001	0.03	0	2001	12900	3225	4	0	0.00			
119	134503_5	2001	3221	15th Avenue, Anchorage	003. C Street to Gambell Street	2002	0.11	1	2002	14062	3516	4	1315506	1.32			

CENTRAL REGION STONE MASTIC ASPHALT WITH POLYMER MODIFIED (PG58-28) ASPHALT TRAFFIC, AGE AND RUT MEASURMENT DATA - ARTERIALS

RoadID	SecCode	FromY	SecID	Name	Description	Condition. Year	Rut Depth (in.)	Age at condition year	Traffic.Year	Total AADT	AADT	Traffic Lanes	Accum. Traffic	Accum. Traffic (mil.)	Rut/mil	Rut/year	Rut/Million Studded Tire Passes
119	134503_5	2001	3221	15th Avenue, Anchorage	003. C Street to Gambell Street	2003	0.12	2	2003	14290	3573	4	2679465	2.68	0.045	0.06	0.189
119	134503_5	2001	3221	15th Avenue, Anchorage	003. C Street to Gambell Street	2004	0.17	3	2004	14518	3630	4	4065270	4.07	0.042	0.06	0.176
119	134503_7	2001	3222	15th Avenue, Anchorage	004. Gambell to Ingra St.	2001	0	0	2001	22010	5503	4	0	0.00			
119	134503_7	2001	3222	15th Avenue, Anchorage	004. Gambell to Ingra St.	2002	0.1	1	2002	23354	5839	4	2200813	2.20			
119	134503_7	2001	3222	15th Avenue, Anchorage	004. Gambell to Ingra St.	2003	0.15	2	2003	23740	5935	4	4466596	4.47	0.034	0.08	0.141
119	134503_7	2001	3222	15th Avenue, Anchorage	004. Gambell to Ingra St.	2004	0.17	3	2004	24765	6191	4	6815986	6.82	0.025	0.06	0.105
66	134700_5	2001	1130	Boniface Parkway	003. Pvmt. change near Debarr Rd. to Glenn Hwy	2001	0.03	0	2001	20472	5118	4	0	0.00			
66	134700_5	2001	1130	Boniface Parkway	003. Pvmt. change near Debarr Rd. to Glenn Hwy	2002	0.1	1	2002	19442	4861	4	1890983	1.89			
66	134700_5	2001	1130	Boniface Parkway	003. Pvmt. change near Debarr Rd. to Glenn Hwy	2003	0.16	2	2003	18938	4735	4	3716978	3.72	0.043	0.08	0.181
66	134700_5	2001	1130	Boniface Parkway	003. Pvmt. change near Debarr Rd. to Glenn Hwy	2004	0.18	3	2004	18083	4521	4	5469084	5.47	0.033	0.06	0.139
66	134700_7	2001	1131	Boniface Parkway	004. Glenn Hwy to Elmendorf AFB Gate/End	2001	0.07	0	2001	13480	3370	4	0	0.00			
66	134700_7	2001	1131	Boniface Parkway	004. Glenn Hwy to Elmendorf AFB Gate/End	2002	0.14	1	2002	18199	4550	4	1614509	1.61			
66	134700_7	2001	1131	Boniface Parkway	004. Glenn Hwy to Elmendorf AFB Gate/End	2003	0.09	2	2003	18530	4633	4	3382364	3.38	0.027	0.05	0.112
66	134700_7	2001	1131	Boniface Parkway	004. Glenn Hwy to Elmendorf AFB Gate/End	2004	0.1	3	2004	18550	4638	4	5159229	5.16	0.019	0.03	0.082
75	133800_1	2001	1776	International Airport Road	001. Aircraft Dr. South to Jewel Lake Road	2001	0.05	0	2001	30072	7518	4	0	0.00			
75	133800_1	2001	1776	International Airport Road	001. Aircraft Dr. South to Jewel Lake Road	2002	0.13	1	2002	23939	5985	4	2461546	2.46			
75	133800_1	2001	1776	International Airport Road	001. Aircraft Dr. South to Jewel Lake Road	2003	0.21	2	2003	28244	7061	4	5069467	5.07	0.041	0.11	0.174
75	133800_1	2001	1776	International Airport Road	001. Aircraft Dr. South to Jewel Lake Road	2004	0.22	3	2004	25590	6398	4	7581877	7.58	0.029	0.07	0.122
192	134765_1	2001	4096	Postmark Drive	001. International Airport Road off ramp	2001	0.05	0	2001	10408	2602	4	0	0.00			
192	134765_1	2001	4096	Postmark Drive	001. International Airport Road off ramp	2002	0.15	1	2002	10385	2596	4	995642	1.00			
192	134765_1	2001	4096	Postmark Drive	001. International Airport Road off ramp	2003	0.14	2	2003	11989	2997	4	2107747	2.11	0.066	0.07	0.280
192	134765_1	2001	4096	Postmark Drive	001. International Airport Road off ramp	2004	0.18	3	2004	12508	3127	4	3294355	3.29	0.055	0.06	0.230
83	134342_5	2002	8203	A Street (Anchorage)	003. Benson Blvd. To Northern Lts. Blvd.	2002	0.05	0	2002	16710	5570	3	0	0.00			
83	134342_5	2002	8203	A Street (Anchorage)	003. Benson Blvd. To Northern Lts. Blvd.	2003	0.15	1	2003	19665	6555	3	2422323	2.42			
83	134342_5	2002	8203	A Street (Anchorage)	003. Benson Blvd. To Northern Lts. Blvd.	2004	0.24	2	2004	20000	6667	3	4967133	4.97	0.048	0.12	0.203
97	134100_1	2002	1845	Benson Blvd.	001. Forest Park Dr. to Minnesota Drive	2002	0.21	0	2002	15180	7590	2	0	0.00			
97	134100_1	2002	1845	Benson Blvd.	001. Forest Park Dr. to Minnesota Drive	2003	0.23	1	2003	16772	8386	2	3141300	3.14			
97	134100_1	2002	1845	Benson Blvd.	001. Forest Park Dr. to Minnesota Drive	2004	0.24	2	2004	17275.16	8638	2	6428695	6.43	0.037	0.12	0.157
97	134100_3	2002	1846	Benson Blvd.	002. Minnesota Drive to C Street	2002	0.13	0	2002	24190	8063	3	0	0.00			
97	134100_3	2002	1846	Benson Blvd.	002. Minnesota Drive to C Street	2003	0.19	1	2003	24380	8127	3	3108766	3.11			
97	134100_3	2002	1846	Benson Blvd.	002. Minnesota Drive to C Street	2004	0.2	2	2004	24570	8190	3	6241804	6.24	0.032	0.10	0.135
97	134100_5	2002	1847	Benson Blvd.	003. C Street to New Seward Highway	2002	0.21	0	2002	27495	9165	3	0	0.00			
97	134100_5	2002	1847	Benson Blvd.	003. C Street to New Seward Highway	2003	0.22	1	2003	27710	9237	3	3533413	3.53			
97	134100_5	2002	1847	Benson Blvd.	003. C Street to New Seward Highway	2004	0.23	2	2004	27925	9308	3	7094292	7.09	0.032	0.12	0.137
97	134100_7	2002	1848	Benson Blvd.	004. New Seward Highway to Jct. N. Lts. Blvd.	2002	0.13	0	2002	22030	7343	3	0	0.00			
97	134100_7	2002	1848	Benson Blvd.	004. New Seward Highway to Jct. N. Lts. Blvd.	2003	0.14	1	2003	21824	7275	3	2794282	2.79			
97	134100_7	2002	1848	Benson Blvd.	004. New Seward Highway to Jct. N. Lts. Blvd.	2004	0.15	2	2004	22260.48	7420	3	5624782	5.62	0.027	0.08	0.112
94	133700_1	2002	1833	Dimond Blvd.	001. New Seward Hwy. To OSH Intersection paving	2002	0.1	0	2002	41420	6903	6	0	0.00			
94	133700_1	2002	1833	Dimond Blvd.	001. New Seward Hwy. To OSH Intersection paving	2003	0.21	1	2003	40550	6758	6	2603363	2.60			
94	133700_1	2002	1833	Dimond Blvd.	001. New Seward Hwy. To OSH Intersection paving	2004	0.26	2	2004	41361	6894	6	5232962	5.23	0.050	0.13	0.209
94	133700_2	2002	4086	Dimond Blvd.	002. Old Seward Highway intersection paving	2002	0	0	2002	47665	7944	6	0	0.00			
94	133700_2	2002	4086	Dimond Blvd.	002. Old Seward Highway intersection paving	2004	0.39	2	2003	37731	6289	6	2561147	2.56	0.152	0.20	0.641
98	134750_17	2002	1853	Northern Lights Blvd.	005. Lake Otis Parkway to New Seward Highway	2002	0.15	0	2002	40514	10129	4	0	0.00			
98	134750_17	2002	1853	Northern Lights Blvd.	005. Lake Otis Parkway to New Seward Highway	2003	0.19	1	2003	40526	10132	4	3882624	3.88			
98	134750_	2002	1853	Northern Lights Blvd.	005. Lake Otis Parkway to New Seward Highway	2004	0.22	2	2004	40538		4	4807123	4.81	0.046	0.11	0.193
98	134750_21	2002	1854	Northern Lights Blvd.	006. New Seward Highway to C Street	2002	0.16	0	2002	27608	6902	4	0	0.00			
98	134750_21	2002	1854	Northern Lights Blvd.	006. New Seward Highway to C Street	2003	0.19	1	2003	27610	6902.5	4	2645338	2.65			
98	134750_	2002	1854	Northern Lights Blvd.	006. New Seward Highway to C Street	2004	0.21	2	2004	27612		4	3275191	3.28	0.064	0.11	0.270
98	134750_25	2002	1855	Northern Lights Blvd.	007. C Street to Forest Park Drive	2002	0.15	0	2002	24871	6217.75	4	0	0.00			
98	134750_25	2002	1855	Northern Lights Blvd.	007. C Street to Forest Park Drive	2003	0.18	1	2003	24870	6217.5	4	2382880	2.38			
98	134750_	2002	1855	Northern Lights Blvd.	007. C Street to Minnesota Drive	2004	0.24	2	2004	24870		4	2950227	2.95	0.081	0.12	0.343
101	133200_13	2002	1869	Old Seward Highway (north end)	009. Dimond Blvd. Paving To 76th Ave.	2002	0.07	0	2002	17602	4400.5	4	0	0.00			
101	133200_13	2002	1869	Old Seward Highway (north end)	009. Dimond Blvd. Paving To 76th Ave.	2003	0.14	1	2003	17060	4265	4	1646926	1.65			
101	133200_13	2002	1869	Old Seward Highway (north end)	009. Dimond Blvd. Paving To 76th Ave.	2004	0.11	2	2004	17230.6	4307.65	4	3293941	3.29	0.033	0.06	0.141
101	133200_15	2002	1870	Old Seward Highway (north end)	010. 76th Ave. to Dowling Road Intersection paving	2002	0.08	0	2002	22043	5510.75	4	0	0.00			
101	133200_15	2002	1870	Old Seward Highway (north end)	010. 76th Ave. to Dowling Road Intersection paving	2003	0.13	1	2003	22180	5545	4	2121996	2.12			
101	133200_15	2002	1870	Old Seward Highway (north end)	010. 76th Ave. to Dowling Road Intersection paving	2004	0.15	2	2004	22317	5579.25	4	4257118	4.26	0.035	0.08	0.148
67	134300_1	2000	1766	Minnesota Drive (NB)	001. Old Seward Hwy to C Street	2000	0.08	0	2000	14192	3548	4	0	0.00			
67	134300_1	2000	1766	Minnesota Drive (NB)	001. Old Seward Hwy to C Street	2001	0.24	1	2001	21448	5362	4	1791603	1.79			
67	134300_1	2000	1766	Minnesota Drive (NB)	001. Old Seward Hwy to C Street	2002	0.34	2	2002	22920	5730	4	3849473	3.85			
67	134300_1	2000	1766	Minnesota Drive (NB)	001. Old Seward Hwy to C Street	2003	0.44	3	2003	29615	7403.75	4	6534230	6.53	0.067	0.146667	0.284

CENTRAL REGION STONE MASTIC ASPHALT WITH POLYMER MODIFIED (PG58-28) ASPHALT TRAFFIC, AGE AND RUT MEASURMENT DATA - ARTERIALS

RoadID	SecCode	FromY	SecID	Name	Description	Condition. Year	Rut Depth (in.)	Age at condition year	Traffic.Year	Total AADT	AADT	Traffic Lanes	Accum. Traffic	Accum. Traffic (mil.)	Rut/mil	Rut/year	Rut/Million Studded Tire Passes
67	134300_1	2000	1766	Minnesota Drive (NB)	001. Old Seward Hwy to C Street	2004	0.48	4	2004	32828	8207	4	9606266	9.61	0.050	0.12	0.210

		Rut/mil	Rut/year	Rut/Million Studded Tire Passes
ALL	**Average**	0.047	0.088	0.197
	Min.	0.019	0.033	0.082
	Max	0.152	0.195	0.641
	Stdev	0.021	0.030	0.089
	Count	62	62	62

CENTRAL REGION STONE MASTIC ASPHALT WITH POLYMER MODIFIED (PG58-28) ASPHALT TRAFFIC, AGE AND RUT MEASURMENT DATA - FREEWAYS

RoadID	SecCode	From Year	SecID	Name	Description	Condition Year	Rut Depth (in.)	Age at Condition Year	Traffic Year	AADT Total	AADT	Traffic Lanes	Accum. Traffic	Accum. Traffic (mil.)	Rut/mil	Rut/year	Rut/Million Studded Tire Passes
61	135000_17	2002	660	Glenn Highway	005. McCarrey St. Overpass to Boniface Rd. overpass	2002	0.1	0	2002	43230	7205	6	0	0.00			
61	135000_17	2002	660	Glenn Highway	005. McCarrey St. Overpass to Boniface Rd. overpass	2003	0.15	1	2003	43294	7215.667	6	2764431	2.76			
61	135000_	2002	660	Glenn Highway	005. McCarrey St. Overpass to Boniface Rd. overpass	2004	0.19	2	2004	43358	7226.333	6	5402043	5.40	0.035	0.095	0.148
61	135000_25	2002	662	Glenn Highway	007. Boniface Rd. overpass to Muldoon Road Overpass	2002	0.08	0	2002	48170	8028.333	6	0	0.00			
61	135000_25	2002	662	Glenn Highway	007. Boniface Rd. overpass to Muldoon Road Overpass	2003	0.23	1	2003	50032	8338.667	6	3167476	3.17			
61	135000_	2002	662	Glenn Highway	007. Boniface Rd. overpass to Muldoon Road Overpass	2004	0.18	2	2004	51894	8649	6	6324361	6.32	0.028	0.09	0.120
61	135000_33	2002	664	Glenn Highway	009. Muldoon Road overpass to Arctic Valley Rd.	2002	0.08	0	2002	56310	9385	6	0	0.00			
61	135000_33	2002	664	Glenn Highway	009. Muldoon Road overpass to Arctic Valley Rd.	2003	0.2	1	2003	57850	9641.667	6	3671748	3.67			
61	135000	2002	664	Glenn Highway	009. Muldoon Road overpass to Ship Cr. Bridge	2004	0.28	2	2004	59390	9898.333	6	7284640	7.28	0.038	0.14	0.162
61	135000_41	2002	666	Glenn Highway	011. Arctic Valley Rd. to Fort Richardson overpass	2002	0.11	0	2002	54060	9010	6	0	0.00			
61	135000_41	2002	666	Glenn Highway	011. Arctic Valley Rd. to Fort Richardson overpass	2003	0.22	1	2003	51059	8509.833	6	3307034	3.31			
61	135000_	2002	666	Glenn Highway	011. Ship Cr. Bridge to Fort Richardson overpass	2004	0.32	2	2004	51059	8509.833	6	6413123	6.41	0.050	0.16	0.210
61	135000_49	2002	668	Glenn Highway	013. Fort Richardson mile 7.1	2002	0.11	0	2002	48223	8037.167	6	0	0.00			
61	135000_49	2002	668	Glenn Highway	013. Fort Richardson mile 7.1	2003	0.18	1	2003	49546	8257.667	6	3144630	3.14			
61	135000_	2002	668	Glenn Highway	013. Fort Richardson mile 7.1	2004	0.26	2	2004	50869	8478.167	6	6239161	6.24	0.042	0.13	0.175
61	135000_65	2001	672	Glenn Highway	023. Highland Dr. pvmt. Break to Eagle R. Bridge	2001	0.14	0	2001	39880	7976	5	0	0.00			
61	135000_65	2001	672	Glenn Highway	023. Highland Dr. pvmt. Break to Eagle R. Bridge	2002	0.26	1	2002	41024	8204.8	5	3119436	3.12			
61	135000_65	2001	672	Glenn Highway	023. Highland Dr. pvmt. Break to Eagle R. Bridge	2003	0.34	2	2003	42150	8430	5	6175837	6.18	0.055	0.17	0.232
61	135000_	2001	672	Glenn Highway	023. Highland Dr. pvmt. Break to Eagle R. Bridge	2004	0.55	3	2004	43276	8655.2	5	9314435	9.31	0.059	0.183333	0.249
61	135000_73	2001	674	Glenn Highway	025. Eagle R. Bridge to Artillery Road	2001	0.18	0	2001	39880	9970	4	0	0.00			
61	135000_73	2001	674	Glenn Highway	025. Eagle R. Bridge to Artillery Road	2002	0.26	1	2002	41024	10256	4	3899295	3.90			
61	135000_73	2001	674	Glenn Highway	025. Eagle R. Bridge to Artillery Road	2003	0.27	2	2003	42150	10537.5	4	7719796	7.72	0.035	0.135	0.147
61	135000_	2001	674	Glenn Highway	025. Eagle R. Bridge to Artillery Road	2004	0.49	3	2004	43288	10822	4	11643865	11.64	0.042	0.163333	0.177
61	135000_81	2001	676	Glenn Highway	027. Artillery Rd. to North Eagle River off-ramp	2001	0.07	0	2001	26332	6583	4	0	0.00			
61	135000_81	2001	676	Glenn Highway	027. Artillery Rd. to North Eagle River off-ramp	2002	0.16	1	2002	27572	6893	4	2607797	2.61			
61	135000_81	2001	676	Glenn Highway	027. Artillery Rd. to North Eagle River off-ramp	2003	0.21	2	2003	28330	7082.5	4	5175618	5.18	0.041	0.105	0.171
61	135000_	2001	676	Glenn Highway	027. Artillery Rd. to North Eagle River off-ramp	2004	0.37	3	2004	29409	7352.333	4	7834597	7.83	0.047	0.123333	0.199
61	135000_85	2001	3016	Glenn Highway	029. N. Eagle River Off-Ramp to end curve	2001	0.02	0	2001	29392	7348	4	0	0.00			
61	135000_85	2001	3016	Glenn Highway	029. N. Eagle River Off-Ramp to end curve	2002	0.1	1	2002	30960	7740	4	2923431	2.92			
61	135000_85	2001	3016	Glenn Highway	029. N. Eagle River Off-Ramp to end curve	2003	0.25	2	2003	31810	7952.5	4	5806703	5.81	0.043	0.125	0.181
61	135000_	2001	3016	Glenn Highway	029. N. Eagle River Off-Ramp to end curve	2004	0.27	3	2004	33139	8284.667	4	8800296	8.80	0.031	0.09	0.129
61	135000_89	2001	678	Glenn Highway	031. end curve past N Eagle R. overpass to S. Birchwood Loop Rd.	2001	0.01	0	2001	29392	7348	4	0	0.00			
61	135000_89	2001	678	Glenn Highway	031. end curve past N Eagle R. overpass to S. Birchwood Loop Rd.	2002	0.14	1	2002	30960	7740	4	2923431	2.92			
61	135000_89	2001	678	Glenn Highway	031. end curve past N Eagle R. overpass to S. Birchwood Loop Rd.	2003	0.32	2	2003	31810	7952.5	4	5806703	5.81	0.055	0.16	0.232
61	135000_89	2001	678	Glenn Highway	031. end curve past N Eagle R. overpass to S. Birchwood Loop Rd.	2004	0.35	3	2004	33139	8284.667	4	8800296	8.80	0.040	0.116667	0.167
61	135000_97	2000	680	Glenn Highway	033. S. Birchwood Loop Rd. to mile 17	2000	0.03	0	2000	31744	7936	4	0	0.00			
61	135000_97	2000	680	Glenn Highway	033. S. Birchwood Loop Rd. to mile 17	2001	0.13	1	2001	32820	8205	4	3115111	3.12			
61	135000_97	2000	680	Glenn Highway	033. S. Birchwood Loop Rd. to mile 17	2002	0.27	2	2002	34980	8745	4	6257761	6.26	0.043	0.135	0.182
61	135000_97	2000	680	Glenn Highway	033. S. Birchwood Loop Rd. to mile 17	2003	0.34	3	2003	32788	8197	4	9299671	9.30	0.037	0.113333	0.154
61	135000_	2000	680	Glenn Highway	033. S. Birchwood Loop Rd. to mile 17	2004	0.49	4	2004	34406	8601.5	4	12402308	12.40	0.040	0.1225	0.166
61	135000_99	2000	3214	Glenn Highway	035. Mile 17 to mile 18	2000	0.02	0	2000	31744	7936	4	0	0.00			
61	135000_99	2000	3214	Glenn Highway	035. Mile 17 to mile 18	2001	0.17	1	2001	32820	8205	4	3115111	3.12			
61	135000_99	2000	3214	Glenn Highway	035. Mile 17 to mile 18	2002	0.29	2	2002	34980	8745	4	6257761	6.26	0.046	0.145	0.195
61	135000_99	2000	3214	Glenn Highway	035. Mile 17 to mile 18	2003	0.37	3	2003	32788	8197	4	9299671	9.30	0.040	0.123333	0.168
61	135000_	2000	3214	Glenn Highway	035. Mile 17 to mile 18	2004	0.59	4	2004	34406	8601.5	4	12402308	12.40	0.048	0.1475	0.200
61	135000_10	2000	3215	Glenn Highway	037. Mile 18 to mile 19	2000	0.01	0	2000	31744	7936	4	0	0.00			
61	135000_10	2000	3215	Glenn Highway	037. Mile 18 to mile 19	2001	0.11	1	2001	32820	8205	4	3115111	3.12			
61	135000_10	2000	3215	Glenn Highway	037. Mile 18 to mile 19	2002	0.25	2	2002	34980	8745	4	6257761	6.26	0.040	0.125	0.168
61	135000_10	2000	3215	Glenn Highway	037. Mile 18 to mile 19	2003	0.39	3	2003	32788	8197	4	9299671	9.30	0.042	0.13	0.177
61	135000_10	2000	3215	Glenn Highway	037. Mile 18 to mile 19	2004	0.53	4	2004	34406	8601.5	4	12402308	12.40	0.043	0.1325	0.180
61	135000_10	2000	3216	Glenn Highway	039. Mile 19 to North Birchwood Loop	2000	0.01	0	2000	31744	7936	4	0	0.00			
61	135000_10	2000	3216	Glenn Highway	039. Mile 19 to North Birchwood Loop	2001	0.09	1	2001	32820	8205	4	3115111	3.12			
61	135000_10	2000	3216	Glenn Highway	039. Mile 19 to North Birchwood Loop	2002	0.22	2	2002	34980	8745	4	6257761	6.26	0.035	0.11	0.148
61	135000_10	2000	3216	Glenn Highway	039. Mile 19 to North Birchwood Loop	2003	0.25	3	2003	32788	8197	4	9299671	9.30	0.027	0.083333	0.113
61	135000_10	2000	3216	Glenn Highway	039. Mile 19 to North Birchwood Loop	2004	0.42	4	2004	34406	8601.5	4	12402308	12.40	0.034	0.105	0.143
61	135000_10	2000	682	Glenn Highway	041. N. Birchwood Loop Rd. to Peters Creek undercrossing	2000	0.03	0	2000	25860	6465	4	0	0.00			
61	135000_10	2000	682	Glenn Highway	041. N. Birchwood Loop Rd. to Peters Creek undercrossing	2001	0.17	1	2001	26740	6685	4	2537936	2.54			
61	135000_10	2000	682	Glenn Highway	041. N. Birchwood Loop Rd. to Peters Creek undercrossing	2002	0.3	2	2002	28500	7125	4	5098411	5.10	0.059	0.15	0.248
61	135000_10	2000	682	Glenn Highway	041. N. Birchwood Loop Rd. to Peters Creek undercrossing	2003	0.27	3	2003	29870	7467.5	4	7792796	7.79	0.035	0.09	0.146
61	135000_10	2000	682	Glenn Highway	041. N. Birchwood Loop Rd. to Peters Creek undercrossing	2004	0.52	4	2004	31190	7797.5	4	10608771	10.61	0.049	0.13	0.206
61	135000_11	2001	684	Glenn Highway	043. Peters Creek Interchange to N. Peters Creek Interchange	2001	0.12	0	2001	25720	6430	4	0	0.00			
61	135000_11	2001	684	Glenn Highway	043. Peters Creek Interchange to N. Peters Creek Interchange	2002	0.21	1	2002	27410	6852.5	4	2579957	2.58			

CENTRAL REGION STONE MASTIC ASPHALT WITH POLYMER MODIFIED (PG58-28) ASPHALT TRAFFIC, AGE AND RUT MEASURMENT DATA - FREEWAYS

RoadID	SecCode	From Year	SecID	Name	Description	Condition Year	Rut Depth (in.)	Age at Condition Year	Traffic Year	AADT Total	AADT	Traffic Lanes	Accum. Traffic	Accum. Traffic (mil.)	Rut/mil	Rut/year	Rut/Million Studded Tire Passes
61	135000_11	2001	684	Glenn Highway	043. Peters Creek Interchange to N. Peters Creek Interchange	2003	0.29	2	2003	28730	7182.5	4	5171457	5.17	0.056	0.145	0.236
61	135000_11	2001	684	Glenn Highway	043. Peters Creek Interchange to N. Peters Creek Interchange	2004	0.32	3	2004	30297	7574.167	4	7900288	7.90	0.041	0.106667	0.171
61	135000_12	2001	686	Glenn Highway	045. N. Peters Cr. Interchange to Mirror Lk. Undercrossing	2001	0.09	0	2001	23960	5990	4	0	0.00			
61	135000_12	2001	686	Glenn Highway	045. N. Peters Cr. Interchange to Mirror Lk. Undercrossing	2002	0.19	1	2002	25540	6385	4	2403799	2.40			
61	135000_12	2001	686	Glenn Highway	045. N. Peters Cr. Interchange to Mirror Lk. Undercrossing	2003	0.24	2	2003	26770	6692.5	4	4818502	4.82	0.050	0.12	0.210
61	135000_12	2001	686	Glenn Highway	045. N. Peters Cr. Interchange to Mirror Lk. Undercrossing	2004	0.34	3	2004	28233	7058.333	4	7361411	7.36	0.046	0.113333	0.194
61	135000_12	2001	688	Glenn Highway	047. Mirror Lk. overcrossing to mile 23	2001	0.05	0	2001	23960	5990	4	0	0.00			
61	135000_12	2001	688	Glenn Highway	047. Mirror Lk. overcrossing to mile 23	2002	0.17	1	2002	25540	6385	4	2403799	2.40			
61	135000_12	2001	688	Glenn Highway	047. Mirror Lk. overcrossing to mile 23	2003	0.26	2	2003	26770	6692.5	4	4818502	4.82	0.054	0.13	0.227
61	135000_12	2001	688	Glenn Highway	047. Mirror Lk. overcrossing to mile 23	2004	0.34	3	2004	28233	7058.333	4	7361411	7.36	0.046	0.113333	0.194
61	135000_13	2000	690	Glenn Highway	049. Mile 23 overcrossing to Eklutna River Bridge	2000	0	0	2000	23092	5773	4	0	0.00			
61	135000_13	2000	690	Glenn Highway	049. Mile 23 overcrossing to Eklutna River Bridge	2001	0.05	1	2001	23960	5990	4	2271906	2.27			
61	135000_13	2000	690	Glenn Highway	049. Mile 23 overcrossing to Eklutna River Bridge	2002	0.15	2	2002	25540	6385	4	4566387	4.57	0.033	0.075	0.138
61	135000_13	2000	690	Glenn Highway	049. Mile 23 overcrossing to Eklutna River Bridge	2003	0.27	3	2003	26770	6692.5	4	6981090	6.98	0.039	0.09	0.163
61	135000_13	2000	690	Glenn Highway	049. Mile 23 overcrossing to Eklutna River Bridge	2004	0.3	4	2004	28233	7058.333	4	9524000	9.52	0.031	0.075	0.133
61	135000_14	2001	692	Glenn Highway	051. Eklutna River Bridge to RR Overpass	2001	0.06	0	2001	23960	5990	4	0	0.00			
61	135000_14	2001	692	Glenn Highway	051. Eklutna River Bridge to RR Overpass	2002	0.15	1	2002	25540	6385	4	2403799	2.40			
61	135000_14	2001	692	Glenn Highway	051. Eklutna River Bridge to RR Overpass	2003	0.23	2	2003	26770	6692.5	4	4818502	4.82	0.048	0.115	0.201
61	135000_14	2001	692	Glenn Highway	051. Eklutna River Bridge to RR Overpass	2004	0.3	3	2004	28233.33	7058.333	4	7361411	7.36	0.041	0.1	0.172
104	135000_14	2001	693	Glenn Highway SB	007. Pavement break To Eklutna overcrossing	2001	0.05	0	2001	22411	5602.75	4	0	0.00			
104	135000_14	2001	693	Glenn Highway SB	007. Pavement break To Eklutna overcrossing	2002	0.12	1	2002	21398	5349.5	4	1975677	1.98			
104	135000_14	2001	693	Glenn Highway SB	007. Pavement break To Eklutna overcrossing	2003	0.18	2	2003	22220	5555	4	3984500	3.98	0.045	0.09	0.190
104	135000_14	2001	693	Glenn Highway SB	007. Pavement break To Eklutna RR overcrossing	2004	0.23	3	2004	21818.67	5454.667	4	5984608	5.98	0.038	0.076667	0.162
104	135000_14	2001	691	Glenn Highway SB	008. Eklutna overcrossing to Eklutna R. Bridge	2001	0.06	0	2001	23079	5769.75	4	0	0.00			
104	135000_14	2001	691	Glenn Highway SB	008. Eklutna overcrossing to Eklutna R. Bridge	2002	0.16	1	2002	24600	6150	4	2210052	2.21			
104	135000_14	2001	691	Glenn Highway SB	008. Eklutna overcrossing to Eklutna R. Bridge	2003	0.25	2	2003	25782	6445.5	4	4535695	4.54	0.055	0.125	0.232
104	135000_14	2001	691	Glenn Highway SB	008. Eklutna RR overcrossing to Eklutna R. Bridge	2004	0.3	3	2004	27189.33	6797.333	4	6984617	6.98	0.043	0.1	0.181
104	135000_13	2001	689	Glenn Highway SB	009. Eklutna R. Bridge to Mirror Lk. Overpass	2001	0.03	0	2001	23079	5769.75	4	0	0.00			
104	135000_13	2001	689	Glenn Highway SB	009. Eklutna R. Bridge to Mirror Lk. Overpass	2002	0.16	1	2002	24600	6150	4	2210052	2.21			
104	135000_13	2001	689	Glenn Highway SB	009. Eklutna R. Bridge to Mirror Lk. Overpass	2003	0.29	2	2003	25782	6445.5	4	4535695	4.54	0.064	0.145	0.269
104	135000_13	2001	689	Glenn Highway SB	009. Eklutna R. Bridge to Mirror Lk. Overpass	2004	0.42	3	2004	27189.33	6797.333	4	6984617	6.98	0.060	0.14	0.253
104	135000_12	2001	687	Glenn Highway SB	010. Mirror Lk. Bridge to N. Peters Cr. Overcrossing	2001	0.06	0	2001	23079	5769.75	4	0	0.00			
104	135000_12	2001	687	Glenn Highway SB	010. Mirror Lk. Bridge to N. Peters Cr. Overcrossing	2002	0.18	1	2002	24600	6150	4	2210052	2.21			
104	135000_12	2001	687	Glenn Highway SB	010. Mirror Lk. Bridge to N. Peters Cr. Overcrossing	2003	0.24	2	2003	25782	6445.5	4	4535695	4.54	0.053	0.12	0.223
104	135000_12	2001	687	Glenn Highway SB	010. Mirror Lk. Bridge to MP 23	2004	0.34	3	2004	27189.33	6797.333	4	6984617	6.98	0.049	0.113333	0.205
104	135000_11	2001	685	Glenn Highway SB	011. N. Peters Creek Overcrossing to Peters Creek undercrossing	2001	0.11	0	2001	23960	5990	4	0	0.00			
104	135000_11	2001	685	Glenn Highway SB	011. N. Peters Creek Overcrossing to Peters Creek undercrossing	2002	0.18	1	2002	25540	6385	4	2294481	2.29			
104	135000_11	2001	685	Glenn Highway SB	011. N. Peters Creek Overcrossing to Peters Creek undercrossing	2003	0.22	2	2003	26770	6692.5	4	4709184	4.71	0.047	0.11	0.197
104	135000_11	2001	685	Glenn Highway SB	011. MP 23 to MP 22	2004	0.36	3	2004	28233.33	7058.333	4	7252094	7.25	0.050	0.12	0.209
104	135000_10	2000	683	Glenn Highway SB	012. Peters Creek undercrossing to N. Birchwood Loop Rd.	2000	0.01	0	2000	24276.7	6069.167	4	0	0.00			
104	135000_10	2000	683	Glenn Highway SB	012. Peters Creek undercrossing to N. Birchwood Loop Rd.	2001	0.08	1	2001	25720	6430	4	2314024	2.31			
104	135000_10	2000	683	Glenn Highway SB	012. Peters Creek undercrossing to N. Birchwood Loop Rd.	2002	0.2	2	2002	27410	6852.5	4	4776633	4.78	0.042	0.1	0.176
104	135000_10	2000	683	Glenn Highway SB	012. Peters Creek undercrossing to N. Birchwood Loop Rd.	2003	0.38	3	2003	28730	7182.5	4	7368133	7.37	0.052	0.126667	0.217
104	135000_10	2000	683	Glenn Highway SB	012. MP 22 to N. Birchwood Loop Rd.	2004	0.5	4	2004	30296.67	7574.167	4	10096965	10.10	0.050	0.125	0.209
104	135000_10	2000	681	Glenn Highway SB	013. N. Birchwood Loop Rd. to mile 19	2000	0.01	0	2000	25240	6310	4	0	0.00			
104	135000_10	2000	681	Glenn Highway SB	013. N. Birchwood Loop Rd. to mile 19	2001	0.07	1	2001	26740	6685	4	2405806	2.41			
104	135000_10	2000	681	Glenn Highway SB	013. N. Birchwood Loop Rd. to mile 19	2002	0.2	2	2002	28500	7125	4	4966281	4.97	0.040	0.1	0.170
104	135000_10	2000	681	Glenn Highway SB	013. N. Birchwood Loop Rd. to mile 19	2003	0.37	3	2003	29870	7467.5	4	7660666	7.66	0.048	0.123333	0.203
104	135000_10	2000	681	Glenn Highway SB	013. N. Birchwood Loop Rd. to mile 19	2004	0.39	4	2004	31500	7875	4	10497856	10.50	0.037	0.0975	0.156
104	135000_98	2000	3206	Glenn Highway SB	014. Mile 19 to mile 18	2000	0.01	0	2000	31744	7936	4	0	0.00			
104	135000_98	2000	3206	Glenn Highway SB	014. Mile 19 to mile 18	2001	0.12	1	2001	32820	8205	4	2970279	2.97			
104	135000_98	2000	3206	Glenn Highway SB	014. Mile 19 to mile 18	2002	0.25	2	2002	34980	8745	4	6112929	6.11	0.041	0.125	0.172
104	135000_98	2000	3206	Glenn Highway SB	014. Mile 19 to mile 18	2003	0.48	3	2003	32788	8197	4	9154839	9.15	0.052	0.16	0.221
104	135000_	2000	3206	Glenn Highway SB	014. Mile 19 to mile 18	2004	0.59	4	2004	33497.33	8374.333	4	12195289	12.20	0.048	0.1475	0.204
104	135000_96	2000	3207	Glenn Highway SB	015. Mile 18 to mile 17	2000	0.01	0	2000	31744	7936	4	0	0.00			
104	135000_96	2000	3207	Glenn Highway SB	015. Mile 18 to mile 17	2001	0.11	1	2001	32820	8205	4	2970279	2.97			
104	135000_96	2000	3207	Glenn Highway SB	015. Mile 18 to mile 17	2002	0.26	2	2002	34980	8745	4	6112929	6.11	0.043	0.13	0.179
104	135000_96	2000	3207	Glenn Highway SB	015. Mile 18 to mile 17	2003	0.35	3	2003	32788	8197	4	9154839	9.15	0.038	0.116667	0.161
104	135000_	2000	3207	Glenn Highway SB	015. Mile 18 to mile 17	2004	0.59	4	2004	33497.33	8374.333	4	12195289	12.20	0.048	0.1475	0.204
104	135000_94	2000	3208	Glenn Highway SB	016. Mile 17 to South Birchwood	2000	0.01	0	2000	31744	7936	4	0	0.00			
104	135000_94	2000	3208	Glenn Highway SB	016. Mile 17 to South Birchwood	2001	0.1	1	2001	32820	8205	4	2970279	2.97			
104	135000_94	2000	3208	Glenn Highway SB	016. Mile 17 to South Birchwood	2002	0.21	2	2002	34980	8745	4	6112929	6.11	0.034	0.105	0.145

CENTRAL REGION STONE MASTIC ASPHALT WITH POLYMER MODIFIED (PG58-28) ASPHALT TRAFFIC, AGE AND RUT MEASURMENT DATA - FREEWAYS

RoadID	SecCode	From Year	SecID	Name	Description	Condition Year	Rut Depth (in.)	Age at Condition Year	Traffic Year	AADT Total	AADT	Traffic Lanes	Accum. Traffic	Accum. Traffic (mil.)	Rut/mil	Rut/year	Rut/Million Studded Tire Passes
104	135000_94	2000	3208	Glenn Highway SB	016. Mile 17 to South Birchwood	2003	0.31	3	2003	32788	8197	4	9154839	9.15	0.034	0.103333	0.143
104	135000	2000	3208	Glenn Highway SB	016. Mile 17 to South Birchwood-pvmt break	2004	0.46	4	2004	33497.33	8374.333	4	12195289	12.20	0.038	0.115	0.159
104	135000_92	2001	679	Glenn Highway SB	017. S. Birchwood Loop Rd. to N. Eagle River off-ramp	2001	0.03	0	2001	29392	7348	4	0	0.00			
104	135000_92	2001	679	Glenn Highway SB	017. S. Birchwood Loop Rd. to N. Eagle River off-ramp	2002	0.16	1	2002	30960	7740	4	2789330	2.79			
104	135000_92	2001	679	Glenn Highway SB	017. S. Birchwood Loop Rd. to N. Eagle River off-ramp	2003	0.28	2	2003	31810	7952.5	4	5672602	5.67	0.049	0.14	0.208
104	135000	2001	679	Glenn Highway SB	017. S. Birchwood Loop Rd. to N. Eagle River off-ramp	2004	0.45	3	2004	33139	8284.667	4	8666195	8.67	0.052	0.15	0.219
104	135000_88	2001	3017	Glenn Highway SB	018. N. Eagle River Off-Ramp to next On-Ramp	2001	0.05	0	2001	29392	7348	4	0	0.00			
104	135000_88	2001	3017	Glenn Highway SB	018. N. Eagle River Off-Ramp to next On-Ramp	2002	0.14	1	2002	30960	7740	4	2789330	2.79			
104	135000_88	2001	3017	Glenn Highway SB	018. N. Eagle River Off-Ramp to next On-Ramp	2003	0.19	2	2003	31810	7952.5	4	5672602	5.67	0.033	0.095	0.141
104	135000_88	2001	3017	Glenn Highway SB	018. N. Eagle River Off-Ramp to next On-Ramp	2004	0.29	3	2004	33139	8284.667	4	8666195	8.67	0.033	0.096667	0.141
104	135000_84	2001	677	Glenn Highway SB	019. North Eagle River On-Ramp to Artillery Rd. overpass	2001	0.03	0	2001	26328	6582	4	0	0.00			
104	135000_84	2001	677	Glenn Highway SB	019. North Eagle River On-Ramp to Artillery Rd. overpass	2002	0.17	1	2002	27572	6893	4	2487566	2.49			
104	135000_84	2001	677	Glenn Highway SB	019. North Eagle River On-Ramp to Artillery Rd. overpass	2003	0.24	2	2003	28330	7082.5	4	5055387	5.06	0.047	0.12	0.200
104	135000_84	2001	677	Glenn Highway SB	019. North Eagle River On-Ramp to Artillery Rd. overpass	2004	0.34	3	2004	29412	7353	4	7714549	7.71	0.044	0.113333	0.186
104	135000_78	2001	675	Glenn Highway SB	020. Artillery Road overpass to Eagle R. Bridge	2001	0.06	0	2001	39880	9970	4	0	0.00			
104	135000_78	2001	675	Glenn Highway SB	020. Artillery Road overpass to Eagle R. Bridge	2002	0.2	1	2002	41024	10256	4	3717343	3.72			
104	135000_78	2001	675	Glenn Highway SB	020. Artillery Road overpass to Eagle R. Bridge	2003	0.27	2	2003	42150	10537.5	4	7537843	7.54	0.036	0.135	0.151
104	135000_78	2001	675	Glenn Highway SB	020. Artillery Road overpass to Eagle R. Bridge	2004	0.43	3	2004	43288	10822	4	11461913	11.46	0.038	0.143333	0.158
104	135000_68	2001	673	Glenn Highway SB	021. Eagle R. Bridge to Highland Dr. SB Off Ramp	2001	0.1	0	2001	39880	7976	5	0	0.00			
104	135000_68	2001	673	Glenn Highway SB	021. Eagle R. Bridge to Highland Dr. SB Off Ramp	2002	0.22	1	2002	41024	8204.8	5	2973874	2.97			
104	135000_68	2001	673	Glenn Highway SB	021. Eagle R. Bridge to Highland Dr. SB Off Ramp	2003	0.23	2	2003	42150	8430	5	6030275	6.03	0.038	0.115	0.161
104	135000_68	2001	673	Glenn Highway SB	021. Eagle R. Bridge to Highland Dr. SB Off Ramp	2004	0.26	3	2004	43288	8657.6	5	9169530	9.17	0.028	0.086667	0.119
104	135000_60	2002	671	Glenn Highway SB	023. Highland Dr. SB On-Ramp to Scalehouse entrance	2002	0.08	0	2002	48222	8037	6	0	0.00			
104	135000_60	2002	671	Glenn Highway SB	023. Highland Dr. SB On-Ramp to Scalehouse entrance	2003	0.11	1	2003	49546	8257.667	6	2993913	2.99			
104	135000_60	2002	671	Glenn Highway SB	023. Highland Dr. SB On-Ramp to Scalehouse entrance	2004	0.19	2	2004	50870	8478.333	6	6068368	6.07	0.031	0.095	0.132
104	135000_52	2002	669	Glenn Highway SB	024. Scalehouse entrance to mile 9	2002	0.07	0	2002	48222	8037	6	0	0.00			
104	135000_52	2002	669	Glenn Highway SB	024. Scalehouse entrance to mile 9	2003	0.13	1	2003	49546	8257.667	6	2993913	2.99			
104	135000_52	2002	669	Glenn Highway SB	024. Scalehouse entrance to mile 9	2004	0.21	2	2004	50870	8478.333	6	6068368	6.07	0.035	0.105	0.146
104	135000_50	2002	3209	Glenn Highway SB	025. Mile 9 to mile 8	2002	0.07	0	2002	48222	8037	6	0	0.00			
104	135000_50	2002	3209	Glenn Highway SB	025. Mile 9 to mile 8	2003	0.14	1	2003	49546	8257.667	6	2993913	2.99			
104	135000_50	2002	3209	Glenn Highway SB	025. Mile 9 to mile 8	2004	0.24	2	2004	50870	8478.333	6	6068368	6.07	0.040	0.12	0.167
104	135000_48	2002	3210	Glenn Highway SB	026. Mile 8 to mile 7	2002	0.07	0	2002	48222	8037	6	0	0.00			
104	135000_48	2002	3210	Glenn Highway SB	026. Mile 8 to mile 7	2003	0.16	1	2003	49546	8257.667	6	2993913	2.99			
104	135000_48	2002	3210	Glenn Highway SB	026. Mile 8 to mile 7	2004	0.28	2	2004	50870	8478.333	6	6068368	6.07	0.046	0.14	0.194
104	135000_46	2002	3211	Glenn Highway SB	027. Mile 7 to Fort Richardson overpass	2002	0.07	0	2002	48222	8037	6	0	0.00			
104	135000_46	2002	3211	Glenn Highway SB	027. Mile 7 to Fort Richardson overpass	2003	0.17	1	2003	49546	8257.667	6	2993913	2.99			
104	135000_46	2002	3211	Glenn Highway SB	027. Mile 7 to Fort Richardson overpass	2004	0.3	2	2004	50870	8478.333	6	6068368	6.07	0.049	0.15	0.208
104	135000_44	2002	667	Glenn Highway SB	028. Fort Richardson overpass to Ship Cr. Bridge	2002	0.07	0	2002	54060	9010	6	0	0.00			
104	135000_44	2002	667	Glenn Highway SB	028. Fort Richardson overpass to Ship Cr. Bridge	2003	0.18	1	2003	51059	8509.833	6	3151729	3.15			
104	135000_44	2002	667	Glenn Highway SB	028. Fort Richardson overpass to Ship Cr. Bridge	2004	0.27	2	2004	51570	8594.932	6	6281114	6.28	0.043	0.135	0.181
104	135000_36	2002	665	Glenn Highway SB	029. Ship Cr. Bridge to Muldoon Rd.	2002	0.06	0	2002	56310	9385	6	0	0.00			
104	135000_36	2002	665	Glenn Highway SB	029. Ship Cr. Bridge to Muldoon Rd.	2003	0.2	1	2003	57850	9641.667	6	3495788	3.50			
104	135000_36	2002	665	Glenn Highway SB	029. Ship Cr. Bridge to Muldoon Rd.	2004	0.29	2	2004	59390	9898.333	6	7085258	7.09	0.041	0.145	0.172
104	135000_28	2002	663	Glenn Highway SB	030. Muldoon Road to Boniface Rd. overpass	2002	0.1	0	2002	48170	8028.333	6	0	0.00			
104	135000_28	2002	663	Glenn Highway SB	030. Muldoon Road to Boniface Rd. overpass	2003	0.12	1	2003	50032	8338.667	6	3015295	3.02			
104	135000_28	2002	663	Glenn Highway SB	030. Muldoon Road to Boniface Rd. overpass	2004	0.17	2	2004	51894	8649	6	6143863	6.14	0.028	0.085	0.117
67	134300_3	2000	1767	Minnesota Drive (NB)	002. C Street to 100th Ave. overcrossing	2000	0.08	0	2000	20032	5008	4	0	0.00			
67	134300_3	2000	1767	Minnesota Drive (NB)	002. C Street to 100th Ave. overcrossing	2001	0.26	1	2001	20192	5048	4	1930266	1.93			
67	134300_3	2000	1767	Minnesota Drive (NB)	002. C Street to 100th Ave. overcrossing	2002	0.36	2	2002	26605	6651.25	4	4211676	4.21	0.085	0.18	0.360
67	134300_3	2000	1767	Minnesota Drive (NB)	002. C Street to 100th Ave. overcrossing	2003	0.48	3	2003	25857	6464.25	4	6706163	6.71	0.072	0.16	0.301
67	134300_3	2000	1767	Minnesota Drive (NB)	002. C Street to 100th Ave. overcrossing	2004	0.56	4	2004	29883	7470.75	4	9477485	9.48	0.059	0.14	0.249
67	134300_5	2000	1768	Minnesota Drive (NB)	003. 100th Ave. Overcrossing to Dimond Blvd.	2000	0.1	0	2000	18880	4720	4	0	0.00			
67	134300_5	2000	1768	Minnesota Drive (NB)	003. 100th Ave. Overcrossing to Dimond Blvd.	2001	0.26	1	2001	25236	6309	4	2243929	2.24			
67	134300_5	2000	1768	Minnesota Drive (NB)	003. 100th Ave. Overcrossing to Dimond Blvd.	2002	0.34	2	2002	26960	6740	4	4664700	4.66	0.073	0.17	0.307
67	134300_5	2000	1768	Minnesota Drive (NB)	003. 100th Ave. Overcrossing to Dimond Blvd.	2003	0.45	3	2003	28569	7142.25	4	7365262	7.37	0.061	0.15	0.257
67	134300_5	2000	1768	Minnesota Drive (NB)	003. 100th Ave. Overcrossing to Dimond Blvd.	2004	0.57	4	2004	30255	7563.667	4	10225583	10.23	0.056	0.1425	0.235
67	134300_7	2000	1769	Minnesota Drive (NB)	004. Dimond Blvd to Strawberry Road Exit	2000	0.1	0	2000	32720	8180	4	0	0.00			
67	134300_7	2000	1769	Minnesota Drive (NB)	004. Dimond Blvd to Strawberry Road Exit	2001	0.31	1	2001	39184	9796	4	3577365	3.58			
67	134300_7	2000	1769	Minnesota Drive (NB)	004. Dimond Blvd to Strawberry Road Exit	2002	0.37	2	2002	38622	9655.5	4	7114443	7.11	0.052	0.185	0.219
67	134300_7	2000	1769	Minnesota Drive (NB)	004. Dimond Blvd to Strawberry Road Exit	2003	0.52	3	2003	40773	10193.25	4	10971937	10.97	0.047	0.173333	0.200
67	134300_7	2000	1769	Minnesota Drive (NB)	004. Dimond Blvd to Strawberry Road Exit	2004	0.62	4	2004	41115.33	10278.83	4	14903490	14.90	0.042	0.155	0.175
67	134300_9	2000	1770	Minnesota Drive (NB)	005. Strawberry Rd. Exit to Raspberry Rd.	2000	0.07	0	2000	22960	5740	4	0	0.00			

CENTRAL REGION STONE MASTIC ASPHALT WITH POLYMER MODIFIED (PG58-28) ASPHALT TRAFFIC, AGE AND RUT MEASURMENT DATA - FREEWAYS

RoadID	SecCode	From Year	SecID	Name	Description	Condition Year	Rut Depth (in.)	Age at Condition Year	Traffic Year	AADT Total	AADT	Traffic Lanes	Accum. Traffic	Accum. Traffic (mil.)	Rut/mil	Rut/year	Rut/Million Studded Tire Passes
67	134300_9	2000	1770	Minnesota Drive (NB)	005. Strawberry Rd. Exit to Raspberry Rd.	2001	0.32	1	2001	28320	7080	4	2566680	2.57			
67	134300_9	2000	1770	Minnesota Drive (NB)	005. Strawberry Rd. Exit to Raspberry Rd.	2002	0.45	2	2002	37818	9454.5	4	5800899	5.80	0.078	0.225	0.327
67	134300_9	2000	1770	Minnesota Drive (NB)	005. Strawberry Rd. Exit to Raspberry Rd.	2003	0.6	3	2003	38140	9535	4	9447843	9.45	0.064	0.2	0.267
67	134300_9	2000	1770	Minnesota Drive (NB)	005. Strawberry Rd. Exit to Raspberry Rd.	2004	0.76	4	2004	38462	9615.5	4	13125637	13.13	0.058	0.19	0.244
67	134300_11	2000	1771	Minnesota Drive (NB)	006. Raspberry Rd. to International Airport Rd. Interchange project	2000	0.08	0	2000	28812	7203	4	0	0.00			
67	134300_11	2000	1771	Minnesota Drive (NB)	006. Raspberry Rd. to International Airport Rd. Interchange project	2001	0.37	1	2001	47648	11912	4	4049639	4.05			
67	134300_11	2000	1771	Minnesota Drive (NB)	006. Raspberry Rd. to International Airport Rd. Interchange project	2002	0.4	2	2002	49896	12474	4	8551366	8.55	0.047	0.2	0.197
67	134300_11	2000	1771	Minnesota Drive (NB)	006. Raspberry Rd. to International Airport Rd. Interchange project	2003	0.46	3	2003	51981	12995.25	4	13484232	13.48	0.034	0.153333	0.144
67	134300_11	2000	1771	Minnesota Drive (NB)	006. Raspberry Rd. to International Airport Rd. Interchange project	2004	0.5	4	2004	54175	13543.67	4	18624799	18.62	0.027	0.125	0.113
67	134300_13	2000	3940	Minnesota Drive (NB)	006.5 International Airport Road Interchange Project	2000	0.06	0	2000	28812	7203	4	0	0.00			
67	134300_13	2000	3940	Minnesota Drive (NB)	006.5 International Airport Road Interchange Project	2001	0.25	1	2001	49608	12402	4	4183776	4.18			
67	134300_13	2000	3940	Minnesota Drive (NB)	006.5 International Airport Road Interchange Project	2002	0.31	2	2002	45283	11320.75	4	8414514	8.41	0.037	0.155	0.155
67	134300_13	2000	3940	Minnesota Drive (NB)	006.5 International Airport Road Interchange Project	2003	0.33	3	2003	46242	11560.5	4	12823198	12.82	0.026	0.11	0.108
67	134300_13	2000	3940	Minnesota Drive (NB)	006.5 International Airport Road Interchange Project	2004	0.43	4	2004	43678	10919.58	4	17066612	17.07	0.025	0.1075	0.106
229	134300_12	2000	3941	Minnesota Drive (SB)	004.5 International Airport Road Interchange Project	2000	0.06	0	2000	28812	4802	6	0	0.00			
229	134300_12	2000	3941	Minnesota Drive (SB)	004.5 International Airport Road Interchange Project	2001	0.32	1	2001	49608	8268	6	2701548	2.70			
229	134300_12	2000	3941	Minnesota Drive (SB)	004.5 International Airport Road Interchange Project	2002	0.26	2	2002	45283	7547.167	6	5522039	5.52	0.047	0.13	0.198
229	134300_12	2000	3941	Minnesota Drive (SB)	004.5 International Airport Road Interchange Project	2003	0.38	3	2003	46242	7707	6	8461162	8.46	0.045	0.126667	0.189
229	134300_12	2000	3941	Minnesota Drive (SB)	004.5 International Airport Road Interchange Project	2004	0.48	4	2004	43678	7279.722	6	11290105	11.29	0.043	0.12	0.179
229	134300_12	2000	2556	Minnesota Drive (SB)	005. International Airport Rd. Interchange Project to Raspberry Rd.	2000	0.07	0	2000	28812	4802	6	0	0.00			
229	134300_12	2000	2556	Minnesota Drive (SB)	005. International Airport Rd. Interchange Project to Raspberry Rd.	2001	0.3	1	2001	47648	7941.333	6	2699759	2.70			
229	134300_12	2000	2556	Minnesota Drive (SB)	005. International Airport Rd. Interchange Project to Raspberry Rd.	2002	0.48	2	2002	49896	8316	6	5700911	5.70	0.084	0.24	0.355
229	134300_12	2000	2556	Minnesota Drive (SB)	005. International Airport Rd. Interchange Project to Raspberry Rd.	2003	0.51	3	2003	51981	8663.5	6	8989488	8.99	0.057	0.17	0.239
229	134300_12	2000	2556	Minnesota Drive (SB)	005. International Airport Rd. Interchange Project to Raspberry Rd.	2004	0.63	4	2004	54175	9029.111	6	12416532	12.42	0.051	0.1575	0.214
229	134300_10	2000	2557	Minnesota Drive (SB)	006. Raspberry Rd. to Strawberry Rd. Exit	2000	0.04	0	2000	22960	3826.667	6	0	0.00			
229	134300_10	2000	2557	Minnesota Drive (SB)	006. Raspberry Rd. to Strawberry Rd. Exit	2001	0.34	1	2001	28320	4720	6	1711120	1.71			
229	134300_10	2000	2557	Minnesota Drive (SB)	006. Raspberry Rd. to Strawberry Rd. Exit	2002	0.41	2	2002	37818	6303	6	3867266	3.87	0.106	0.205	0.446
229	134300_10	2000	2557	Minnesota Drive (SB)	006. Raspberry Rd. to Strawberry Rd. Exit	2003	0.39	3	2003	38140	6356.667	6	6298562	6.30	0.062	0.13	0.261
229	134300_10	2000	2557	Minnesota Drive (SB)	006. Raspberry Rd. to Strawberry Rd. Exit	2004	0.45	4	2004	38462	6410.333	6	8750425	8.75	0.051	0.1125	0.217
229	134300_8	2000	2558	Minnesota Drive (SB)	007. Strawberry Rd. Exit to Dimond Blvd.	2000	0.04	0	2000	32720	5453.333	6	0	0.00			
229	134300_8	2000	2558	Minnesota Drive (SB)	007. Strawberry Rd. Exit to Dimond Blvd.	2001	0.32	1	2001	39184	6530.667	6	2384910	2.38			
229	134300_8	2000	2558	Minnesota Drive (SB)	007. Strawberry Rd. Exit to Dimond Blvd.	2002	0.4	2	2002	38622	6437	6	4742962	4.74	0.084	0.2	0.355
229	134300_8	2000	2558	Minnesota Drive (SB)	007. Strawberry Rd. Exit to Dimond Blvd.	2003	0.46	3	2003	40773	6795.5	6	7314624	7.31	0.063	0.153333	0.265
229	134300_8	2000	2558	Minnesota Drive (SB)	007. Strawberry Rd. Exit to Dimond Blvd.	2004	0.59	4	2004	41115.33	6852.556	6	9935660	9.94	0.059	0.1475	0.250
229	134300_6	2000	2559	Minnesota Drive (SB)	008. Dimond Blvd. To W. 100th Ave. Exit	2000	0.09	0	2000	18880	3146.667	6	0	0.00			
229	134300_6	2000	2559	Minnesota Drive (SB)	008. Dimond Blvd. To W. 100th Ave. Exit	2001	0.4	1	2001	25236	4206	6	1495953	1.50			
229	134300_6	2000	2559	Minnesota Drive (SB)	008. Dimond Blvd. To W. 100th Ave. Exit	2002	0.46	2	2002	26960	4493.333	6	3109800	3.11	0.148	0.23	0.623
229	134300_6	2000	2559	Minnesota Drive (SB)	008. Dimond Blvd. To W. 100th Ave. Exit	2003	0.5	3	2003	28569	4761.5	6	4910175	4.91	0.102	0.166667	0.429
229	134300_6	2000	2559	Minnesota Drive (SB)	008. Dimond Blvd. To W. 100th Ave. Bridge	2004	0.69	4	2004	30255	5042.444	6	6817055	6.82	0.101	0.1725	0.426
229	134300_4	2000	2560	Minnesota Drive (SB)	009. 100th Ave. Exit to C Street	2000	0.09	0	2000	20032	5008	4	0	0.00			
229	134300_4	2000	2560	Minnesota Drive (SB)	009. 100th Ave. Exit to C Street	2001	0.27	1	2001	20192	5048	4	1930266	1.93			
229	134300_4	2000	2560	Minnesota Drive (SB)	009. 100th Ave. Exit to C Street	2002	0.38	2	2002	26605	6651.25	4	4211676	4.21	0.090	0.19	0.380
229	134300_4	2000	2560	Minnesota Drive (SB)	009. 100th Ave. Exit to C Street	2003	0.41	3	2003	25857	6464.25	4	6706163	6.71	0.061	0.136667	0.257
229	134300_4	2000	2560	Minnesota Drive (SB)	009. 100th Ave. Exit to C Street	2004	0.48	4	2004	29883	7470.75	4	9477485	9.48	0.051	0.12	0.213

		Rut/mil	Rut/year	Rut/Million Studded Tire Passes
ALL	**Average**	0.049	0.133	0.205
	Min.	0.025	0.075	0.106
	Max	0.148	0.240	0.623
	Stdev	0.018	0.033	0.075
	Count	119	119	119

APPENDIX H

DATA FOR ANCHORAGE SMA WITH PG64-28 WEARING COURSES

CENTRAL REGION STONE MASTIC ASPHALT WITH POLYMER MODIFIED (PG64-28) ASPHALT TRAFFIC, AGE AND RUT MEASURMENT DATA - ARTERIALS

RoadID	SecCode	FromY	SecID	Name	Description	Condition Year	Rut Depth (in.)	Age at condition year	Traffic Year	Total AADT	AADT	Traffic Lanes	Accum. Traffic	Accum. Traffic (mil.)	Rut/mil	Rut/year	Rut/Million Studded Tire Passes
229	134300_2	2000	2561	Minnesota Drive (SB)	010. C Street to Old Seward Highway	2000	0.08	0	2000	20660	5165	4	0	0.00			
229	134300_2	2000	2561	Minnesota Drive (SB)	010. C Street to Old Seward Highway	2001	0.14	1	2001	21450	5362.5	4	2033551.9	2.03			
229	134300_2	2000	2561	Minnesota Drive (SB)	010. C Street to Old Seward Highway	2002	0.27	2	2002	22920	5730	4	4091467.5	4.09	0.066	0.14	0.278
229	134300_2	2000	2561	Minnesota Drive (SB)	010. C Street to Old Seward Highway	2003	0.37	3	2003	29615	7403.75	4	6776225	6.78	0.055	0.12	0.230
229	134300_2	2000	2561	Minnesota Drive (SB)	010. C Street to Old Seward Highway	2004	0.41	4	2004	29615	7403.75	4	9613712.2	9.61	0.043	0.10	0.180
82	134341_15	1999	1800	C Street (Anchorage)	009. Tudor Road to International Airport Road	1999	0.02	0	1999	29508	4918	6	0	0.00			
82	134341_15	1999	1800	C Street (Anchorage)	009. Tudor Road to International Airport Road	2000	0.05	1	2000	37068	6178	6	2229748.5	2.23			
82	134341_15	1999	1800	C Street (Anchorage)	009. Tudor Road to International Airport Road	2001	0.14	2	2001	24600	4100	6	3915866	3.92	0.036	0.07	0.151
82	134341_15	1999	1800	C Street (Anchorage)	009. Tudor Road to International Airport Road	2002	0.15	3	2002	25590	4265	6	5457534.8	5.46	0.027	0.05	0.116
82	134341_15	1999	1800	C Street (Anchorage)	009. Tudor Road to International Airport Road	2003	0.2	4	2003	23223	3870.5	6	6976902	6.98	0.029	0.05	0.121
82	134341_15	1999	1800	C Street (Anchorage)	009. Tudor Road to International Airport Road	2004	0.21	5	2004	23455	3909.205	6	8471573	8.47	0.025	0.04	0.104
82	134341_17	1999	1801	C Street (Anchorage)	010. International Airport Road to pvmt. change	1999	0.04	0	1999	16756	4189	4	0	0.00			
82	134341_17	1999	1801	C Street (Anchorage)	010. International Airport Road to pvmt. change	2000	0.05	1	2000	19288	4822	4	1778718	1.78			
82	134341_17	1999	1801	C Street (Anchorage)	010. International Airport Road to pvmt. change	2001	0.12	2	2001	21552	5388	4	3693690.5	3.69	0.032	0.06	0.137
82	134341_17	1999	1801	C Street (Anchorage)	010. International Airport Road to pvmt. change	2002	0.15	3	2002	19240	4810	4	5502083	5.50	0.027	0.05	0.115
82	134341_17	1999	1801	C Street (Anchorage)	010. International Airport Road to pvmt. change	2003	0.18	4	2003	19030	4757.5	4	7330185.5	7.33	0.025	0.05	0.103
82	134341_17	1999	1801	C Street (Anchorage)	010. International Airport Road to 68th Ave.	2004	0.2	5	2004	19220	3203.383	6	8699695.3	8.70	0.023	0.04	0.097

	Rut/mil	Rut/year	Rut/Million Studded Tire Passes
Average	0.035	0.070	0.148
Min.	0.025	0.042	0.103
Max	0.055	0.123	0.230
Stdev	0.010	0.028	0.042
Count	9	9	9

APPENDIX I

DATA FOR ANCHORAGE HARD AGGREGATE SMA WEARING COURSE

ANCHORAGE HARD AGGREGATE SMA, SEWARD HIGHWAY, NORTHBOUND, 36TH AVE. TO BENSON BLVD

Year	Lane ADT	Age (years)	Cumulative Traffic Passes	Cumulative Traffic/10^6	Rut (in.)	Rutting Rate (inches per mil.)	Rutting Rate (inches per year)	Studded Tire Wear Rate (inches per mil.)
1998	11005	0	-	0	0			
1999	9578	1						
2000	10237	2	7,302,555	7.3	0.11	0.015	0.056	0.065
2001	8008	3	10,428,871	10.4	0.19	0.018	0.062	0.075
2002	8084	4	13,372,596	13.4	0.243	0.018	0.061	0.077
5/2003	8084	4.5	14,847,926	14.8	0.258	0.017	0.057	0.073
					Mean	0.017	0.059	0.073
					Stdev	0.001	0.003	0.005
					84%	0.019	0.064	0.081
					Avg. Life	44	13	10
					84% Life	26	8	6

APPENDIX J

DATA FOR ANCHORAGE PORTLAND CEMENT CONCRETE WEIGH-IN-MOTION SLABS

PORTLAND CEMENT CONCRETE WEARING COURSE SITES, TRAFFIC, AGE AND RUT DEPTHS

Site	2003 Max Avg. Rut (in.)	2004 Max Avg. Rut (in.)	2004 Accumulated Traffic passes (millions)	2004 Age (yrs.)	Lanes	2004 Rate (in/mil.)	2004 Rate (In/yr)	2004 Rate per Mil. Studded Tire passes (in./mil.)
Tudor WIM	0.61	n/a	24.927748	12	4	0.024	0.051	0.103
Mn. Drive WIM NB	0.35	0.36	13.40474363	5	2	0.027	0.072	0.113
MN. Dr. WIM SB	0.26	0.27	13.49781863	5	3	0.020	0.054	0.084
Knik R. Bridge #1 NB	0.184	0.246	19.77465975	11	4	0.012	0.022	0.052
Avereges			n/a	8.25	n/a	0.021	0.050	0.088

WEAR VS DEFORMATION COMPARISON

Site	PCC Rut (in)	Adjacent Asphalt Rut (in.)	% Wear	% Plasitc Deformation
Tudor WIM	0.61	0.86	71%	29%
Mn. Drive NB	0.36	0.84	43%	57%
MN. Dr. SB	0.27	0.51	53%	47%
Average	n/a	n/a	56%	44%

APPENDIX K

DATA FOR ANCHORAGE PLUSRIDE WEARING COURSES

ANCHORAGE AREA PLUS RIDE (CRUMB RUBBER) PAVEMENT TRAFFIC AND RUT MEASUREMENT DATA

From Year	RoadID	Name	Description	Traffic Year	Lane AADT	ESAL	Total AADT	Lanes	Growth Rate	Age at Condition Year (years)	Accumulated Traffic Passes	Accumulated Traffic/10^6	Condition Year	Rut Depth (in.)	Rut per 10^6 Passes (in.)	Rut per 10^5 Studded Tired Vehicle Passes (in.)	Rut/Year (in.)
1985	82	C Street (Anchorage)	005. 15th Avenue to Fireweed Lane	1985	3662		10986	3		0	-	0.0	1985	0			
1985	82	C Street (Anchorage)	005. 15th Avenue to Fireweed Lane	1998	6460	115936	19380	3	0.059	13	24,014,445	24.0	1998	0.28	0.012	0.005	0.022
1985	82	C Street (Anchorage)	005. 15th Avenue to Fireweed Lane	1999	6028	114682	18083	3	-0.067	14	26,253,994	26.3	1999	0.31	0.012	0.005	0.022
1985	82	C Street (Anchorage)	005. 15th Avenue to Fireweed Lane	2000	6288	118814	18865	3	0.043	15	28,525,450	28.5	2000	0.35	0.012	0.005	0.023
1985	82	C Street (Anchorage)	005. 15th Avenue to Fireweed Lane	2001	6263	116010	18790	3	-0.004	16	30,813,848	30.8	2001	0.37	0.012	0.005	0.023
1985	82	C Street (Anchorage)	005. 15th Avenue to Fireweed Lane	2002	6203		18610	3	-0.010	17	33,083,539	33.1	2002	0.48	0.015	0.006	0.028
1985	82	C Street (Anchorage)	005. 15th Avenue to Fireweed Lane	2003	6137		18412	3	-0.011	18	35,329,688	35.3	2003	0.54	0.015	0.006	0.030
1985	82	C Street (Anchorage)	005. 15th Avenue to Fireweed Lane	2004	6148		18445	3	0.002	19	37,572,867	37.6	2004	0.65	0.017	0.007	0.034
1985	83	A Street (Anchorage)	003. Fireweed Lane to 13th Avenue	1985	3662		10986	3		0	-	0.0	1985	0			
1985	83	A Street (Anchorage)	003. Fireweed Lane to 13th Avenue	1998	5318	53622	15953	3	0.035	13	21,304,259	21.3	1998	0.28	0.013	0.006	0.022
1985	83	A Street (Anchorage)	003. Fireweed Lane to 13th Avenue	1999	5238	52691	15713	3	-0.015	14	23,223,308	23.2	1999	0.33	0.014	0.006	0.024
1985	83	A Street (Anchorage)	003. Fireweed Lane to 13th Avenue	2000	5486	51805	16459	3	0.047	15	25,203,128	25.2	2000	0.38	0.015	0.006	0.025
1985	83	A Street (Anchorage)	003. Fireweed Lane to 13th Avenue	2001	5658	54562	16974	3	0.031	16	27,252,634	27.3	2001	0.48	0.018	0.007	0.030
1985	83	A Street (Anchorage)	003. Fireweed Lane to 13th Avenue	2002	5423	56474	16269	3	-0.042	17	29,253,473	29.3	2002	0.72	0.025	0.010	0.042
1985	83	A Street (Anchorage)	003. Fireweed Lane to 13th Avenue	2003	5458		16373	3	0.006	18	31,242,358	31.2	2003	0.75	0.024	0.010	0.042
1985	83	A Street (Anchorage)	005. Fireweed Lane to 13th Avenue	2004	5515		16546	3	0.011	19	33,250,183	33.3	2004	0.83	0.025	0.011	0.044
1986		Seward Highway-NB	Tudor to 36th	1986	8750		43848	5		0							
1986		Seward Highway-NB	Tudor to 36th	1996	9702		48510	5		10	33,674,900	33.7	1996	0.75	0.022	0.009	0.075
1986		Minnesota Dr.	Dimond to 100th Ave.	1987	3060		12240	4		0							
1986		Minnesota Dr.	Dimond to 100th Ave.	2000	6450		25800	4		14	24,298,050	24.3	2000	0.75	0.031	0.013	0.054

Avg	0.018	0.007	0.034
min	0.012	0.005	0.022
max	0.031	0.013	0.075
stdev	0.006	0.002	0.015
84%	0.024	0.010	0.048
95%	0.027	0.012	0.058
99%	0.031	0.013	0.067
COUNT	16	16	16