State of Florida

Department of Transportation

Flexible Pavement Smoothness Acceptance Report

International Roughness Index Edition

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Executive Summary

The traveling public wants smooth, safe, and long lasting pavements. Initial pavement smoothness has been shown to improve the overall pavement performance. The Florida Department of Transportation (FDOT) has developed smoothness specifications for the acceptance of asphalt pavements on high-speed facilities that incorporate smoothness results obtained using high-speed inertial profilers.

This report is a synthesis of statewide project smoothness data collected from January 2005 through December 2010, including more than 7,900 miles and 81,000 lots. It provides the end user with basic statistics on the Ride quality of projects tested for Ride Acceptance (RA). The data analyzed herein consists of all lots greater than or equal to 0.01 mile and less than or equal to 0.1 mile in length.

This report expresses ride quality using International Roughness Index (IRI). This index was chosen to be used in future versions of FDOT's smoothness specifications because it is not influenced by differences in texture. Currently, FDOT's smoothness specifications use Ride Number (RN) to indicate the level of smoothness present on newly placed asphalt pavements. RN, however, is greatly influenced by differences in texture, especially dense graded versus open graded pavements.

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Introduction

According to National Cooperative Highway Research Program (NCHRP) project 1-31, conducted between February 1994 and December 1996 and published as NCHRP Web Document 1, "Smoothness Specifications for Pavements," the importance of pavement smoothness to the traveling public is undisputed. Smooth-riding pavements provide comfort, allow more efficient movement of vehicles over the roadway, raise optimum travel speeds, maintain traffic flow, reduce safety hazards to users and their vehicles, and may increase fuel efficiency, leading to lower traveling costs to roadway users. Pavement smoothness also imparts a positive reflection on the construction and maintanance proficiency of the owner agency, be it a state agency, city, county, or toll authority. In addition, American Association of State Highway and Transportation Officials (AASHTO) pavement design models suggest that initially smooth pavements last longer than initially rough pavements, though this has been never confirmed through long-term field investigation (AASHTO design equations are based on only 2 years of performance data).

FDOT RIDE QUALITY

Ride quality has been used by FDOT for evaluating new construction, overlay projects, special ride quality evaluations used for informational purposes, and for monitoring long-term pavement performance at the network level. To measure pavement ride quality, automated or manual methods can be used to measure roadway profiles from which a roughness value is calculated. Most states, including Florida, use high-speed inertial profilers to measure smoothness. The commonly used measures of roughness (or smoothness) are the International Roughness Index (IRI) and Ride Number (RN). Since 1998, FDOT has been using the RN for project level acceptance and evaluation in accordance with American Society for Testing and Materials (ASTM) E1489.

The FDOT has worked very closely with the Federal Highway Administration (FHWA) and the construction industry to improve pavement smoothness on Florida's state highways. To this end, a smoothness task team was created with representatives from FDOT, FHWA, and the paving industry to develop and implement non-contact profiler based smoothness specifications. Sub-article 330-12.4.6 of the FDOT Standard Specifications sets the requirements for Acceptance Testing for Pavement Smoothness by Laser Profiler.

RIDE QUALITY EVALUATION PROCESS

The Pavement Condition Unit of the State Materials (SMO) is responsible for conducting smoothness evaluation using an high-speed inertial laser profiler. Florida Test Method Fm 5-549, "Laser Profiler Roughness Evaluation," provides the method by which a pavement section is evaluated for smoothness using the longitudinal profiles recorded from each wheel path using as inertial profiler test vehicle.

The test vehicle is driven along the wheel paths of the pavement section to be evaluated and uses a system of three laser sensors and two accelerometers mounted in the front bumper of a full-size van. One laser is mounted in front of each tire to measure the longitudinal profile in the left and right wheel paths of the traveled surface. These 32 kHz lasers measure the vertical distance between the sensor and the pavement surface at a rate of 30 readings per inch as the vehicle travels at 60 mph. An accelerometer is mounted atop each of these two lasers to isolate the vehicle's vertical motion and thus provide a "zero" reference plane. The third laser, mounted equidistant from the two wheel path lasers, provides a height reading from which to calculate rut depth in ech wheel path. The vehicle's data acquisition system uses the accelerometer data to provide a correction to the laser data, eliminating the effects of vehicle movement, and uses a Distance Measuring Instrument (DMI) connected to the vehicle transmission or axle to record the longitudinal distance traveled to summarize the corrected laser data into approximately 1 inch intervals. The exact interval is a function of each individual vehicle's DMI calibration settings. These summary values are then post-processed into exactly 6 inch intervals to generate a longitudinal profile for each wheel path as well as a combined value for both wheel paths, and an average rut depth.

The laser profilers currently in use by FDOT are manufactured by International Cybernetics Corporation (ICC) of Largo, Florida. All of these profilers are owned by FDOT with the exception of one unit that is provided through a contract with Applied Research Associates, Inc. (ARA). Currently, this profiler is the primary unit used by the SMO for the collection of project level smoothness data.

District project personnel may submit all requests for pavement evaluation using online request forms available at the SMO's website:

Intranet: http://materials.dot.state.fl.us/smo/pavement/pavementhome.htm
Internet: http://www.dot.state.fl.us/statematerialsoffice/pavement/index.shtm

WHAT IS THE INTERNATIONAL ROUGHNESS INDEX?

In "Guidelines for Conducting and Calibrating Road Roughness Measurements," published by the World Bank in 1986 as Technical Paper 46, International Roughness Index (IRI) is defined as a mathematical transform (a property) of a true profile describing surface roughness that causes vehicle vibration.

The underlying IRI model is a series of differential equations that relate the motions of a simulated quarter-car to a road profile. The IRI is computed as a linear accumulation of the simulated suspension motion, normalized by the length of the profile. IRI therefore has units of slope, typically "in/mi" or "m/km", and is computed from a single longitudinal wheel path profile. It has a demonstrated strong compatibility with the equipment used to develop pavement management systems. IRI is sensitive to wavelengths between 4 and 100 feet and is most sensitive to wavelengths of 7 and 50 feet.

All data is analyzed according to ASTM E1926, "Standard Practice for Computing International Roughness Index of Roads from Longitudinal Profile Measurements".

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Observations

Many roadway characteristics and construction practices are being monitored and included in the FDOT's smoothness database. Some of these have proven to be significant contributors to the ride quality of the pavements tested, and some factors have not been so valuable. Below is a summary list of key variables being monitored with a brief explanation of their effect on pavement smoothness.

- Average Annual Daily Traffic (AADT) - Analysis on Interstate pavements has shown that 150,000 AADT or greater exhibit higher average IRIs.

- Material Transfer Device (MTD) Usage - Data shows that pavements placed using this equipment are typically smoother. When the MTD was used on the entire project, the average IRI is 45, versus 55 IRI when the MTD was not used at all. MTD usage on the Interstate system yielded even more benefit: 41 IRI with full-project MTD usage versus 55 for Interstate projects where the MTD was not used at all.

- Aggregate Type - Based on summary data from Florida projects, smooth pavements can be constructed regardless of the aggregate type used. However, on average, pavements using Granite aggregate in friction courses are smoother. Granite pavements have an average IRI of 48, compared to an IRI of 56 for Limestone pavements.

- Data by Year - Pavements placed in 2005 averaged 54 IRI, and have consistently improved slightly each year. Pavements placed in 2010 averaged 48 IRI.

- Binder Type - No significant difference was found when comparing the smoothness of pavements using polymer-modified binders in the friction course to pavements using other types of binders.

- Paving Time - No significant difference was found when comparing the smoothness of pavements placed at Night to those placed during the Day.

- System - No significant difference was found when comparing the smoothness of Primary and Interstate systems.

- Surface Type - No significant difference was found when comparing the smoothness of pavements with open-graded friction courses and dense-graded friction courses.

In addition to these factors, there are many other variables that the data can be subdivided by. If any additional information is needed, please contact the following people.

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Ride Distribution of All Lots

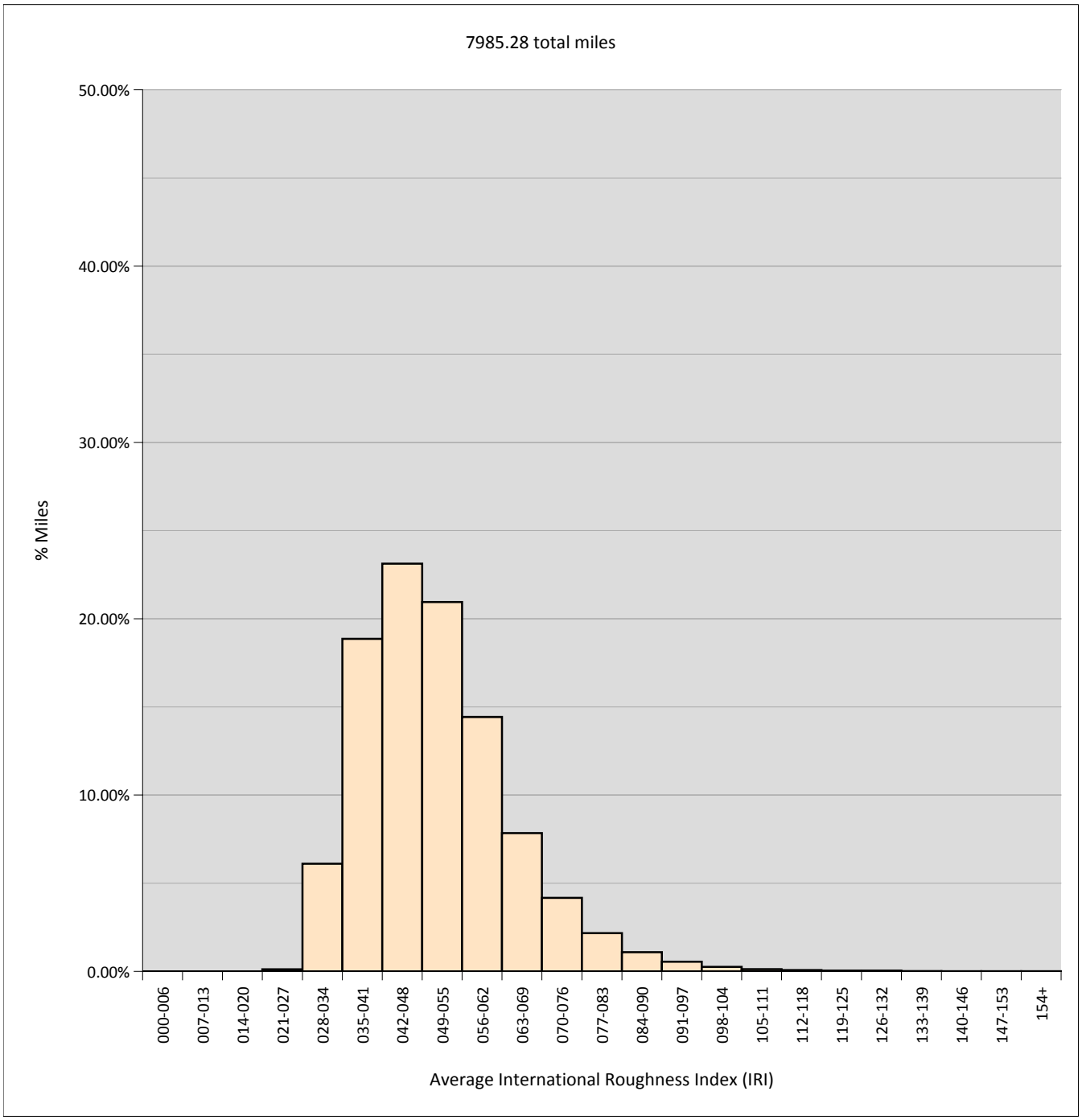

Figure 1: Statewide Ride Distribution, All Lots

Type	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
							Lots	Miles	% Miles
All Lots	81850	7985.28	20	51	356	13.2	676	55.52	0.70%

Ride Distribution by Friction Course and System

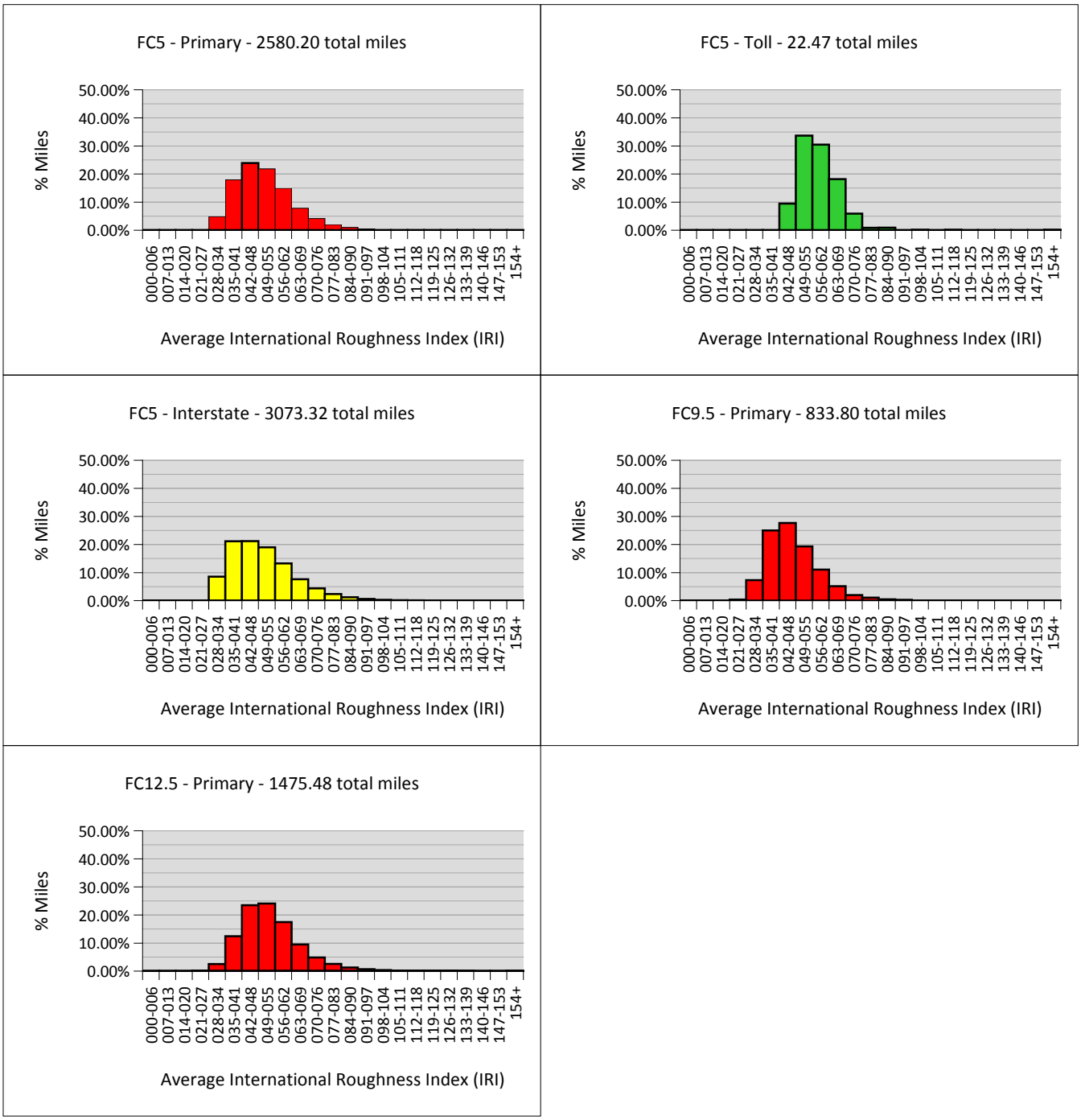

Figure 2: Statewide Ride Distribution by Friction Course and System

Friction Course	System	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
								Lots	Miles	% Miles
FC5	Primary	26353	2580.20	23	51	356	12.7	195	15.33	0.59%
FC5	Toll	243	22.47	42	58	228	9.8	4	0.10	0.43%
FC5	Interstate	31731	3073.32	25	50	166	13.7	261	21.90	0.71%
FC9.5	Primary	8485	833.80	25	48	189	11.3	34	2.65	0.32%
FC12.5	Primary	15038	1475.48	20	54	207	13.2	182	15.55	1.05%

Table 1: Statewide Statistical Summary by Friction Course, System, Year, and Aggregate

Friction Course	System	Year	Aggregate	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	2005	Granite	1184	117.11	31	51	127	10.2	4	0.36	0.31%
FC5	Primary	2005	Limestone	929	87.51	39	60	134	10.8	16	0.95	1.08%
FC5	Primary	2006	Granite	1477	144.73	34	57	269	12.0	17	1.43	0.99%
FC5	Primary	2006	Limestone	1750	171.24	32	54	356	11.2	24	1.69	0.99%
FC5	Primary	2007	Granite	3744	369.77	28	46	98	9.5	1	0.10	0.03%
FC5	Primary	2007	Limestone	3049	300.31	30	58	163	13.8	50	4.14	1.38%
FC5	Primary	2008	Granite	3206	314.84	27	50	141	9.9	7	0.32	0.10%
FC5	Primary	2008	Limestone	1433	139.66	35	55	177	13.8	24	1.88	1.35%
FC5	Primary	2009	Granite	3617	352.57	24	47	164	12.0	15	1.19	0.34%
FC5	Primary	2009	Limestone	1813	178.34	33	57	144	13.3	24	2.18	1.22%
FC5	Primary	2010	Granite	2578	250.59	23	43	101	10.5	2	0.13	0.05%
FC5	Primary	2010	Limestone	1459	142.76	32	54	127	12.1	11	0.95	0.67%
FC5	Toll	2006	Granite	207	19.47	42	57	85	7.4	0	0.00	0.00%
FC5	Toll	2006	Limestone	36	3.00	47	67	228	16.4	4	0.10	3.20%
FC5	Interstate	2005	Granite	870	82.94	29	53	100	10.4	2	0.13	0.15%
FC5	Interstate	2005	Limestone	2205	212.41	28	53	127	14.2	15	1.23	0.58%
FC5	Interstate	2006	Granite	2669	261.44	28	53	142	13.2	28	2.74	1.05%
FC5	Interstate	2006	Limestone	1420	138.50	42	66	141	12.4	42	3.90	2.82%
FC5	Interstate	2007	Granite	4190	410.21	28	47	127	10.1	9	0.65	0.16%
FC5	Interstate	2007	Limestone	1721	164.78	30	61	166	14.1	29	2.09	1.27%
FC5	Interstate	2008	Granite	3640	355.96	25	44	110	11.4	7	0.56	0.16%
FC5	Interstate	2008	Limestone	3500	333.75	31	57	151	13.9	71	5.96	1.79%
FC5	Interstate	2009	Granite	3560	343.91	27	45	130	10.4	6	0.47	0.14%
FC5	Interstate	2009	Limestone	2231	215.02	32	50	117	12.2	14	1.15	0.54%
FC5	Interstate	2010	Granite	3708	361.27	27	42	108	10.1	3	0.21	0.06%
FC5	Interstate	2010	Limestone	2017	193.14	35	56	146	12.6	35	2.82	1.46%
FC9.5	Primary	2005	Granite	625	60.77	33	55	147	11.5	6	0.32	0.52%
FC9.5	Primary	2006	Limestone	919	89.86	29	47	189	12.8	8	0.63	0.70%
FC9.5	Primary	2007	Granite	980	96.45	28	47	105	9.8	3	0.16	0.17%
FC9.5	Primary	2008	Granite	1319	130.15	25	41	85	7.4	0	0.00	0.00%
FC9.5	Primary	2008	Limestone	918	89.06	31	55	111	10.9	3	0.19	0.21%
FC9.5	Primary	2009	Granite	1560	154.14	25	46	121	10.9	8	0.80	0.52%
FC9.5	Primary	2009	Limestone	464	45.63	34	53	127	9.0	1	0.06	0.13%
FC9.5	Primary	2010	Granite	751	74.22	25	45	136	11.4	3	0.30	0.40%
FC9.5	Primary	2010	Limestone	502	49.27	29	48	89	9.2	0	0.00	0.00%
FC12.5	Primary	2005	Granite	606	59.51	41	68	207	17.8	29	2.57	4.32%
FC12.5	Primary	2005	Limestone	486	47.94	33	46	70	6.0	0	0.00	0.00%
FC12.5	Primary	2006	Granite	1643	161.45	24	52	161	10.7	13	0.88	0.54%

Table 1: Statewide Statistical Summary by Friction Course, System, Year, and Aggregate, continued

Friction Course	System	Year	Aggregate	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC12.5	Primary	2006	Limestone	1052	102.94	31	56	153	12.4	17	1.53	1.49%
FC12.5	Primary	2007	Granite	1843	180.77	27	57	127	12.1	17	1.33	0.74%
FC12.5	Primary	2007	Limestone	247	24.03	37	53	115	11.2	3	0.15	0.62%
FC12.5	Primary	2008	Granite	2535	249.74	26	48	109	10.9	4	0.34	0.14%
FC12.5	Primary	2008	Limestone	490	47.62	32	64	148	19.7	42	3.97	8.34%
FC12.5	Primary	2009	Granite	1788	175.21	26	52	121	12.4	11	0.97	0.55%
FC12.5	Primary	2009	Limestone	136	13.53	42	60	96	10.2	1	0.10	0.74%
FC12.5	Primary	2010	Granite	3693	362.11	20	53	158	12.4	26	1.92	0.53%
FC12.5	Primary	2010	Limestone	42	4.10	41	85	114	19.6	16	1.58	38.56%

Aggregate Type of "Mixed" has been excluded from this report.

Table 2: Statewide Statistical Summary by Friction Course, System, Aggregate, and Material Transfer Device Status

Friction Course	System	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Granite	Fully Used	4233	414.36	23	43	110	10.8	10	0.94	0.23%
FC5	Primary	Granite	Not Used	1353	129.55	32	55	164	12.1	8	0.48	0.37%
FC5	Primary	Limestone	Fully Used	2625	259.03	32	53	117	11.6	16	1.35	0.52%
FC5	Primary	Limestone	Not Used	490	46.74	35	61	144	14.1	13	1.09	2.33%
FC5	Interstate	Granite	Fully Used	4735	458.70	27	41	130	8.9	3	0.17	0.04%
FC5	Interstate	Granite	Not Used	692	67.34	31	47	80	8.4	0	0.00	0.00%
FC5	Interstate	Limestone	Fully Used	1040	100.58	32	43	90	6.5	0	0.00	0.00%
FC5	Interstate	Limestone	Not Used	1429	136.56	36	59	146	14.2	43	3.64	2.67%
FC9.5	Primary	Granite	Fully Used	1473	146.09	25	44	136	11.1	8	0.80	0.55%
FC9.5	Primary	Granite	Not Used	320	31.34	34	46	77	7.0	0	0.00	0.00%
FC9.5	Primary	Limestone	Fully Used	404	39.78	29	50	127	10.1	1	0.06	0.15%
FC9.5	Primary	Limestone	Not Used	80	7.68	30	48	89	10.8	0	0.00	0.00%
FC12.5	Primary	Granite	Fully Used	1839	180.47	20	49	106	11.2	4	0.31	0.17%
FC12.5	Primary	Granite	Not Used	2662	260.55	28	56	158	12.2	25	2.05	0.79%
FC12.5	Primary	Limestone	Fully Used	146	14.46	41	60	96	10.4	1	0.10	0.69%
FC12.5	Primary	Limestone	Not Used	32	3.16	77	95	114	8.8	16	1.58	50.00%
All	All	Granite & Limestone	Fully Used	16495	1613.47	20	45	136	11.3	43	3.72	0.23%
All	All	Granite & Limestone	Not Used	7058	682.92	28	55	164	13.1	105	8.85	1.30%

Aggregate Type of "Mixed" has been excluded from this report.

Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Table 3: Statewide Statistical Summary by Friction Course, System, Aggregate, and Paving Time

Friction Course	System	Aggregate	Paving Time	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Granite	Day	8636	848.20	25	46	110	10.0	6	0.41	0.05%
FC5	Primary	Granite	Night	2736	263.96	31	52	164	10.6	12	0.64	0.24%
FC5	Primary	Limestone	Day	4902	483.57	32	55	163	11.6	35	2.94	0.61%
FC5	Primary	Limestone	Night	2174	210.89	35	62	177	13.9	63	5.17	2.45%
FC5	Toll	Granite	Night	207	19.47	42	57	85	7.4	0	0.00	0.00%
FC5	Toll	Limestone	Night	36	3.00	47	67	228	16.4	4	0.10	3.20%
FC5	Interstate	Granite	Day	2556	251.37	28	39	107	7.4	1	0.04	0.02%
FC5	Interstate	Granite	Night	9761	945.66	25	45	111	10.6	12	0.86	0.09%
FC5	Interstate	Limestone	Day	3436	332.28	30	54	134	9.7	17	1.30	0.39%
FC5	Interstate	Limestone	Night	6593	631.29	32	60	166	14.8	125	10.42	1.65%
FC9.5	Primary	Granite	Day	2583	254.90	25	45	136	9.9	6	0.46	0.18%
FC9.5	Primary	Granite	Night	1033	101.67	26	47	104	10.8	3	0.30	0.30%
FC9.5	Primary	Limestone	Day	2473	241.81	29	51	189	11.2	8	0.55	0.23%
FC9.5	Primary	Limestone	Night	238	23.08	31	52	118	14.5	4	0.33	1.43%
FC12.5	Primary	Granite	Day	9152	900.95	26	52	161	11.4	41	3.18	0.35%
FC12.5	Primary	Granite	Night	847	81.22	20	58	135	16.5	21	1.74	2.14%
FC12.5	Primary	Limestone	Day	1287	126.40	31	57	133	12.9	35	3.25	2.57%
FC12.5	Primary	Limestone	Night	113	10.46	36	55	153	12.9	1	0.01	0.13%
All	All	Granite & Limestone	Day	35025	3439.46	25	50	189	11.5	149	12.13	0.35%
All	All	Granite & Limestone	Night	23738	2290.70	20	52	228	14.4	245	19.56	0.85%

Aggregate Type of "Mixed" has been excluded from this report.

Paving Times of "Both" and "Unknown" have been excluded from this report.

Table 4: Lane Miles Tested Per District by Friction Course and System

Total Lane Miles Tested								
Friction Course	System	District 1	District 2	District 3	District 4	District 5	District 6	District 7
FC5	Interstate	637.10	453.99	283.05	765.87	629.55	54.71	249.06
FC5	Toll	0.00	0.00	0.00	0.00	22.47	0.00	0.00
FC5	Primary	474.56	592.31	248.02	352.83	644.95	76.10	191.43
FC9.5	Primary	178.28	80.65	242.41	107.22	167.11	0.00	58.13
FC12.5	Primary	426.85	639.68	118.11	14.48	201.91	10.54	63.92
Total		**1,716.79**	**1,766.62**	**891.59**	**1,240.41**	**1,665.98**	**141.35**	**562.54**

Table 5: Statewide Statistical Summary by Contractor, Friction Course, Aggregate, and Material Transfer Device Status

Contractor	Friction Course	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
A.P.A.C.	FC5	Granite	Fully Used	1338	131.74	28	40	88	7.8	0	0.00	0.00%
A.P.A.C.	FC5	Granite	Not Used	565	53.94	33	55	164	10.1	2	0.04	0.07%
A.P.A.C.	FC5	Limestone	Not Used	278	27.16	36	54	88	9.3	0	0.00	0.00%
A.P.A.C.	FC9.5	Granite	Fully Used	124	12.27	29	42	63	6.9	0	0.00	0.00%
A.P.A.C.	FC9.5	Granite	Not Used	41	3.83	39	49	74	6.9	0	0.00	0.00%
A.P.A.C.	FC12.5	Granite	Fully Used	60	5.85	31	42	94	8.7	0	0.00	0.00%
A.P.A.C.	FC12.5	Granite	Not Used	668	64.90	37	57	135	10.0	2	0.11	0.17%
Ajax Paving Industry	FC5	Granite	Fully Used	3117	301.47	27	42	107	8.7	2	0.15	0.05%
Ajax Paving Industry	FC5	Limestone	Fully Used	452	44.81	32	45	82	7.8	0	0.00	0.00%
Ajax Paving Industry	FC12.5	Granite	Fully Used	373	36.56	20	47	101	13.2	1	0.10	0.27%
Anderson Columbia	FC5	Granite	Fully Used	1778	174.73	25	40	90	7.8	0	0.00	0.00%
Anderson Columbia	FC5	Granite	Not Used	270	25.93	31	42	71	7.0	0	0.00	0.00%
Anderson Columbia	FC9.5	Granite	Fully Used	273	26.99	26	45	121	13.6	4	0.40	1.48%
Anderson Columbia	FC12.5	Granite	Fully Used	719	70.53	32	49	102	9.5	2	0.11	0.15%
Anderson Columbia	FC12.5	Granite	Not Used	473	46.84	28	48	97	11.3	1	0.10	0.21%
Asphalt Group, Inc.	FC5	Limestone	Not Used	670	64.46	42	59	144	10.7	12	0.92	1.42%
Atlantic Coast	FC5	Granite	Fully Used	482	45.71	24	38	90	7.8	0	0.00	0.00%
Better Roads Inc.	FC5	Limestone	Not Used	350	33.65	39	50	84	7.5	0	0.00	0.00%
Better Roads Inc.	FC9.5	Limestone	Not Used	12	1.17	40	55	89	16.7	0	0.00	0.00%
C. W. Roberts Contracting	FC5	Granite	Fully Used	760	75.30	27	37	87	6.1	0	0.00	0.00%
C. W. Roberts Contracting	FC9.5	Granite	Fully Used	312	30.91	26	42	97	8.4	1	0.10	0.32%
C. W. Roberts Contracting	FC12.5	Granite	Fully Used	172	16.98	28	50	86	11.2	0	0.00	0.00%
Community Asphalt Corp.	FC5	Limestone	Fully Used	894	88.61	33	57	103	11.5	5	0.43	0.49%
Community Asphalt Corp.	FC5	Limestone	Not Used	239	21.43	37	59	146	15.5	10	0.64	2.98%
Community Asphalt Corp.	FC12.5	Limestone	Fully Used	136	13.53	42	60	96	10.2	1	0.10	0.74%
D.A.B. Constructors	FC5	Granite	Not Used	152	14.99	35	47	73	6.8	0	0.00	0.00%
D.A.B. Constructors	FC12.5	Granite	Not Used	20	1.86	41	54	121	14.6	1	0.06	3.02%
Dickerson Asphalt	FC5	Limestone	Fully Used	1086	105.64	32	42	89	6.3	0	0.00	0.00%
Dickerson Asphalt	FC9.5	Limestone	Fully Used	146	14.20	34	54	127	10.7	1	0.06	0.43%
Dickerson Asphalt	FC12.5	Limestone	Fully Used	10	0.94	41	54	73	10.8	0	0.00	0.00%
Duval Asphalt	FC5	Granite	Fully Used	274	25.71	38	50	97	8.6	1	0.05	0.19%
Duval Asphalt	FC12.5	Granite	Fully Used	82	8.02	35	47	75	6.2	0	0.00	0.00%
Duval Asphalt	FC12.5	Granite	Not Used	50	4.77	59	81	114	12.9	7	0.62	12.89%
GAC Contractors	FC5	Granite	Fully Used	260	25.61	23	34	60	5.7	0	0.00	0.00%
General Asphalt Company	FC5	Limestone	Fully Used	133	13.04	48	67	117	10.8	4	0.31	2.39%
General Asphalt Company	FC5	Limestone	Not Used	53	5.03	55	78	107	10.6	5	0.50	9.93%
Halifax Paving Inc.	FC5	Granite	Not Used	516	50.58	32	53	101	10.6	1	0.08	0.17%
Hardrives of Delray	FC12.5	Limestone	Not Used	32	3.16	77	95	114	8.8	16	1.58	50.00%

Table 5: Statewide Statistical Summary by Contractor, Friction Course, Aggregate, and Material Transfer Device Status, continued

Contractor	Friction Course	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
Hubbard Construction	FC5	Granite	Fully Used	40	3.81	37	49	70	8.3	0	0.00	0.00%
Hubbard Construction	FC5	Granite	Not Used	70	6.10	37	62	106	16.0	3	0.23	3.79%
Hubbard Construction	FC5	Limestone	Fully Used	238	23.09	33	52	108	11.7	4	0.40	1.73%
J. W. Cheatham, LLC.	FC9.5	Limestone	Not Used	16	1.43	42	51	67	7.2	0	0.00	0.00%
Lane Construction Corp.	FC5	Granite	Fully Used	186	18.16	36	59	91	10.8	0	0.00	0.00%
Lane Construction Corp.	FC5	Limestone	Fully Used	96	9.59	38	53	82	9.1	0	0.00	0.00%
Lane Construction Corp.	FC9.5	Granite	Not Used	166	16.44	36	45	71	5.4	0	0.00	0.00%
Lane Construction Corp.	FC12.5	Granite	Fully Used	80	7.97	49	69	106	10.0	1	0.10	1.26%
Lane Construction Corp.	FC12.5	Granite	Not Used	56	5.41	53	70	100	11.2	3	0.30	5.54%
Middlesex Corp.	FC5	Granite	Not Used	100	9.65	32	47	77	9.7	0	0.00	0.00%
Middlesex Corp.	FC9.5	Granite	Not Used	113	11.07	34	47	77	8.6	0	0.00	0.00%
Middlesex Corp.	FC12.5	Granite	Not Used	115	11.04	46	63	100	8.3	1	0.04	0.40%
Orlando Paving Company	FC5	Granite	Fully Used	155	15.48	42	72	110	14.8	9	0.89	5.75%
P & S Paving	FC5	Granite	Not Used	150	14.38	36	53	87	9.2	0	0.00	0.00%
P & S Paving	FC12.5	Granite	Fully Used	253	24.75	34	48	84	7.6	0	0.00	0.00%
P & S Paving	FC12.5	Granite	Not Used	388	37.65	37	54	99	10.0	1	0.08	0.21%
Panhandle Grading & Paving	FC9.5	Granite	Fully Used	452	44.86	25	46	136	13.1	3	0.30	0.67%
Peavy and Sons	FC5	Granite	Fully Used	578	55.36	30	45	130	7.5	1	0.01	0.03%
Peavy and Sons	FC9.5	Granite	Fully Used	312	31.06	25	43	72	8.1	0	0.00	0.00%
Peavy and Sons	FC12.5	Granite	Fully Used	100	9.81	39	54	73	7.9	0	0.00	0.00%
Ranger Construction	FC5	Granite	Not Used	222	21.33	34	57	124	14.1	2	0.13	0.61%
Ranger Construction	FC5	Limestone	Fully Used	748	73.17	36	53	90	8.3	0	0.00	0.00%
Ranger Construction	FC5	Limestone	Not Used	133	12.90	35	62	105	17.7	9	0.84	6.54%
Ranger Construction	FC9.5	Limestone	Fully Used	258	25.57	29	47	78	8.9	0	0.00	0.00%
Ranger Construction	FC9.5	Limestone	Not Used	52	5.08	30	45	76	8.5	0	0.00	0.00%
Ranger Construction	FC12.5	Granite	Not Used	70	6.87	48	62	78	6.3	0	0.00	0.00%
S. T. Wooten Corp.	FC5	Limestone	Not Used	36	3.21	41	63	106	13.6	1	0.06	1.77%
Steven Counts Inc.	FC12.5	Granite	Not Used	28	2.63	45	77	158	27.2	4	0.34	12.93%
Superior Asphalt Inc.	FC12.5	Granite	Not Used	597	58.90	35	54	132	10.2	4	0.31	0.53%
Weekly Asphalt Paving	FC5	Limestone	Fully Used	18	1.66	57	74	113	14.1	3	0.21	12.44%
Weekly Asphalt Paving	FC5	Limestone	Not Used	160	15.46	53	81	123	11.6	19	1.78	11.50%
Whitehurst	FC12.5	Granite	Not Used	197	19.67	47	61	96	8.5	1	0.10	0.51%

Aggregate Type of "Mixed" has been excluded from this report.

Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

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Ride Distribution of All Lots

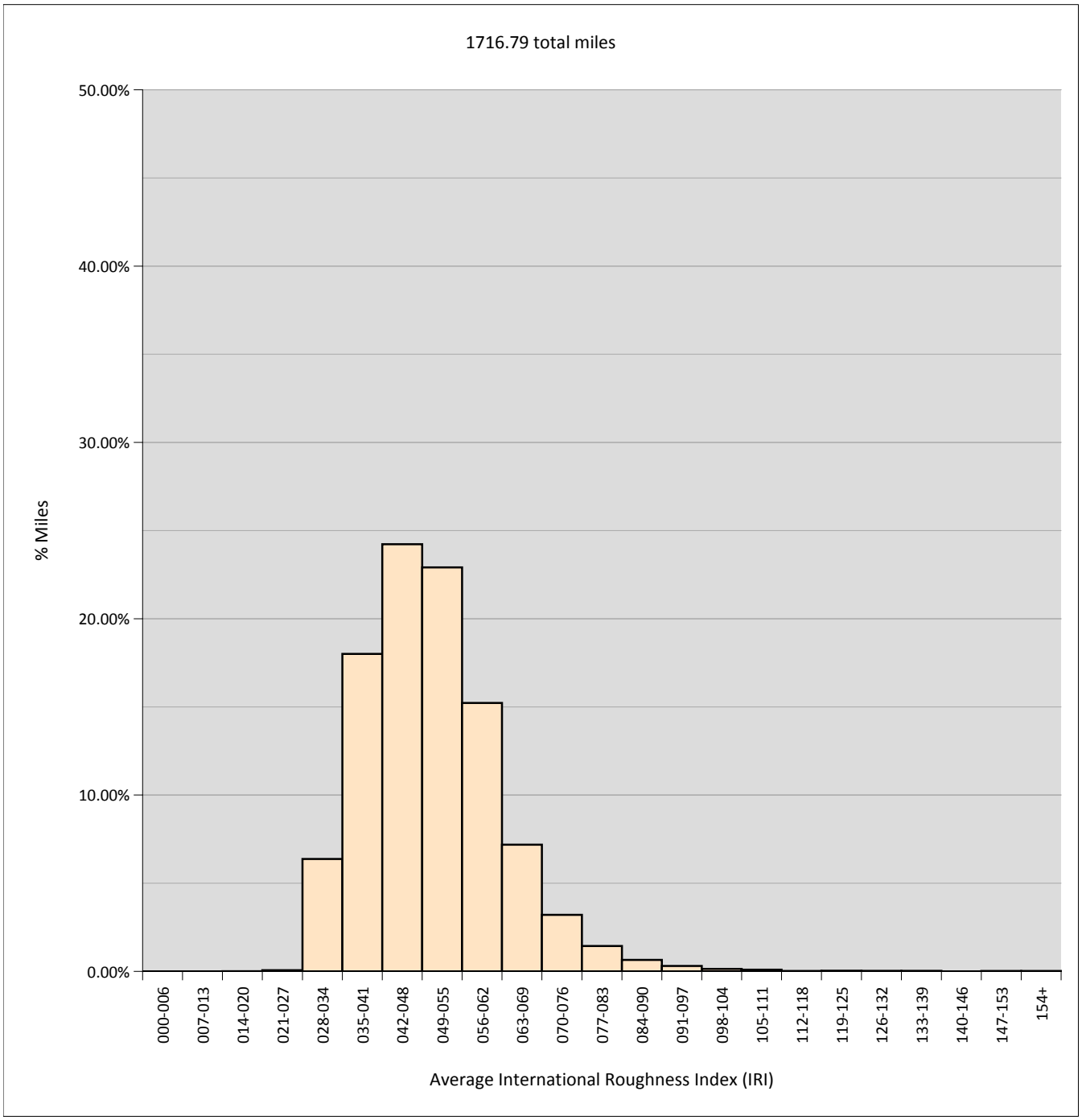

Figure 3: District 1 Ride Distribution, All Lots

Type	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
							Lots	Miles	% Miles
All Lots	17644	1716.79	20	50	207	12.1	91	7.09	0.41%

Ride Distribution by Friction Course and System

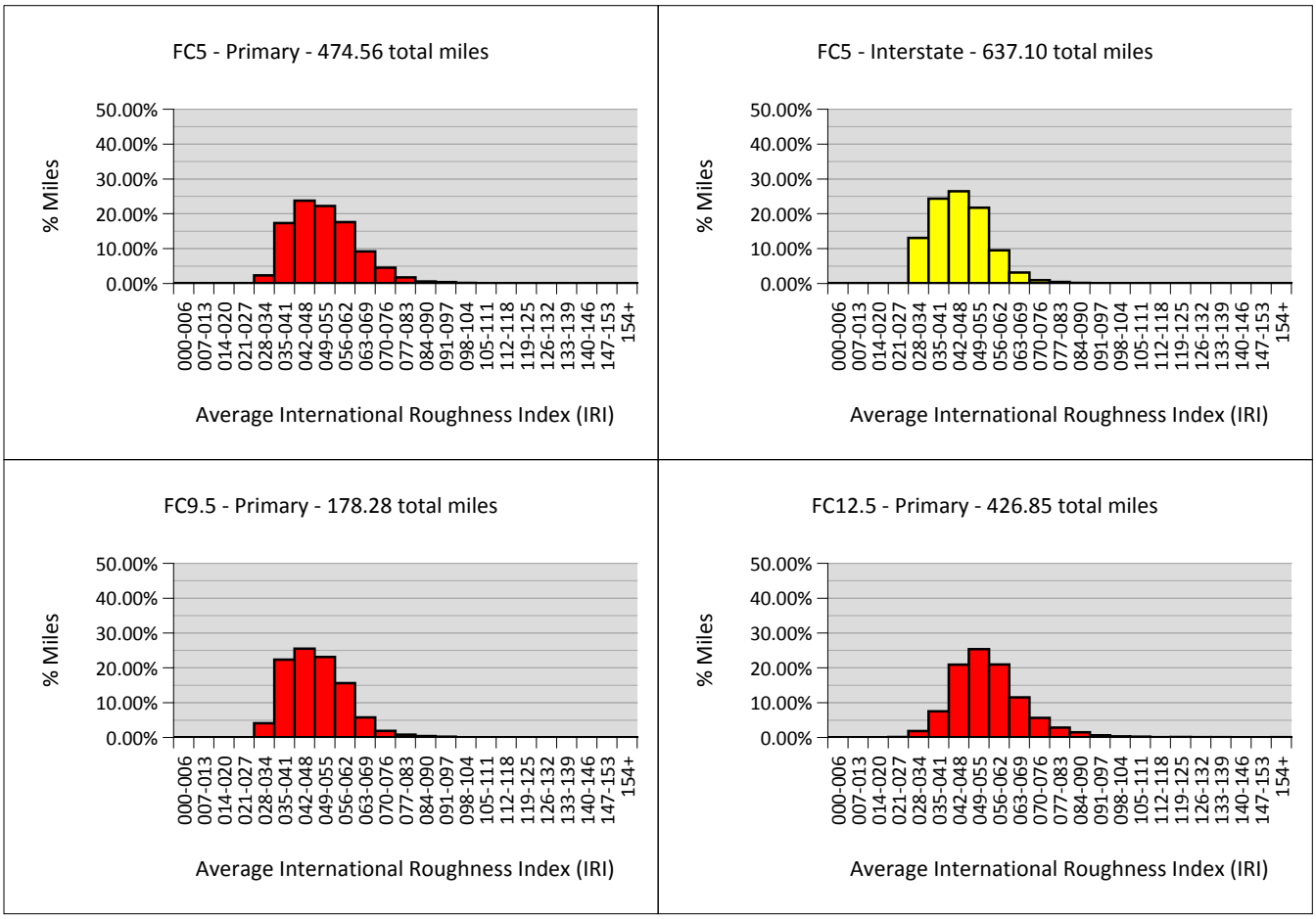

Figure 4: District 1 Ride Distribution by Friction Course and System

Friction Course	System	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
								Lots	Miles	% Miles
FC5	Primary	4854	474.56	29	52	198	11.6	21	1.43	0.30%
FC5	Interstate	6601	637.10	27	46	127	9.7	5	0.34	0.05%
FC9.5	Primary	1826	178.28	29	49	189	10.9	7	0.42	0.23%
FC12.5	Primary	4363	426.85	20	56	207	13.4	58	4.91	1.15%

Table 6: District 1 Statistical Summary by Friction Course, System, Year, and Aggregate

Friction Course	System	Year	Aggregate	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	2005	Limestone	410	39.25	40	59	102	9.9	2	0.20	0.51%
FC5	Primary	2006	Limestone	843	81.95	34	53	198	9.0	6	0.10	0.13%
FC5	Primary	2007	Granite	14	1.40	52	66	91	10.8	0	0.00	0.00%
FC5	Primary	2007	Limestone	1325	130.65	30	51	107	10.9	1	0.01	0.01%
FC5	Primary	2008	Granite	136	13.23	31	47	81	8.7	0	0.00	0.00%
FC5	Primary	2008	Limestone	293	28.22	39	59	123	10.8	2	0.16	0.58%
FC5	Primary	2009	Granite	961	94.38	29	49	110	13.7	9	0.89	0.94%
FC5	Primary	2009	Limestone	434	42.51	34	54	88	10.5	0	0.00	0.00%
FC5	Primary	2010	Granite	78	7.63	31	50	77	11.4	0	0.00	0.00%
FC5	Primary	2010	Limestone	360	35.35	32	47	106	10.5	1	0.06	0.16%
FC5	Interstate	2005	Limestone	595	58.43	41	54	127	6.9	1	0.02	0.04%
FC5	Interstate	2006	Granite	91	8.04	35	47	85	8.1	0	0.00	0.00%
FC5	Interstate	2006	Limestone	56	5.27	45	60	82	7.7	0	0.00	0.00%
FC5	Interstate	2007	Limestone	728	71.72	30	50	101	8.9	1	0.10	0.14%
FC5	Interstate	2008	Granite	49	4.12	33	40	90	5.3	0	0.00	0.00%
FC5	Interstate	2008	Limestone	1056	99.13	34	52	101	8.0	1	0.07	0.07%
FC5	Interstate	2009	Granite	1556	150.28	27	45	107	10.1	2	0.15	0.10%
FC5	Interstate	2009	Limestone	418	40.57	36	48	65	5.1	0	0.00	0.00%
FC5	Interstate	2010	Granite	2052	199.54	27	38	86	6.1	0	0.00	0.00%
FC9.5	Primary	2005	Granite	53	5.01	42	58	106	9.2	1	0.03	0.60%
FC9.5	Primary	2006	Limestone	697	68.21	29	46	189	11.7	4	0.30	0.44%
FC9.5	Primary	2008	Granite	176	17.53	33	44	60	4.7	0	0.00	0.00%
FC9.5	Primary	2008	Limestone	780	75.57	31	53	111	9.7	2	0.09	0.12%
FC9.5	Primary	2009	Limestone	12	1.17	40	55	89	16.7	0	0.00	0.00%
FC12.5	Primary	2005	Granite	198	19.49	47	75	207	23.4	25	2.34	12.02%
FC12.5	Primary	2005	Limestone	486	47.94	33	46	70	6.0	0	0.00	0.00%
FC12.5	Primary	2006	Granite	253	24.88	33	56	90	10.1	0	0.00	0.00%
FC12.5	Primary	2006	Limestone	962	94.34	31	57	153	11.9	14	1.23	1.31%
FC12.5	Primary	2007	Granite	94	9.25	50	76	106	11.7	5	0.43	4.61%
FC12.5	Primary	2007	Limestone	133	12.71	37	50	115	8.4	2	0.05	0.39%
FC12.5	Primary	2008	Limestone	382	37.08	32	55	94	9.3	0	0.00	0.00%
FC12.5	Primary	2009	Granite	379	36.31	26	54	106	12.7	2	0.20	0.55%
FC12.5	Primary	2009	Limestone	136	13.53	42	60	96	10.2	1	0.10	0.74%
FC12.5	Primary	2010	Granite	1284	126.00	20	54	135	12.6	9	0.56	0.44%
FC12.5	Primary	2010	Limestone	10	0.94	41	54	73	10.8	0	0.00	0.00%

Aggregate Type of "Mixed" has been excluded from this report.

Table 7: District 1 Statistical Summary by Friction Course, System, Aggregate, and Material Transfer Device Status

Friction Course	System	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Granite	Fully Used	1039	102.00	29	49	110	13.6	9	0.89	0.87%
FC5	Primary	Limestone	Fully Used	548	54.40	32	46	82	8.7	0	0.00	0.00%
FC5	Primary	Limestone	Not Used	246	23.46	41	60	106	9.5	1	0.06	0.24%
FC5	Interstate	Granite	Fully Used	2867	277.18	27	41	107	8.3	2	0.15	0.06%
FC5	Interstate	Granite	Not Used	270	26.43	39	52	80	6.8	0	0.00	0.00%
FC5	Interstate	Limestone	Not Used	418	40.57	36	48	65	5.1	0	0.00	0.00%
FC9.5	Primary	Limestone	Not Used	12	1.17	40	55	89	16.7	0	0.00	0.00%
FC12.5	Primary	Granite	Fully Used	453	44.53	20	51	106	15.3	2	0.20	0.45%
FC12.5	Primary	Granite	Not Used	1042	101.48	35	56	135	10.4	7	0.47	0.46%
FC12.5	Primary	Limestone	Fully Used	146	14.46	41	60	96	10.4	1	0.10	0.69%
All	All	Granite & Limestone	Fully Used	5053	492.57	20	45	110	11.5	14	1.34	0.27%
All	All	Granite & Limestone	Not Used	1988	193.10	35	55	135	9.8	8	0.52	0.27%

Aggregate Type of "Mixed" has been excluded from this report.

Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Table 8: District 1 Statistical Summary by Friction Course, System, Aggregate, and Paving Time

Friction Course	System	Aggregate	Paving Time	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Granite	Day	500	48.78	30	45	91	8.3	0	0.00	0.00%
FC5	Primary	Granite	Night	118	11.57	31	49	81	11.2	0	0.00	0.00%
FC5	Primary	Limestone	Day	1062	104.67	32	53	136	10.0	2	0.03	0.03%
FC5	Primary	Limestone	Night	878	85.30	37	57	123	10.2	4	0.23	0.27%
FC5	Interstate	Granite	Night	3748	361.98	27	41	107	8.7	2	0.15	0.04%
FC5	Interstate	Limestone	Day	1964	190.10	30	50	101	7.9	2	0.17	0.09%
FC5	Interstate	Limestone	Night	154	14.85	36	48	65	6.0	0	0.00	0.00%
FC9.5	Primary	Limestone	Day	1397	136.02	29	50	189	11.3	6	0.39	0.29%
FC12.5	Primary	Granite	Day	1621	158.75	26	56	132	12.7	14	1.13	0.71%
FC12.5	Primary	Granite	Night	274	26.65	20	49	135	14.2	1	0.01	0.04%
FC12.5	Primary	Limestone	Day	1203	118.27	31	56	133	11.2	16	1.37	1.16%
FC12.5	Primary	Limestone	Night	75	6.83	40	59	153	12.3	1	0.01	0.21%
All	All	Granite & Limestone	Day	7747	756.58	26	53	189	11.0	40	3.09	0.41%
All	All	Granite & Limestone	Night	5247	507.18	20	45	153	11.4	8	0.41	0.08%

Aggregate Type of "Mixed" has been excluded from this report.

Paving Times of "Both" and "Unknown" have been excluded from this report.

Table 9: District 1 Statistical Summary by Contractor, Friction Course, Aggregate, and Material Transfer Device Status

Contractor	Friction Course	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
A.P.A.C.	FC5	Granite	Fully Used	634	62.23	29	44	88	7.9	0	0.00	0.00%
A.P.A.C.	FC5	Granite	Not Used	270	26.43	39	52	80	6.8	0	0.00	0.00%
A.P.A.C.	FC5	Limestone	Not Used	278	27.16	36	54	88	9.3	0	0.00	0.00%
A.P.A.C.	FC12.5	Granite	Not Used	330	31.53	39	58	135	10.0	2	0.11	0.35%
Ajax Paving Industry	FC5	Granite	Fully Used	3117	301.47	27	42	107	8.7	2	0.15	0.05%
Ajax Paving Industry	FC5	Limestone	Fully Used	452	44.81	32	45	82	7.8	0	0.00	0.00%
Ajax Paving Industry	FC12.5	Granite	Fully Used	373	36.56	20	47	101	13.2	1	0.10	0.27%
Better Roads Inc.	FC5	Limestone	Not Used	350	33.65	39	50	84	7.5	0	0.00	0.00%
Better Roads Inc.	FC9.5	Limestone	Not Used	12	1.17	40	55	89	16.7	0	0.00	0.00%
Community Asphalt Corp.	FC12.5	Limestone	Fully Used	136	13.53	42	60	96	10.2	1	0.10	0.74%
Dickerson Asphalt	FC12.5	Limestone	Fully Used	10	0.94	41	54	73	10.8	0	0.00	0.00%
Lane Construction Corp.	FC5	Limestone	Fully Used	96	9.59	38	53	82	9.1	0	0.00	0.00%
Lane Construction Corp.	FC12.5	Granite	Fully Used	80	7.97	49	69	106	10.0	1	0.10	1.26%
Middlesex Corp.	FC12.5	Granite	Not Used	115	11.04	46	63	100	8.3	1	0.04	0.40%
Orlando Paving Company	FC5	Granite	Fully Used	155	15.48	42	72	110	14.8	9	0.89	5.75%
S. T. Wooten Corp.	FC5	Limestone	Not Used	36	3.21	41	63	106	13.6	1	0.06	1.77%
Superior Asphalt Inc.	FC12.5	Granite	Not Used	597	58.90	35	54	132	10.2	4	0.31	0.53%

Aggregate Type of "Mixed" has been excluded from this report.

Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Ride Distribution of All Lots

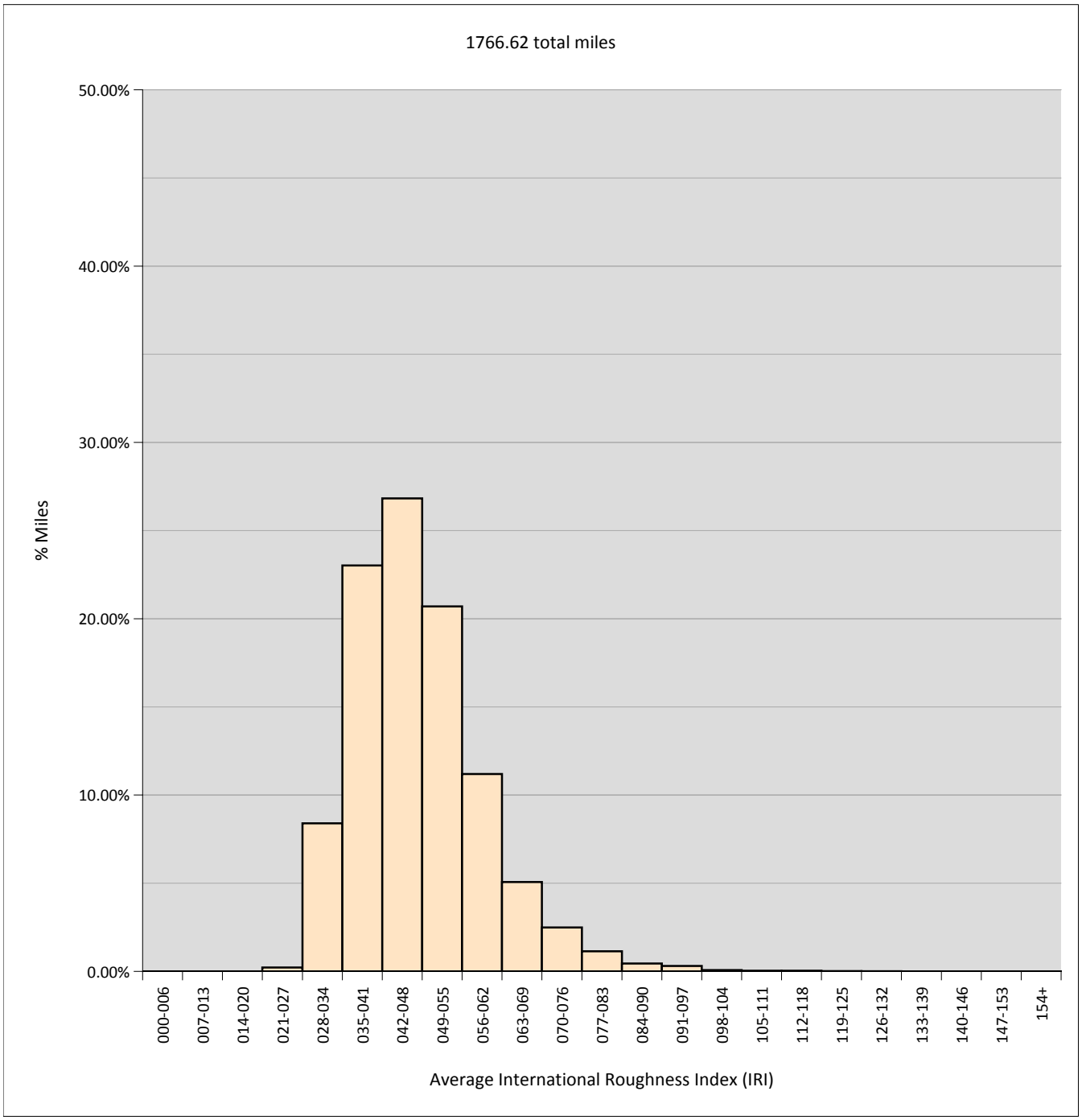

Figure 5: District 2 Ride Distribution, All Lots

Type	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
							Lots	Miles	% Miles
All Lots	18020	1766.62	23	48	161	11.3	60	4.24	0.24%

Ride Distribution by Friction Course and System

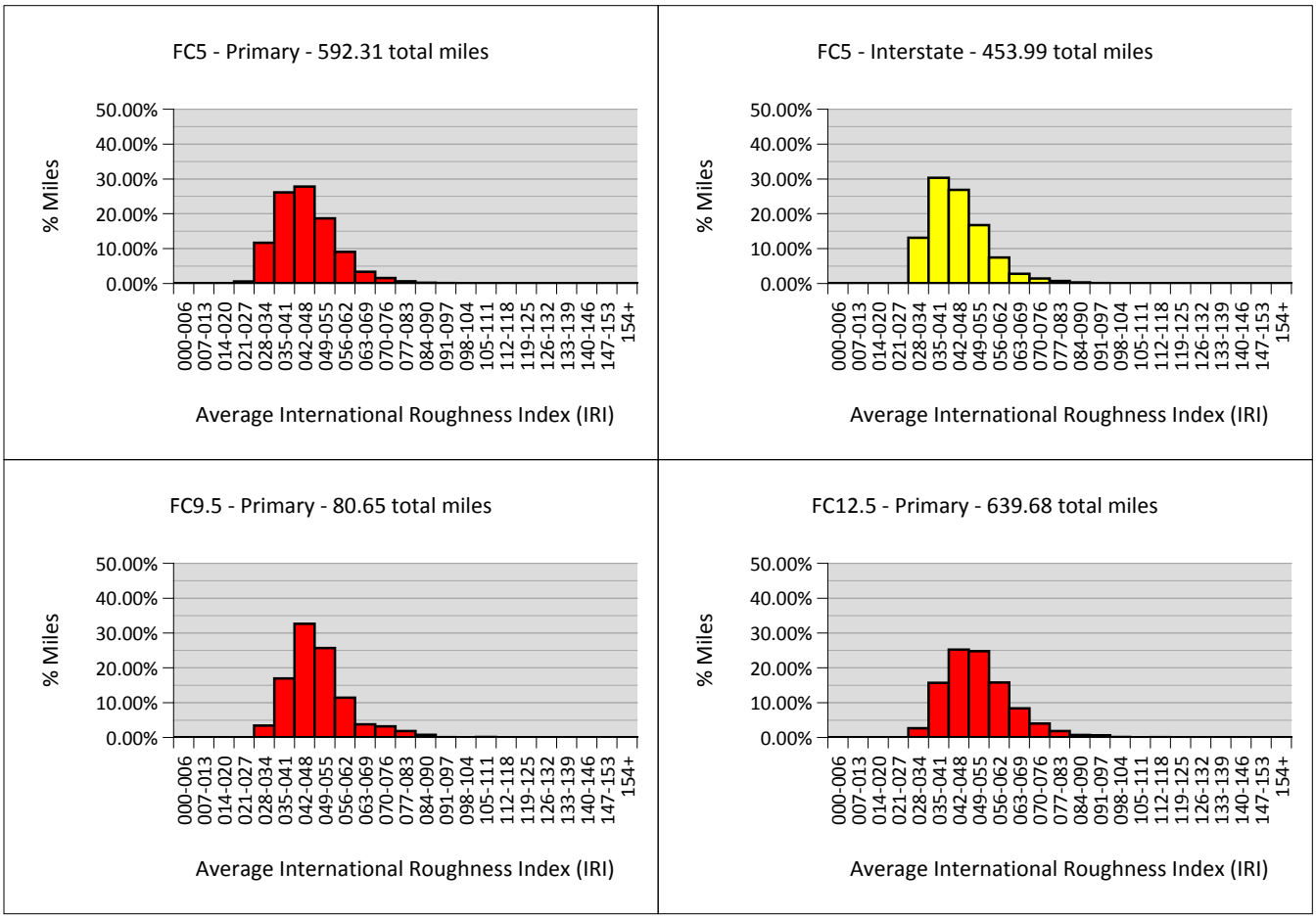

Figure 6: District 2 Ride Distribution by Friction Course and System

Friction Course	System	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
								Lots	Miles	% Miles
FC5	Primary	6032	592.31	23	46	131	10.4	13	0.73	0.12%
FC5	Interstate	4669	453.99	26	45	111	10.2	9	0.69	0.15%
FC9.5	Primary	827	80.65	29	49	147	10.6	2	0.11	0.14%
FC12.5	Primary	6492	639.68	24	52	161	11.6	36	2.70	0.42%

Table 10: District 2 Statistical Summary by Friction Course, System, Year, and Aggregate

Friction Course	System	Year	Aggregate	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	2005	Granite	536	52.95	31	46	127	9.5	1	0.06	0.12%
FC5	Primary	2005	Limestone	72	6.13	44	65	131	12.1	6	0.21	3.38%
FC5	Primary	2006	Granite	445	44.07	35	52	98	9.8	1	0.10	0.23%
FC5	Primary	2006	Limestone	276	27.26	42	57	125	11.0	3	0.28	1.02%
FC5	Primary	2007	Granite	1563	154.56	30	45	91	7.7	0	0.00	0.00%
FC5	Primary	2008	Granite	577	55.94	36	52	99	9.0	1	0.04	0.07%
FC5	Primary	2009	Granite	847	83.48	24	43	90	7.8	0	0.00	0.00%
FC5	Primary	2010	Granite	1716	167.93	23	40	97	10.0	1	0.05	0.03%
FC5	Interstate	2005	Granite	492	47.04	29	55	97	11.6	1	0.10	0.21%
FC5	Interstate	2006	Granite	420	41.53	28	38	57	5.1	0	0.00	0.00%
FC5	Interstate	2007	Granite	2033	198.08	28	47	111	8.3	6	0.39	0.20%
FC5	Interstate	2008	Granite	1039	101.55	26	43	110	11.4	2	0.20	0.20%
FC5	Interstate	2009	Granite	296	29.00	28	39	74	7.4	0	0.00	0.00%
FC5	Interstate	2010	Granite	389	36.79	29	40	90	6.9	0	0.00	0.00%
FC9.5	Primary	2005	Granite	397	38.85	33	53	147	11.1	1	0.01	0.03%
FC9.5	Primary	2007	Granite	224	22.04	30	49	105	8.4	1	0.10	0.45%
FC9.5	Primary	2008	Granite	165	15.92	29	41	70	7.7	0	0.00	0.00%
FC9.5	Primary	2010	Granite	41	3.83	39	49	74	6.9	0	0.00	0.00%
FC12.5	Primary	2005	Granite	196	19.48	41	58	104	11.4	3	0.21	1.10%
FC12.5	Primary	2006	Granite	1346	132.38	24	51	161	10.3	11	0.73	0.55%
FC12.5	Primary	2006	Limestone	10	0.95	43	53	74	9.2	0	0.00	0.00%
FC12.5	Primary	2007	Granite	1117	109.87	32	55	122	10.3	3	0.13	0.11%
FC12.5	Primary	2008	Granite	1687	166.43	28	49	104	10.8	2	0.20	0.12%
FC12.5	Primary	2009	Granite	825	81.71	28	50	114	13.1	8	0.72	0.88%
FC12.5	Primary	2010	Granite	1199	117.76	31	53	107	12.2	8	0.61	0.52%

Aggregate Type of "Mixed" has been excluded from this report.

Table 11: District 2 Statistical Summary by Friction Course, System, Aggregate, and Material Transfer Device Status

Friction Course	System	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Granite	Fully Used	1997	195.94	23	40	97	8.9	1	0.05	0.03%
FC5	Interstate	Granite	Fully Used	605	57.91	28	39	90	6.7	0	0.00	0.00%
FC9.5	Primary	Granite	Not Used	41	3.83	39	49	74	6.9	0	0.00	0.00%
FC12.5	Primary	Granite	Fully Used	298	29.31	34	50	90	8.4	0	0.00	0.00%
FC12.5	Primary	Granite	Not Used	914	90.15	28	54	114	13.6	10	0.89	0.99%
All	All	Granite	Fully Used	2900	283.16	23	41	97	9.0	1	0.05	0.02%
All	All	Granite	Not Used	955	93.98	28	53	114	13.4	10	0.89	0.95%

Aggregate Type of "Mixed" has been excluded from this report.

Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Table 12: District 2 Statistical Summary by Friction Course, System, Aggregate, and Paving Time

Friction Course	System	Aggregate	Paving Time	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Granite	Day	3738	367.83	25	46	98	9.5	2	0.15	0.04%
FC5	Primary	Granite	Night	205	18.82	36	56	99	11.5	1	0.04	0.20%
FC5	Primary	Limestone	Day	276	27.26	42	57	125	11.0	3	0.28	1.02%
FC5	Interstate	Granite	Day	420	41.53	28	38	57	5.1	0	0.00	0.00%
FC5	Interstate	Granite	Night	998	93.93	28	43	111	10.1	6	0.39	0.42%
FC9.5	Primary	Granite	Day	224	22.04	30	49	105	8.4	1	0.10	0.45%
FC9.5	Primary	Granite	Night	206	19.75	29	43	74	8.1	0	0.00	0.00%
FC12.5	Primary	Granite	Day	5475	540.38	28	51	161	10.7	16	1.22	0.22%
FC12.5	Primary	Granite	Night	157	14.70	37	68	114	16.1	9	0.79	5.39%
FC12.5	Primary	Limestone	Day	10	0.95	43	53	74	9.2	0	0.00	0.00%
All	All	Granite & Limestone	Day	10143	999.99	25	48	161	10.6	22	1.74	0.17%
All	All	Granite & Limestone	Night	1566	147.20	28	47	114	13.5	16	1.22	0.83%

Aggregate Type of "Mixed" has been excluded from this report.

Paving Times of "Both" and "Unknown" have been excluded from this report.

Table 13: District 2 Statistical Summary by Contractor, Friction Course, Aggregate, and Material Transfer Device Status

Contractor	Friction Course	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
A.P.A.C.	FC5	Granite	Fully Used	402	39.48	28	39	64	6.2	0	0.00	0.00%
A.P.A.C.	FC9.5	Granite	Not Used	41	3.83	39	49	74	6.9	0	0.00	0.00%
A.P.A.C.	FC12.5	Granite	Not Used	174	17.40	37	51	77	8.9	0	0.00	0.00%
Anderson Columbia	FC5	Granite	Fully Used	1184	117.34	25	39	83	7.9	0	0.00	0.00%
Anderson Columbia	FC12.5	Granite	Fully Used	116	11.48	34	49	90	8.9	0	0.00	0.00%
Anderson Columbia	FC12.5	Granite	Not Used	473	46.84	28	48	97	11.3	1	0.10	0.21%
Atlantic Coast	FC5	Granite	Fully Used	482	45.71	24	38	90	7.8	0	0.00	0.00%
Duval Asphalt	FC5	Granite	Fully Used	274	25.71	38	50	97	8.6	1	0.05	0.19%
Duval Asphalt	FC12.5	Granite	Fully Used	82	8.02	35	47	75	6.2	0	0.00	0.00%
Duval Asphalt	FC12.5	Granite	Not Used	50	4.77	59	81	114	12.9	7	0.62	12.89%
GAC Contractors	FC5	Granite	Fully Used	260	25.61	23	34	60	5.7	0	0.00	0.00%
P & S Paving	FC12.5	Granite	Not Used	20	1.47	53	71	99	14.1	1	0.08	5.30%
Peavy and Sons	FC12.5	Granite	Fully Used	100	9.81	39	54	73	7.9	0	0.00	0.00%
Whitehurst	FC12.5	Granite	Not Used	197	19.67	47	61	96	8.5	1	0.10	0.51%

Aggregate Type of "Mixed" has been excluded from this report.

Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Ride Distribution of All Lots

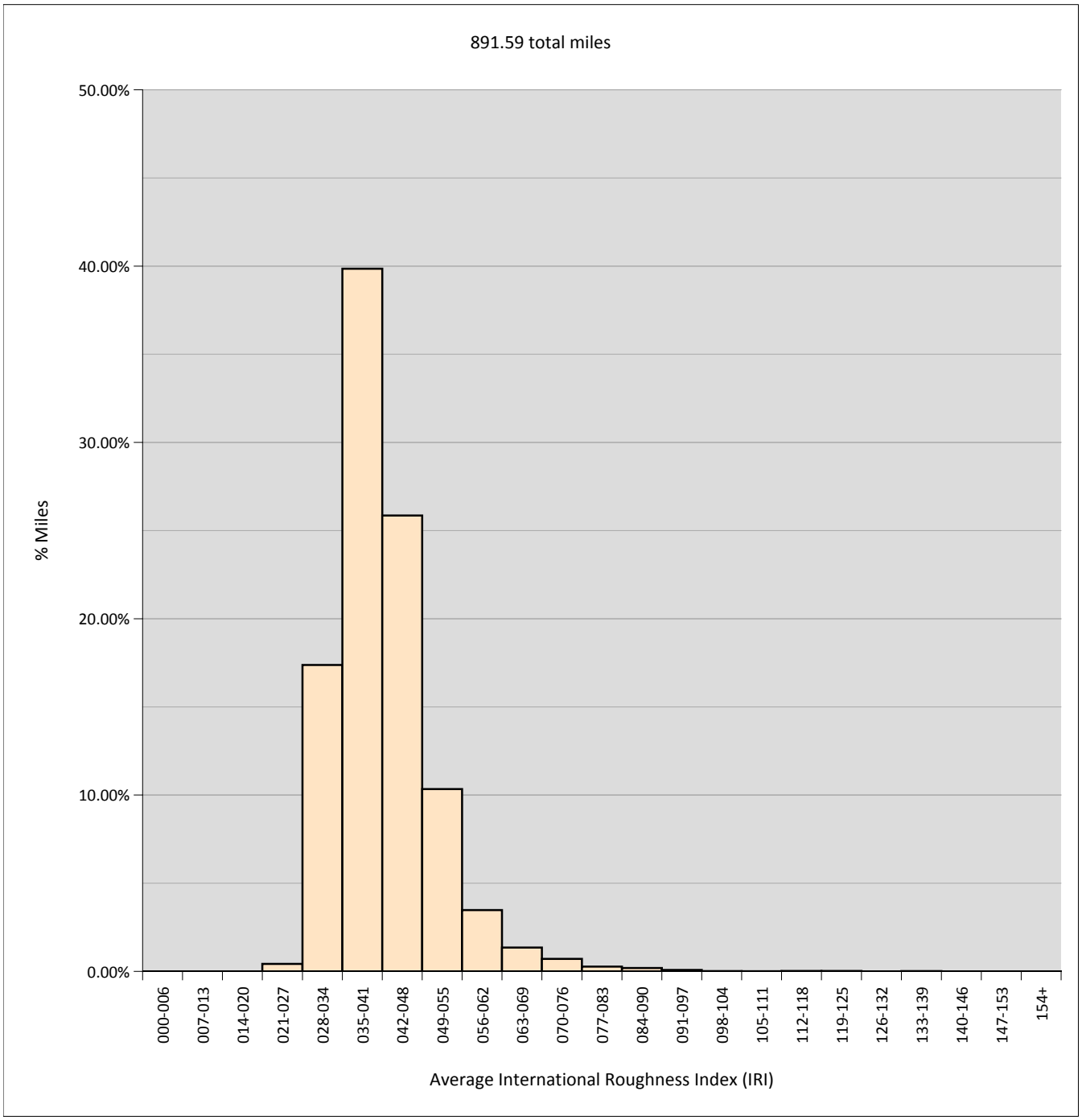

Figure 7: District 3 Ride Distribution, All Lots

Type	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
							Lots	Miles	% Miles
All Lots	9081	891.59	25	42	136	8.8	12	0.82	0.09%

Ride Distribution by Friction Course and System

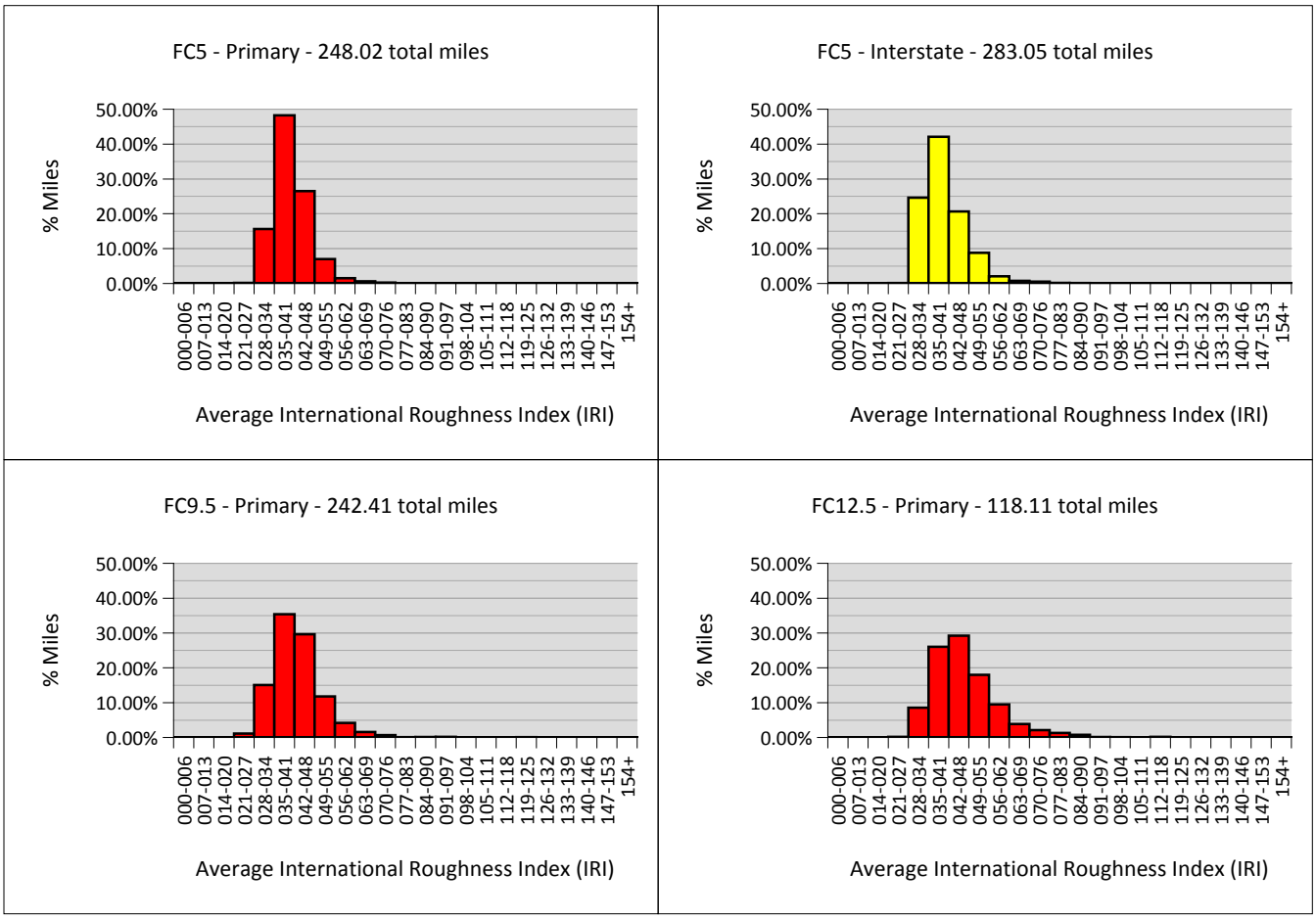

Figure 8: District 3 Ride Distribution by Friction Course and System

Friction Course	System	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
								Lots	Miles	% Miles
FC5	Primary	2521	248.02	27	40	87	6.6	0	0.00	0.00%
FC5	Interstate	2904	283.05	27	40	130	7.8	2	0.06	0.02%
FC9.5	Primary	2452	242.41	25	42	136	9.2	6	0.46	0.19%
FC12.5	Primary	1204	118.11	26	47	114	11.3	4	0.31	0.26%

Table 14: District 3 Statistical Summary by Friction Course, System, Year, and Aggregate

Friction Course	System	Year	Aggregate	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	2007	Granite	1170	115.87	28	40	79	6.0	0	0.00	0.00%
FC5	Primary	2008	Granite	266	26.30	31	41	83	6.0	0	0.00	0.00%
FC5	Primary	2009	Granite	737	72.06	27	39	87	7.5	0	0.00	0.00%
FC5	Primary	2010	Granite	348	33.79	29	42	67	6.2	0	0.00	0.00%
FC5	Interstate	2006	Granite	341	32.78	34	46	77	5.7	0	0.00	0.00%
FC5	Interstate	2007	Granite	371	36.22	28	37	75	5.3	0	0.00	0.00%
FC5	Interstate	2008	Granite	1115	108.59	27	41	107	8.4	1	0.04	0.04%
FC5	Interstate	2009	Granite	775	75.43	28	40	130	7.7	1	0.01	0.02%
FC5	Interstate	2010	Granite	302	30.03	28	34	63	4.3	0	0.00	0.00%
FC9.5	Primary	2007	Granite	496	48.70	28	43	101	7.9	2	0.06	0.12%
FC9.5	Primary	2008	Granite	498	49.08	25	39	67	7.0	0	0.00	0.00%
FC9.5	Primary	2009	Granite	748	74.25	25	42	97	8.0	1	0.10	0.13%
FC9.5	Primary	2010	Granite	710	70.39	25	44	136	11.6	3	0.30	0.43%
FC12.5	Primary	2005	Granite	78	7.68	41	59	87	10.1	0	0.00	0.00%
FC12.5	Primary	2007	Granite	197	19.24	27	50	114	13.1	2	0.20	1.04%
FC12.5	Primary	2008	Granite	224	22.20	26	39	95	8.6	0	0.00	0.00%
FC12.5	Primary	2009	Granite	184	18.16	28	44	68	7.0	0	0.00	0.00%
FC12.5	Primary	2010	Granite	521	50.84	31	48	102	10.4	2	0.11	0.21%

Aggregate Type of "Mixed" has been excluded from this report.

Table 15: District 3 Statistical Summary by Friction Course, System, Aggregate, and Material Transfer Device Status

Friction Course	System	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Granite	Fully Used	1085	105.85	27	40	87	7.2	0	0.00	0.00%
FC5	Interstate	Granite	Fully Used	1077	105.46	28	39	130	7.5	1	0.01	0.01%
FC9.5	Primary	Granite	Fully Used	1410	139.93	25	43	136	10.1	4	0.40	0.28%
FC12.5	Primary	Granite	Fully Used	705	69.00	28	47	102	9.8	2	0.11	0.16%
All	All	Granite	Fully Used	4277	420.23	25	42	136	9.2	7	0.52	0.12%

Aggregate Type of "Mixed" has been excluded from this report.
Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Table 16: District 3 Statistical Summary by Friction Course, System, Aggregate, and Paving Time

Friction Course	System	Aggregate	Paving Time	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Granite	Day	2095	205.88	27	40	87	6.4	0	0.00	0.00%
FC5	Primary	Granite	Night	126	12.43	31	43	83	7.4	0	0.00	0.00%
FC5	Interstate	Granite	Day	2136	209.84	28	40	107	7.7	1	0.04	0.02%
FC5	Interstate	Granite	Night	429	41.24	27	37	74	5.9	0	0.00	0.00%
FC9.5	Primary	Granite	Day	1646	162.41	25	44	136	9.5	5	0.36	0.22%
FC9.5	Primary	Granite	Night	80	7.99	26	35	48	4.8	0	0.00	0.00%
FC12.5	Primary	Granite	Day	842	82.39	27	48	114	10.7	4	0.31	0.37%
FC12.5	Primary	Granite	Night	92	8.97	31	42	94	7.5	0	0.00	0.00%
All	All	Granite	Day	6719	660.52	25	42	136	8.8	10	0.71	0.11%
All	All	Granite	Night	727	70.63	26	39	94	6.8	0	0.00	0.00%

Aggregate Type of "Mixed" has been excluded from this report.

Paving Times of "Both" and "Unknown" have been excluded from this report.

Table 17: District 3 Statistical Summary by Contractor, Friction Course, Aggregate, and Material Transfer Device Status

Contractor	Friction Course	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
A.P.A.C.	FC5	Granite	Fully Used	302	30.03	28	34	63	4.3	0	0.00	0.00%
A.P.A.C.	FC9.5	Granite	Fully Used	124	12.27	29	42	63	6.9	0	0.00	0.00%
A.P.A.C.	FC12.5	Granite	Fully Used	60	5.85	31	42	94	8.7	0	0.00	0.00%
Anderson Columbia	FC5	Granite	Fully Used	522	50.62	29	41	84	6.1	0	0.00	0.00%
Anderson Columbia	FC9.5	Granite	Fully Used	210	20.82	26	41	77	7.1	0	0.00	0.00%
Anderson Columbia	FC12.5	Granite	Fully Used	603	59.05	32	48	102	9.6	2	0.11	0.18%
C. W. Roberts Contracting	FC5	Granite	Fully Used	760	75.30	27	37	87	6.1	0	0.00	0.00%
C. W. Roberts Contracting	FC9.5	Granite	Fully Used	312	30.91	26	42	97	8.4	1	0.10	0.32%
C. W. Roberts Contracting	FC12.5	Granite	Fully Used	42	4.10	28	39	60	7.1	0	0.00	0.00%
Panhandle Grading & Paving	FC9.5	Granite	Fully Used	452	44.86	25	46	136	13.1	3	0.30	0.67%
Peavy and Sons	FC5	Granite	Fully Used	578	55.36	30	45	130	7.5	1	0.01	0.03%
Peavy and Sons	FC9.5	Granite	Fully Used	312	31.06	25	43	72	8.1	0	0.00	0.00%

Aggregate Type of "Mixed" has been excluded from this report.

Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Ride Distribution of All Lots

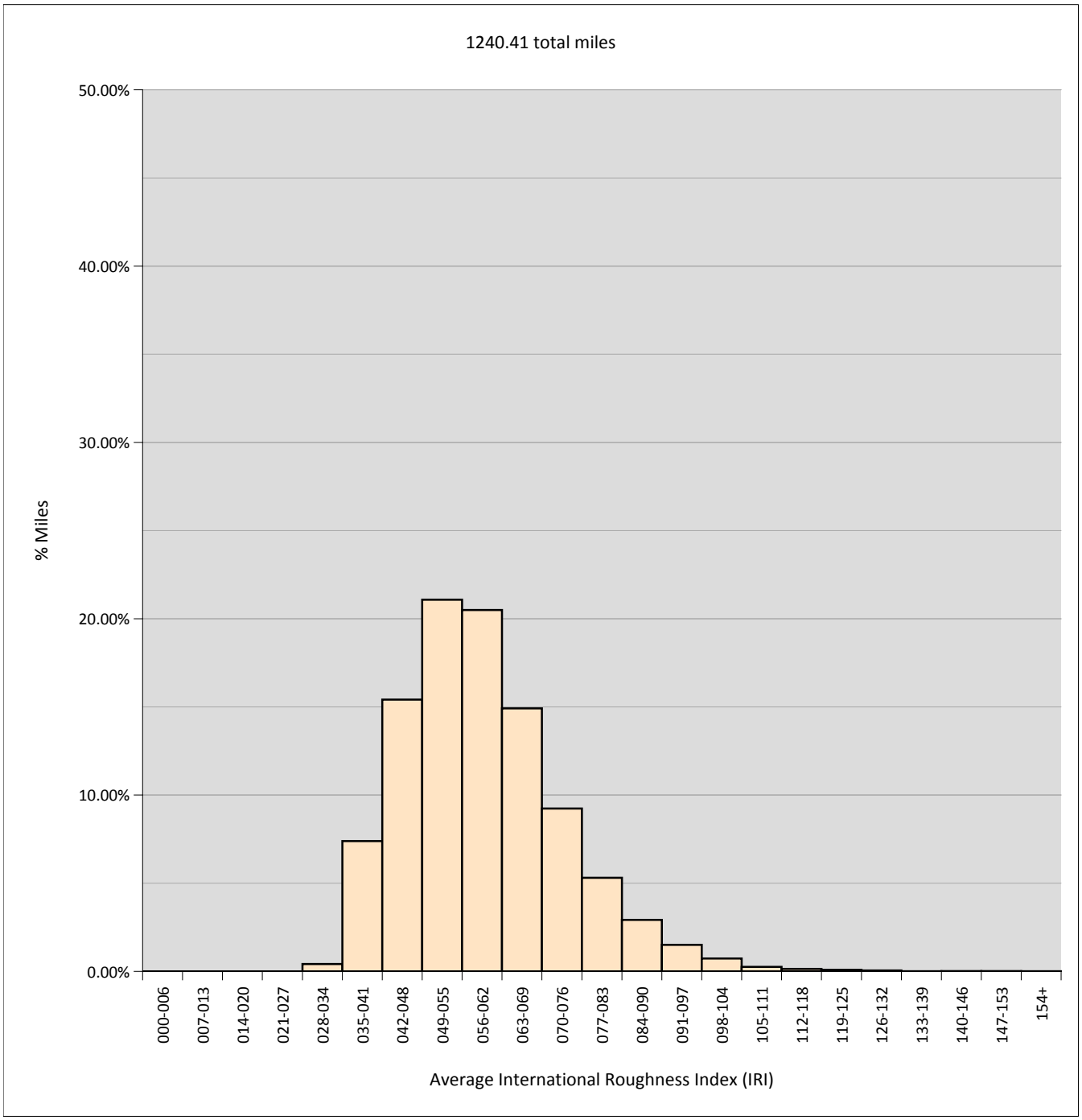

Figure 9: District 4 Ride Distribution, All Lots

Type	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
							Lots	Miles	% Miles
All Lots	12846	1240.41	29	59	177	14.0	242	20.45	1.65%

Ride Distribution by Friction Course and System

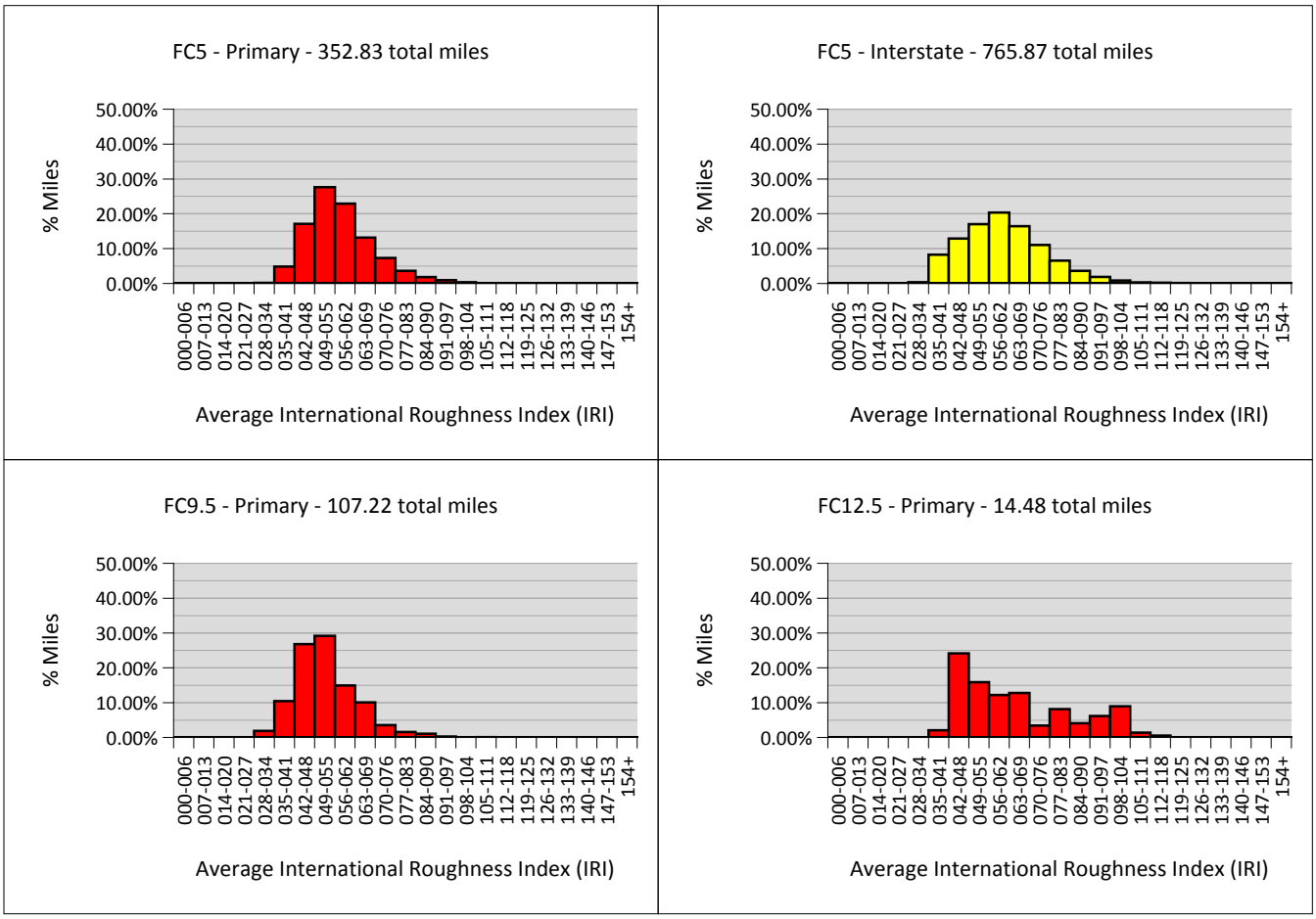

Figure 10: District 4 Ride Distribution by Friction Course and System

Friction Course	System	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
								Lots	Miles	% Miles
FC5	Primary	3592	352.83	33	58	177	11.7	32	2.41	0.68%
FC5	Interstate	8016	765.87	32	61	166	14.8	191	16.20	2.11%
FC9.5	Primary	1092	107.22	29	53	127	10.8	2	0.16	0.15%
FC12.5	Primary	146	14.48	37	65	114	19.6	17	1.68	11.61%

Table 18: District 4 Statistical Summary by Friction Course, System, Year, and Aggregate

Friction Course	System	Year	Aggregate	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	2007	Limestone	1252	123.36	41	62	142	11.7	20	1.62	1.31%
FC5	Primary	2008	Limestone	485	46.64	36	56	177	10.9	6	0.28	0.59%
FC5	Primary	2009	Limestone	998	98.92	33	56	103	11.7	5	0.43	0.44%
FC5	Primary	2010	Limestone	857	83.92	33	53	96	9.3	1	0.09	0.10%
FC5	Interstate	2005	Limestone	806	74.37	42	67	119	11.2	14	1.21	1.62%
FC5	Interstate	2006	Limestone	1364	133.23	42	67	141	12.5	42	3.90	2.93%
FC5	Interstate	2007	Limestone	993	93.05	44	69	166	11.1	28	1.99	2.14%
FC5	Interstate	2008	Limestone	1886	180.18	35	61	151	15.8	70	5.90	3.27%
FC5	Interstate	2009	Limestone	1351	129.05	32	50	105	13.8	11	0.94	0.73%
FC5	Interstate	2010	Limestone	1616	155.99	35	56	134	12.5	26	2.27	1.45%
FC9.5	Primary	2008	Limestone	138	13.49	42	65	105	11.5	1	0.10	0.74%
FC9.5	Primary	2009	Limestone	452	44.46	34	53	127	8.7	1	0.06	0.14%
FC9.5	Primary	2010	Limestone	502	49.27	29	48	89	9.2	0	0.00	0.00%
FC12.5	Primary	2007	Limestone	114	11.32	37	57	101	12.7	1	0.10	0.88%
FC12.5	Primary	2010	Limestone	32	3.16	77	95	114	8.8	16	1.58	50.00%

Aggregate Type of "Mixed" has been excluded from this report.

Table 19: District 4 Statistical Summary by Friction Course, System, Aggregate, and Material Transfer Device Status

Friction Course	System	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Limestone	Fully Used	1688	166.84	33	55	103	10.7	5	0.43	0.26%
FC5	Primary	Limestone	Not Used	167	16.00	35	53	96	11.4	1	0.09	0.54%
FC5	Interstate	Limestone	Fully Used	794	77.04	32	40	74	4.1	0	0.00	0.00%
FC5	Interstate	Limestone	Not Used	856	82.38	42	64	134	13.8	34	3.09	3.75%
FC9.5	Primary	Limestone	Fully Used	404	39.78	29	50	127	10.1	1	0.06	0.15%
FC9.5	Primary	Limestone	Not Used	68	6.51	30	46	76	8.7	0	0.00	0.00%
FC12.5	Primary	Limestone	Not Used	32	3.16	77	95	114	8.8	16	1.58	50.00%
All	All	Limestone	Fully Used	2886	283.66	29	50	127	11.1	6	0.49	0.17%
All	All	Limestone	Not Used	1123	108.05	30	62	134	15.3	51	4.76	4.41%

Aggregate Type of "Mixed" has been excluded from this report.

Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Table 20: District 4 Statistical Summary by Friction Course, System, Aggregate, and Paving Time

Friction Course	System	Aggregate	Paving Time	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Limestone	Day	2324	229.11	33	57	112	11.8	15	1.37	0.60%
FC5	Primary	Limestone	Night	740	71.48	35	57	177	10.8	7	0.36	0.51%
FC5	Interstate	Limestone	Day	1472	142.18	37	58	134	10.0	15	1.14	0.80%
FC5	Interstate	Limestone	Night	5512	527.33	32	61	166	15.2	113	9.65	1.83%
FC9.5	Primary	Limestone	Day	1076	105.79	29	53	127	10.8	2	0.16	0.15%
FC9.5	Primary	Limestone	Night	16	1.43	42	51	67	7.2	0	0.00	0.00%
FC12.5	Primary	Limestone	Day	32	3.16	77	95	114	8.8	16	1.58	50.00%
All	All	Limestone	Day	4904	480.24	29	56	134	11.7	48	4.25	0.88%
All	All	Limestone	Night	6268	600.24	32	60	177	14.8	120	10.02	1.67%

Aggregate Type of "Mixed" has been excluded from this report.

Paving Times of "Both" and "Unknown" have been excluded from this report.

Table 21: District 4 Statistical Summary by Contractor, Friction Course, Aggregate, and Material Transfer Device Status

Contractor	Friction Course	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
Asphalt Group, Inc.	FC5	Limestone	Not Used	646	62.21	42	58	134	9.1	6	0.47	0.76%
Community Asphalt Corp.	FC5	Limestone	Fully Used	894	88.61	33	57	103	11.5	5	0.43	0.49%
Community Asphalt Corp.	FC5	Limestone	Not Used	84	7.81	37	55	96	12.8	1	0.09	1.11%
Dickerson Asphalt	FC5	Limestone	Fully Used	1086	105.64	32	42	89	6.3	0	0.00	0.00%
Dickerson Asphalt	FC9.5	Limestone	Fully Used	146	14.20	34	54	127	10.7	1	0.06	0.43%
Hardrives of Delray	FC12.5	Limestone	Not Used	32	3.16	77	95	114	8.8	16	1.58	50.00%
J. W. Cheatham, LLC.	FC9.5	Limestone	Not Used	16	1.43	42	51	67	7.2	0	0.00	0.00%
Ranger Construction	FC5	Limestone	Fully Used	502	49.63	36	55	88	8.5	0	0.00	0.00%
Ranger Construction	FC5	Limestone	Not Used	133	12.90	35	62	105	17.7	9	0.84	6.54%
Ranger Construction	FC9.5	Limestone	Fully Used	258	25.57	29	47	78	8.9	0	0.00	0.00%
Ranger Construction	FC9.5	Limestone	Not Used	52	5.08	30	45	76	8.5	0	0.00	0.00%
Weekly Asphalt Paving	FC5	Limestone	Not Used	160	15.46	53	81	123	11.6	19	1.78	11.50%

Aggregate Type of "Mixed" has been excluded from this report.

Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Ride Distribution of All Lots

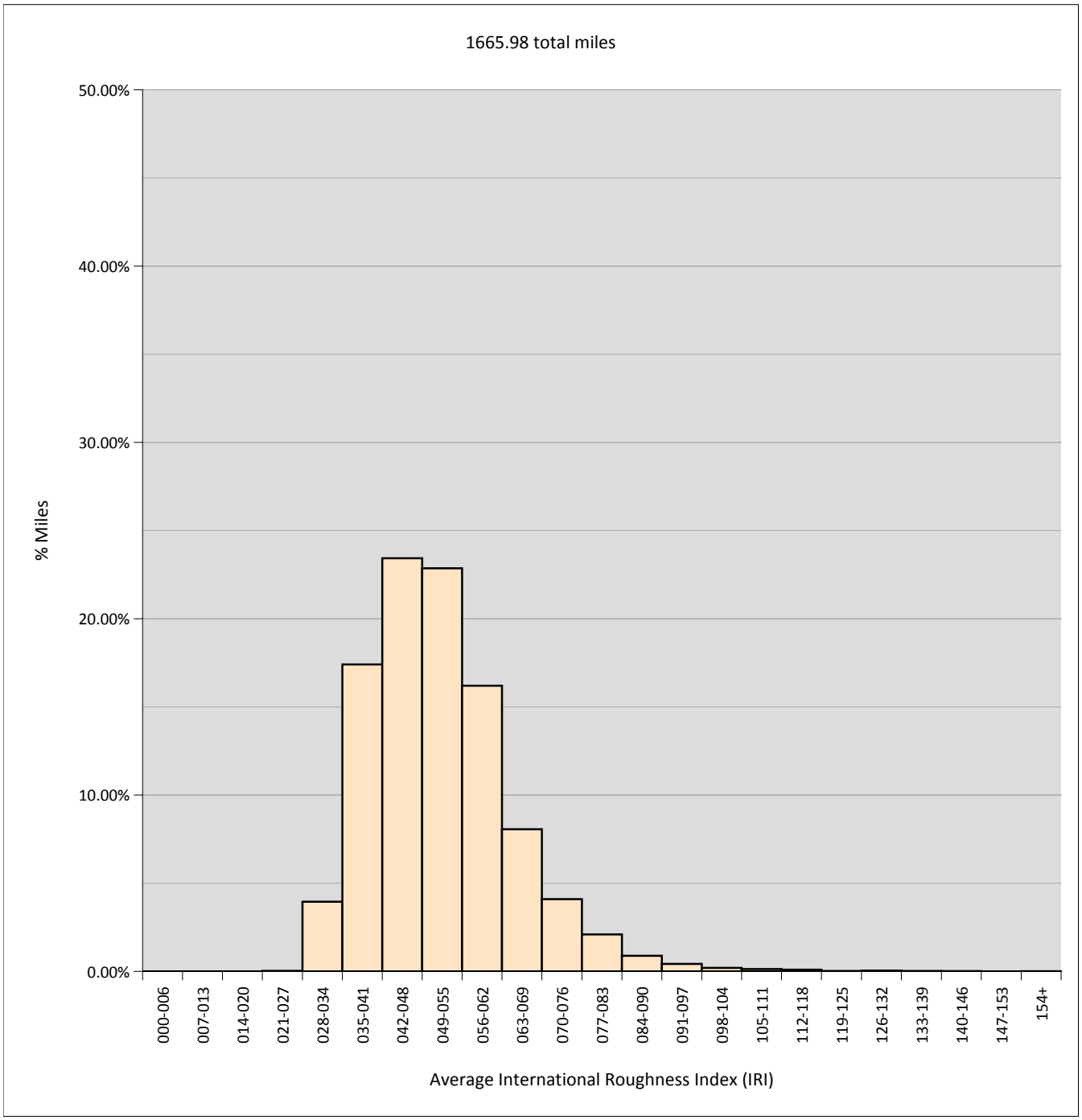

Figure 11: District 5 Ride Distribution, All Lots

Type	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
							Lots	Miles	% Miles
All Lots	17012	1665.98	25	52	356	12.5	127	10.63	0.64%

Ride Distribution by Friction Course and System

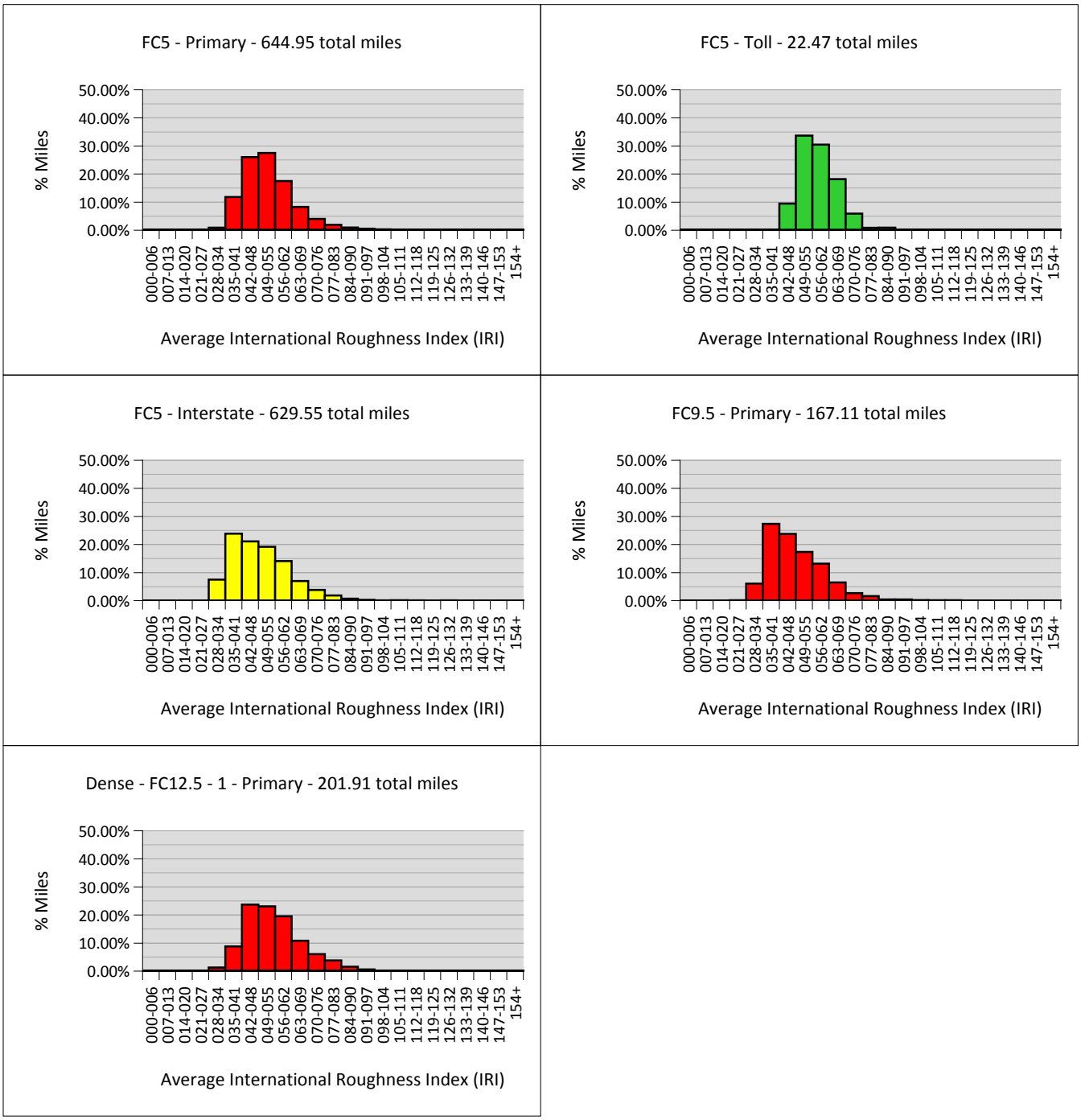

Figure 12: District 5 Ride Distribution by Friction Course and System

Friction Course	System	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
								Lots	Miles	% Miles
FC5	Primary	6602	644.95	29	53	356	11.5	55	4.41	0.68%
FC5	Toll	243	22.47	42	58	228	9.8	4	0.10	0.43%
FC5	Interstate	6402	629.55	25	50	142	12.9	40	3.73	0.59%
FC9.5	Primary	1696	167.11	27	49	121	12.3	11	1.06	0.64%
FC12.5	Primary	2069	201.91	29	55	158	12.9	17	1.33	0.66%

Table 22: District 5 Statistical Summary by Friction Course, System, Year, and Aggregate

Friction Course	System	Year	Aggregate	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	2005	Granite	648	64.16	33	54	110	9.6	3	0.30	0.47%
FC5	Primary	2005	Limestone	447	42.13	39	60	134	11.1	8	0.54	1.28%
FC5	Primary	2006	Granite	718	70.31	34	59	114	10.6	4	0.36	0.51%
FC5	Primary	2006	Limestone	631	62.04	32	54	356	13.4	15	1.31	2.11%
FC5	Primary	2007	Granite	785	77.22	38	55	92	9.2	0	0.00	0.00%
FC5	Primary	2007	Limestone	234	23.13	40	65	163	14.3	12	1.04	4.48%
FC5	Primary	2008	Granite	1139	112.15	33	47	141	8.7	4	0.12	0.11%
FC5	Primary	2008	Limestone	497	49.20	35	45	76	5.9	0	0.00	0.00%
FC5	Primary	2009	Granite	981	94.59	29	52	124	11.1	4	0.26	0.28%
FC5	Primary	2009	Limestone	238	23.09	33	52	108	11.7	4	0.40	1.73%
FC5	Primary	2010	Granite	284	26.96	32	49	101	10.9	1	0.08	0.31%
FC5	Toll	2006	Granite	207	19.47	42	57	85	7.4	0	0.00	0.00%
FC5	Toll	2006	Limestone	36	3.00	47	67	228	16.4	4	0.10	3.20%
FC5	Interstate	2005	Limestone	804	79.62	28	40	75	6.2	0	0.00	0.00%
FC5	Interstate	2006	Granite	1306	128.49	41	61	142	11.8	28	2.74	2.13%
FC5	Interstate	2007	Granite	1691	167.21	28	49	127	11.1	3	0.26	0.15%
FC5	Interstate	2008	Granite	1417	139.74	25	46	108	12.8	4	0.31	0.22%
FC5	Interstate	2008	Limestone	248	24.36	31	45	85	9.0	0	0.00	0.00%
FC5	Interstate	2009	Granite	412	39.44	31	49	114	13.6	3	0.30	0.76%
FC5	Interstate	2009	Limestone	248	24.40	35	46	69	5.9	0	0.00	0.00%
FC5	Interstate	2010	Granite	30	2.76	43	61	99	13.2	2	0.12	4.32%
FC5	Interstate	2010	Limestone	246	23.54	37	50	90	7.3	0	0.00	0.00%
FC9.5	Primary	2005	Granite	60	5.63	35	58	112	15.0	1	0.06	1.12%
FC9.5	Primary	2006	Limestone	99	9.78	31	41	118	9.8	1	0.10	1.02%
FC9.5	Primary	2007	Granite	260	25.71	35	54	88	10.0	0	0.00	0.00%
FC9.5	Primary	2008	Granite	480	47.63	27	41	85	8.1	0	0.00	0.00%
FC9.5	Primary	2009	Granite	458	44.91	33	55	121	12.8	7	0.70	1.56%
FC12.5	Primary	2005	Granite	134	12.87	41	75	98	8.6	1	0.01	0.09%
FC12.5	Primary	2006	Limestone	80	7.65	35	53	121	16.7	3	0.30	3.92%
FC12.5	Primary	2007	Granite	435	42.41	41	61	127	10.8	7	0.58	1.37%
FC12.5	Primary	2008	Granite	480	47.25	29	49	109	9.6	1	0.04	0.08%
FC12.5	Primary	2009	Granite	236	23.07	39	55	121	9.8	1	0.06	0.24%
FC12.5	Primary	2010	Granite	503	49.22	34	53	158	12.3	4	0.34	0.69%

Aggregate Type of "Mixed" has been excluded from this report.

Table 23: District 5 Statistical Summary by Friction Course, System, Aggregate, and Material Transfer Device Status

Friction Course	System	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Granite	Fully Used	112	10.58	37	50	90	8.8	0	0.00	0.00%
FC5	Primary	Granite	Not Used	1110	107.20	32	54	124	11.9	6	0.45	0.42%
FC5	Primary	Limestone	Fully Used	238	23.09	33	52	108	11.7	4	0.40	1.73%
FC5	Interstate	Granite	Not Used	270	25.93	31	42	71	7.0	0	0.00	0.00%
FC5	Interstate	Limestone	Fully Used	246	23.54	37	50	90	7.3	0	0.00	0.00%
FC9.5	Primary	Granite	Fully Used	63	6.16	33	60	121	18.8	4	0.40	6.49%
FC9.5	Primary	Granite	Not Used	113	11.07	34	47	77	8.6	0	0.00	0.00%
FC12.5	Primary	Granite	Fully Used	253	24.75	34	48	84	7.6	0	0.00	0.00%
FC12.5	Primary	Granite	Not Used	486	47.54	37	56	158	12.4	5	0.40	0.83%
All	All	Granite & Limestone	Fully Used	912	88.11	33	51	121	10.4	8	0.80	0.91%
All	All	Granite & Limestone	Not Used	1979	191.74	31	52	158	12.3	11	0.84	0.44%

Aggregate Type of "Mixed" has been excluded from this report.
Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Table 24: District 5 Statistical Summary by Friction Course, System, Aggregate, and Paving Time

Friction Course	System	Aggregate	Paving Time	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Granite	Day	2163	212.14	32	53	110	10.4	4	0.26	0.12%
FC5	Primary	Granite	Night	1225	118.33	32	50	141	10.0	6	0.30	0.26%
FC5	Primary	Limestone	Day	1182	116.77	32	50	163	10.9	13	1.06	0.91%
FC5	Toll	Granite	Night	207	19.47	42	57	85	7.4	0	0.00	0.00%
FC5	Toll	Limestone	Night	36	3.00	47	67	228	16.4	4	0.10	3.20%
FC5	Interstate	Granite	Night	2524	247.30	25	45	99	11.2	3	0.22	0.09%
FC5	Interstate	Limestone	Night	248	24.40	35	46	69	5.9	0	0.00	0.00%
FC9.5	Primary	Granite	Day	713	70.45	27	46	88	10.7	0	0.00	0.00%
FC9.5	Primary	Granite	Night	393	38.94	31	54	104	11.4	3	0.30	0.77%
FC9.5	Primary	Limestone	Night	99	9.78	31	41	118	9.8	1	0.10	1.02%
FC12.5	Primary	Granite	Day	1170	115.24	29	52	158	10.7	5	0.38	0.33%
FC12.5	Primary	Granite	Night	268	25.49	41	65	127	12.2	8	0.64	2.50%
FC12.5	Primary	Limestone	Day	42	4.02	35	58	121	19.4	3	0.30	7.46%
FC12.5	Primary	Limestone	Night	38	3.63	36	48	78	10.5	0	0.00	0.00%
All	All	Granite & Limestone	Day	5270	518.61	27	51	163	11.0	25	2.00	0.39%
All	All	Granite & Limestone	Night	5038	490.34	25	49	228	12.0	25	1.65	0.34%

Aggregate Type of "Mixed" has been excluded from this report.

Paving Times of "Both" and "Unknown" have been excluded from this report.

Table 25: District 5 Statistical Summary by Contractor, Friction Course, Aggregate, and Material Transfer Device Status

Contractor	Friction Course	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
A.P.A.C.	FC5	Granite	Not Used	52	5.17	35	56	82	11.0	0	0.00	0.00%
Anderson Columbia	FC5	Granite	Fully Used	72	6.77	37	50	90	9.0	0	0.00	0.00%
Anderson Columbia	FC5	Granite	Not Used	270	25.93	31	42	71	7.0	0	0.00	0.00%
Anderson Columbia	FC9.5	Granite	Fully Used	63	6.16	33	60	121	18.8	4	0.40	6.49%
D.A.B. Constructors	FC12.5	Granite	Not Used	20	1.86	41	54	121	14.6	1	0.06	3.02%
Halifax Paving Inc.	FC5	Granite	Not Used	516	50.58	32	53	101	10.6	1	0.08	0.17%
Hubbard Construction	FC5	Granite	Fully Used	40	3.81	37	49	70	8.3	0	0.00	0.00%
Hubbard Construction	FC5	Granite	Not Used	70	6.10	37	62	106	16.0	3	0.23	3.79%
Hubbard Construction	FC5	Limestone	Fully Used	238	23.09	33	52	108	11.7	4	0.40	1.73%
Middlesex Corp.	FC5	Granite	Not Used	100	9.65	32	47	77	9.7	0	0.00	0.00%
Middlesex Corp.	FC9.5	Granite	Not Used	113	11.07	34	47	77	8.6	0	0.00	0.00%
P & S Paving	FC5	Granite	Not Used	150	14.38	36	53	87	9.2	0	0.00	0.00%
P & S Paving	FC12.5	Granite	Fully Used	253	24.75	34	48	84	7.6	0	0.00	0.00%
P & S Paving	FC12.5	Granite	Not Used	368	36.18	37	54	92	9.1	0	0.00	0.00%
Ranger Construction	FC5	Granite	Not Used	222	21.33	34	57	124	14.1	2	0.13	0.61%
Ranger Construction	FC5	Limestone	Fully Used	246	23.54	37	50	90	7.3	0	0.00	0.00%
Ranger Construction	FC12.5	Granite	Not Used	70	6.87	48	62	78	6.3	0	0.00	0.00%
Steven Counts Inc.	FC12.5	Granite	Not Used	28	2.63	45	77	158	27.2	4	0.34	12.93%

Aggregate Type of "Mixed" has been excluded from this report.

Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Ride Distribution of All Lots

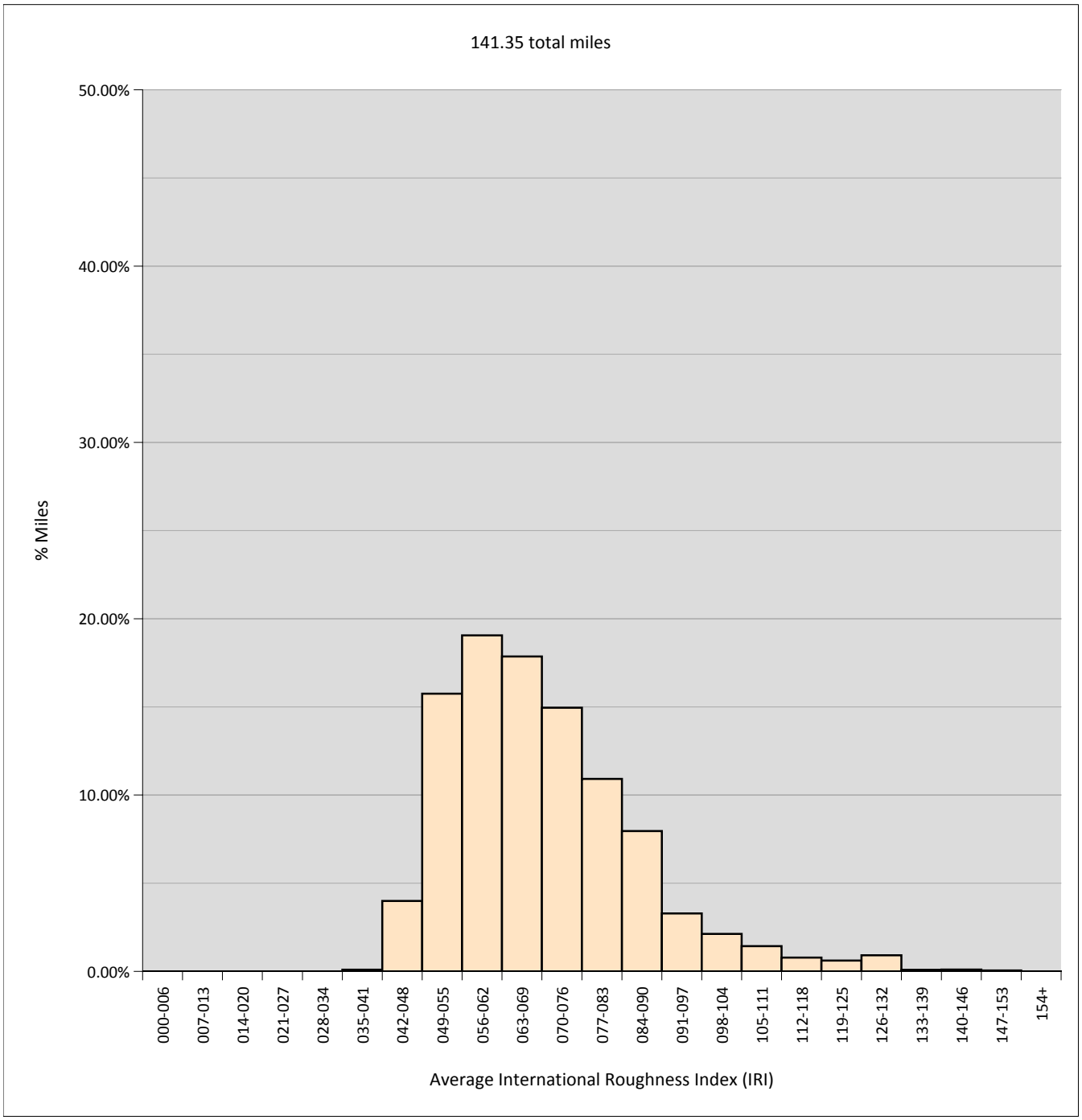

Figure 13: District 6 Ride Distribution, All Lots

Type	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
							Lots	Miles	% Miles
All Lots	1464	141.35	40	70	148	16.5	111	9.81	6.94%

Ride Distribution by Friction Course and System

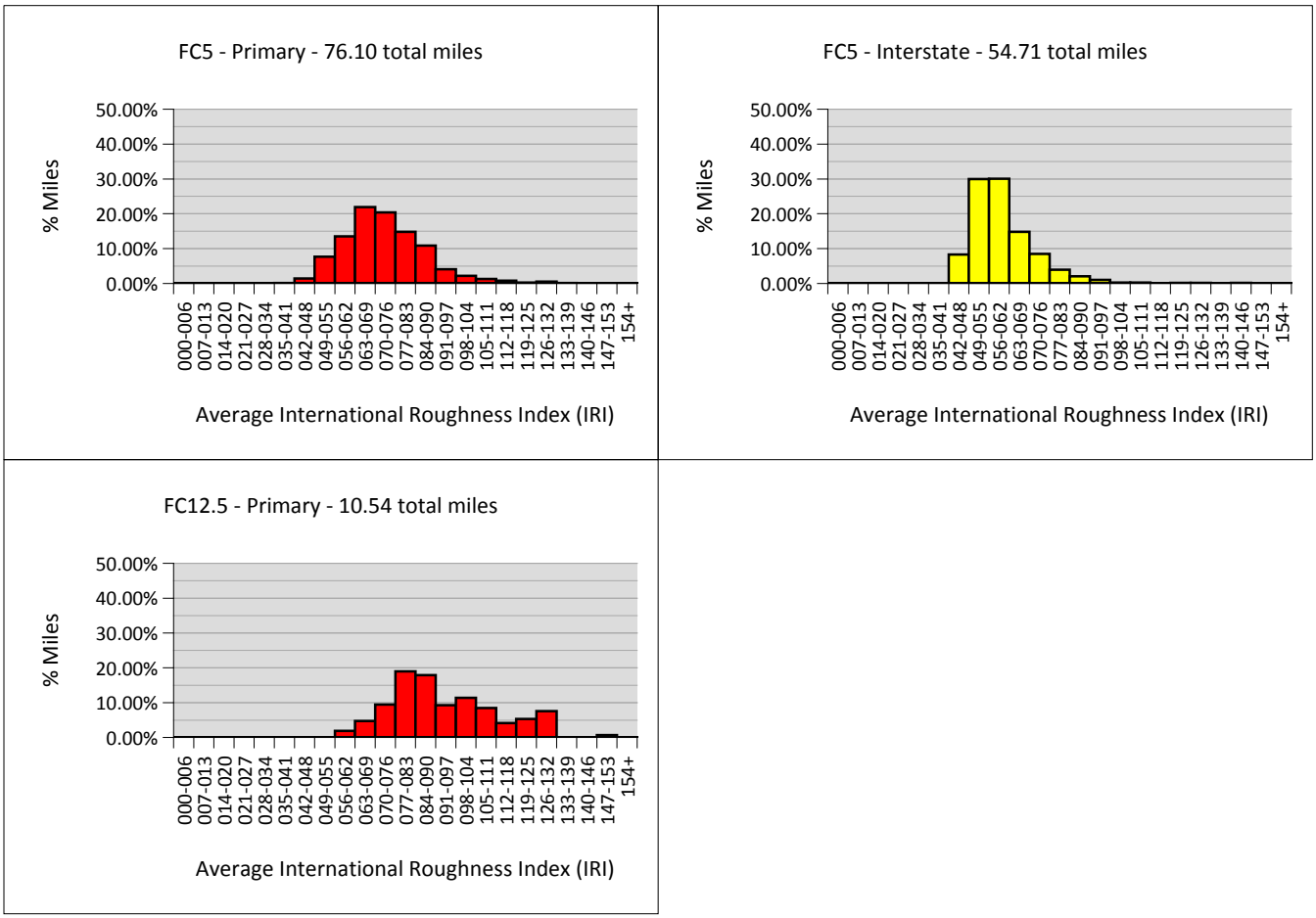

Figure 14: District 6 Ride Distribution by Friction Course and System

Friction Course	System	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
								Lots	Miles	% Miles
FC5	Primary	781	76.10	41	73	146	14.3	57	5.07	6.67%
FC5	Interstate	575	54.71	40	60	146	11.9	12	0.77	1.40%
FC12.5	Primary	108	10.54	60	93	148	18.3	42	3.97	37.70%

Table 26: District 6 Statistical Summary by Friction Course, System, Year, and Aggregate

Friction Course	System	Year	Aggregate	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	2007	Limestone	238	23.18	50	73	125	13.1	17	1.48	6.38%
FC5	Primary	2008	Limestone	158	15.61	52	77	146	14.4	16	1.44	9.24%
FC5	Primary	2009	Limestone	143	13.82	55	79	144	12.2	15	1.35	9.73%
FC5	Primary	2010	Limestone	242	23.49	41	66	127	13.7	9	0.81	3.44%
FC5	Interstate	2008	Limestone	206	20.10	43	59	94	8.9	0	0.00	0.00%
FC5	Interstate	2009	Limestone	214	21.00	42	62	117	10.9	3	0.21	1.02%
FC5	Interstate	2010	Limestone	155	13.62	40	61	146	16.4	9	0.55	4.05%
FC12.5	Primary	2008	Limestone	108	10.54	60	93	148	18.3	42	3.97	37.70%

Aggregate Type of "Mixed" has been excluded from this report.

Table 27: District 6 Statistical Summary by Friction Course, System, Aggregate, and Material Transfer Device Status

Friction Course	System	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Limestone	Fully Used	151	14.70	48	68	117	11.5	7	0.52	3.53%
FC5	Primary	Limestone	Not Used	77	7.28	55	80	144	13.8	11	0.95	12.98%
FC5	Interstate	Limestone	Not Used	155	13.62	40	61	146	16.4	9	0.55	4.05%
All	All	Limestone	Fully Used	151	14.70	48	68	117	11.5	7	0.52	3.53%
All	All	Limestone	Not Used	232	20.90	40	68	146	18.0	20	1.50	7.16%

Aggregate Type of "Mixed" has been excluded from this report.
Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Table 28: District 6 Statistical Summary by Friction Course, System, Aggregate, and Paving Time

Friction Course	System	Aggregate	Paving Time	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Limestone	Day	58	5.76	52	71	136	12.8	2	0.20	3.47%
FC5	Primary	Limestone	Night	556	54.12	48	76	146	13.5	52	4.57	8.45%
FC5	Interstate	Limestone	Night	575	54.71	40	60	146	11.9	12	0.77	1.40%
All	All	Limestone	Day	58	5.76	52	71	136	12.8	2	0.20	3.47%
All	All	Limestone	Night	1131	108.83	40	68	146	14.9	64	5.34	4.91%

Aggregate Type of "Mixed" has been excluded from this report.
Paving Times of "Both" and "Unknown" have been excluded from this report.

Table 29: District 6 Statistical Summary by Contractor, Friction Course, Aggregate, and Material Transfer Device Status

Contractor	Friction Course	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
Asphalt Group, Inc.	FC5	Limestone	Not Used	24	2.25	58	85	144	18.1	6	0.45	19.82%
Community Asphalt Corp.	FC5	Limestone	Not Used	155	13.62	40	61	146	16.4	9	0.55	4.05%
General Asphalt Company	FC5	Limestone	Fully Used	133	13.04	48	67	117	10.8	4	0.31	2.39%
General Asphalt Company	FC5	Limestone	Not Used	53	5.03	55	78	107	10.6	5	0.50	9.93%
Weekly Asphalt Paving	FC5	Limestone	Fully Used	18	1.66	57	74	113	14.1	3	0.21	12.44%

Aggregate Type of "Mixed" has been excluded from this report.

Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Ride Distribution of All Lots

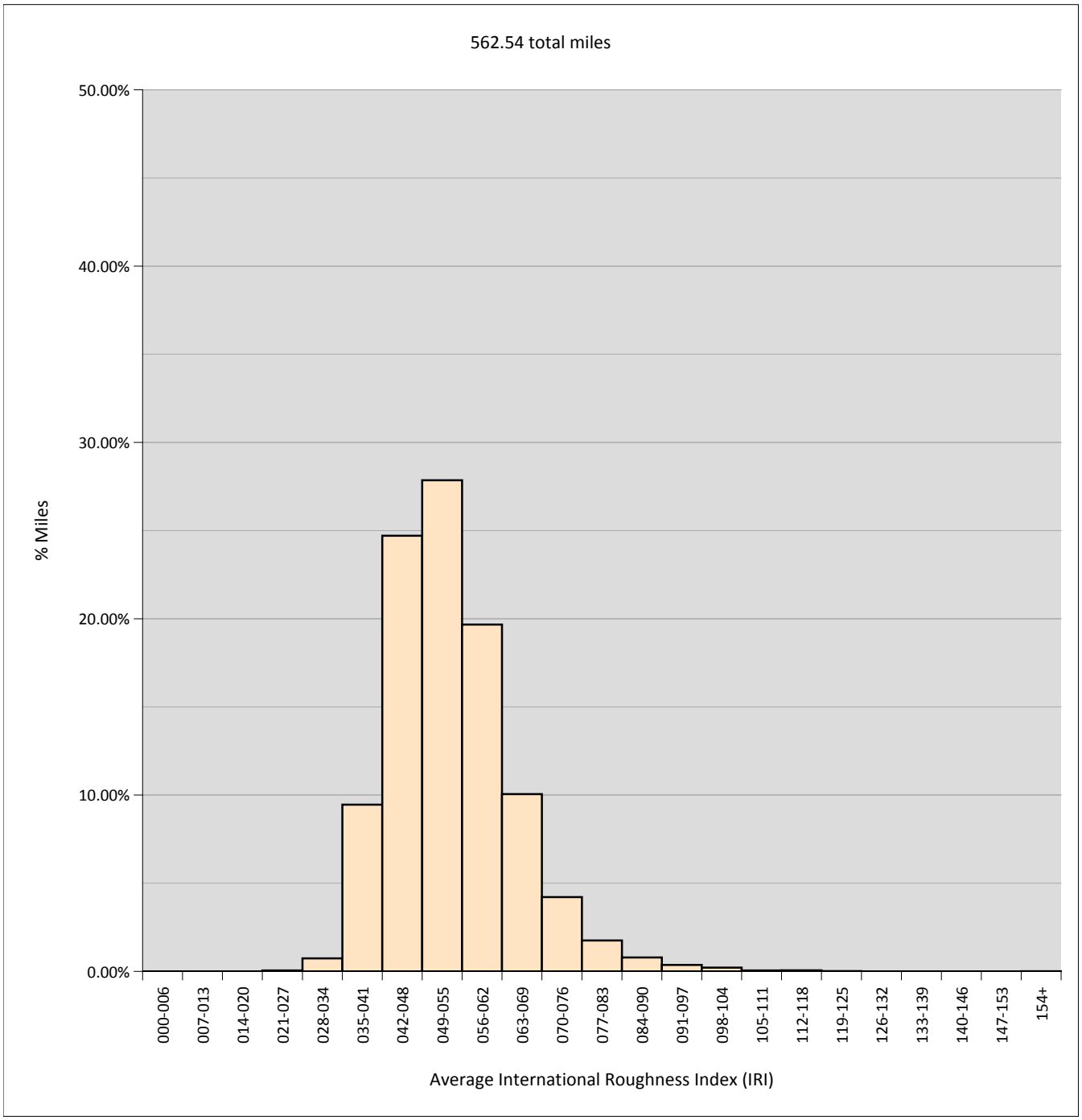

Figure 15: District 7 Ride Distribution, All Lots

Type	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
							Lots	Miles	% Miles
All Lots	5783	562.54	27	54	269	10.9	33	2.48	0.44%

Ride Distribution by Friction Course and System

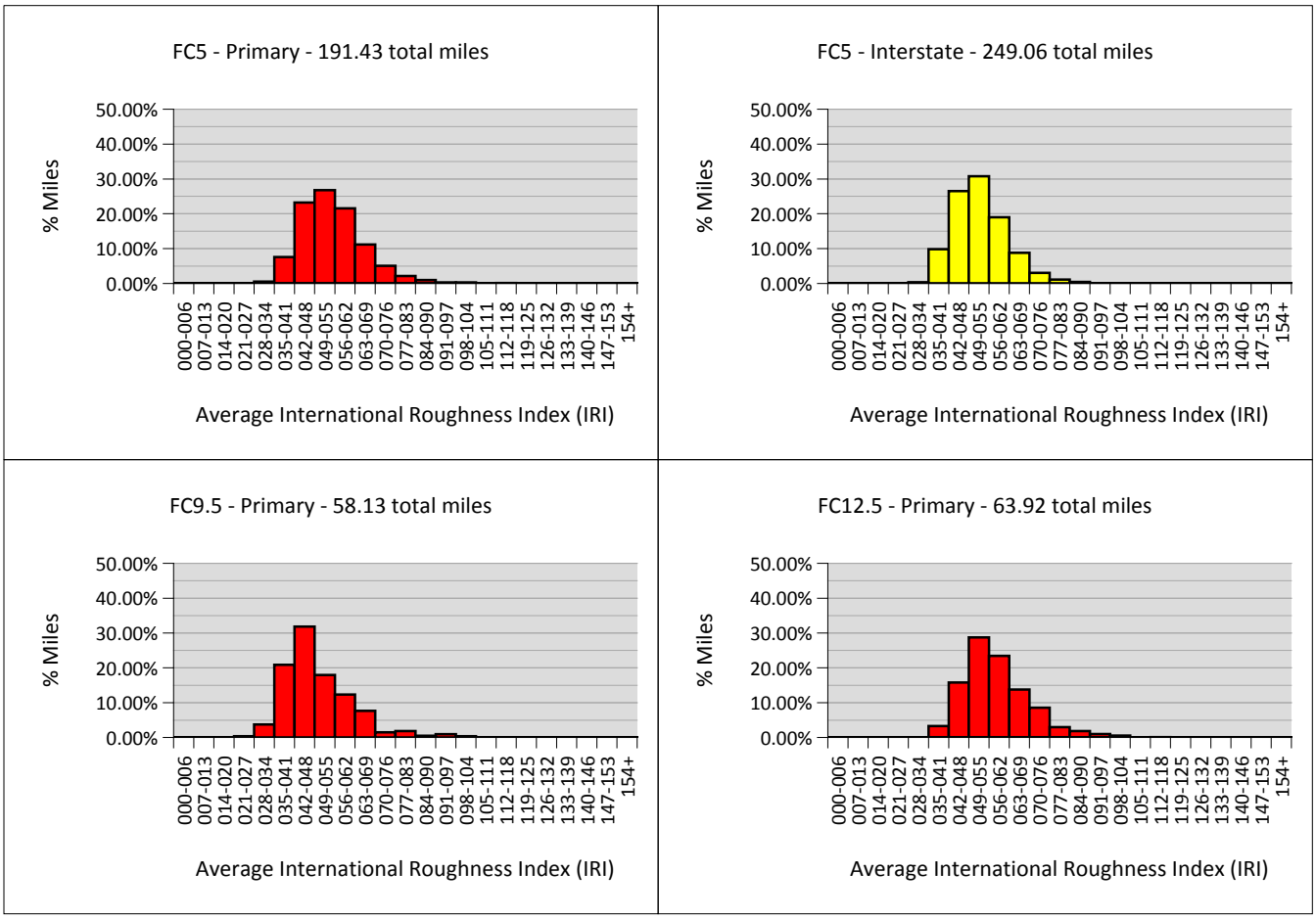

Figure 16: District 7 Ride Distribution by Friction Course and System

Friction Course	System	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
								Lots	Miles	% Miles
FC5	Primary	1971	191.43	27	55	269	11.5	17	1.27	0.66%
FC5	Interstate	2564	249.06	33	52	108	9.3	2	0.12	0.05%
FC9.5	Primary	592	58.13	27	49	106	11.9	6	0.44	0.76%
FC12.5	Primary	656	63.92	35	58	117	11.4	8	0.65	1.02%

Table 30: District 7 Statistical Summary by Friction Course, System, Year, and Aggregate

Friction Course	System	Year	Aggregate	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	2006	Granite	314	30.36	37	58	269	15.5	12	0.97	3.19%
FC5	Primary	2007	Granite	212	20.73	38	53	98	8.7	1	0.10	0.48%
FC5	Primary	2008	Granite	1088	107.23	27	53	103	10.3	2	0.16	0.15%
FC5	Primary	2009	Granite	91	8.06	41	66	164	11.4	2	0.04	0.46%
FC5	Primary	2010	Granite	152	14.28	33	53	87	9.7	0	0.00	0.00%
FC5	Interstate	2005	Granite	378	35.90	36	51	100	8.1	1	0.03	0.07%
FC5	Interstate	2006	Granite	511	50.61	33	50	90	9.7	0	0.00	0.00%
FC5	Interstate	2007	Granite	95	8.69	42	58	93	10.1	0	0.00	0.00%
FC5	Interstate	2008	Granite	20	1.95	49	58	72	6.1	0	0.00	0.00%
FC5	Interstate	2008	Limestone	104	9.99	45	56	91	7.5	0	0.00	0.00%
FC5	Interstate	2009	Granite	521	49.77	33	51	90	8.9	0	0.00	0.00%
FC5	Interstate	2010	Granite	935	92.15	35	54	108	9.4	1	0.09	0.10%
FC9.5	Primary	2005	Granite	115	11.28	36	57	106	11.1	3	0.21	1.86%
FC9.5	Primary	2006	Limestone	123	11.87	35	60	100	13.1	3	0.23	1.93%
FC9.5	Primary	2009	Granite	354	34.99	27	43	71	6.7	0	0.00	0.00%
FC12.5	Primary	2006	Granite	44	4.19	42	64	98	14.3	2	0.15	3.46%
FC12.5	Primary	2008	Granite	144	13.86	35	55	98	11.2	1	0.10	0.72%
FC12.5	Primary	2009	Granite	164	15.97	45	60	89	8.7	0	0.00	0.00%
FC12.5	Primary	2010	Granite	186	18.29	39	58	100	13.0	3	0.30	1.64%

Aggregate Type of "Mixed" has been excluded from this report.

Table 31: District 7 Statistical Summary by Friction Course, System, Aggregate, and Material Transfer Device Status

Friction Course	System	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Granite	Not Used	243	22.35	33	58	164	12.3	2	0.04	0.17%
FC5	Interstate	Granite	Fully Used	186	18.16	36	59	91	10.8	0	0.00	0.00%
FC5	Interstate	Granite	Not Used	152	14.99	35	47	73	6.8	0	0.00	0.00%
FC9.5	Primary	Granite	Not Used	166	16.44	36	45	71	5.4	0	0.00	0.00%
FC12.5	Primary	Granite	Fully Used	130	12.88	39	53	86	10.1	0	0.00	0.00%
FC12.5	Primary	Granite	Not Used	220	21.39	45	63	100	10.4	3	0.30	1.40%
All	All	Granite	Fully Used	316	31.03	36	56	91	10.9	0	0.00	0.00%
All	All	Granite	Not Used	781	75.16	33	54	164	11.9	5	0.34	0.45%

Aggregate Type of "Mixed" has been excluded from this report.
Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Table 32: District 7 Statistical Summary by Friction Course, System, Aggregate, and Paving Time

Friction Course	System	Aggregate	Paving Time	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
FC5	Primary	Granite	Day	140	13.57	27	43	70	7.4	0	0.00	0.00%
FC5	Primary	Granite	Night	1062	102.82	33	54	164	10.4	5	0.30	0.29%
FC5	Interstate	Granite	Night	2062	201.22	33	52	108	9.6	1	0.09	0.05%
FC5	Interstate	Limestone	Night	104	9.99	45	56	91	7.5	0	0.00	0.00%
FC9.5	Primary	Granite	Night	354	34.99	27	43	71	6.7	0	0.00	0.00%
FC9.5	Primary	Limestone	Night	123	11.87	35	60	100	13.1	3	0.23	1.93%
FC12.5	Primary	Granite	Day	44	4.19	42	64	98	14.3	2	0.15	3.46%
FC12.5	Primary	Granite	Night	56	5.41	53	70	100	11.2	3	0.30	5.54%
All	All	Granite & Limestone	Day	184	17.76	27	48	98	13.1	2	0.15	0.82%
All	All	Granite & Limestone	Night	3761	366.29	27	53	164	10.5	12	0.92	0.25%

Aggregate Type of "Mixed" has been excluded from this report.

Paving Times of "Both" and "Unknown" have been excluded from this report.

Table 33: District 7 Statistical Summary by Contractor, Friction Course, Aggregate, and Material Transfer Device Status

Contractor	Friction Course	Aggregate	Material Transfer Device Status	Total Lots	Total Miles	Min	Mean	Max	St. Dev	IRI ≥ 96		
										Lots	Miles	% Miles
A.P.A.C.	FC5	Granite	Not Used	243	22.35	33	58	164	12.3	2	0.04	0.17%
A.P.A.C.	FC12.5	Granite	Not Used	164	15.97	45	60	89	8.7	0	0.00	0.00%
C. W. Roberts Contracting	FC12.5	Granite	Fully Used	130	12.88	39	53	86	10.1	0	0.00	0.00%
D.A.B. Constructors	FC5	Granite	Not Used	152	14.99	35	47	73	6.8	0	0.00	0.00%
Lane Construction Corp.	FC5	Granite	Fully Used	186	18.16	36	59	91	10.8	0	0.00	0.00%
Lane Construction Corp.	FC9.5	Granite	Not Used	166	16.44	36	45	71	5.4	0	0.00	0.00%
Lane Construction Corp.	FC12.5	Granite	Not Used	56	5.41	53	70	100	11.2	3	0.30	5.54%

Aggregate Type of "Mixed" has been excluded from this report.

Material Transfer Device Statuses of "Partially Used" and "Unknown" have been excluded from this report.

Appendix

A

RIDE NUMBER REPORT SUMMARY

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WHAT IS RIDE NUMBER?

The Pavement Serviceability Index (PSI) has been used by engineers since the AASHTO road test in the 1950's as an estimate of the opinion of the traveling public on the roughness (or lack of smoothness) of roads. The Ride Number (RN) is a profile index similar to the PSI, and was a result of NCHRP projects 1-23, conducted between January 1982 and November 1984 and published as NCHRP report 275, "Pavement Roughness and Rideability," and 1-23(2), conductd between January 1986 and December 1987 and published as NCHRP Report 308, "Pavement Roughness and Rideability - Field Evaluation." It is an index that rates rideability of a road using a 0 to 5 scale, where an RN of 5.0 is considered to be a perfect ride quality road, and an RN of zero is an impassable road. The RN was chosen because it corresponds to users' perception of pavement roughness. The definition of this method is given in Section 4.3.2 of ASTM E1489. The Profile Index (PI), equation (2), statistic is derived from the longitudinal profile and then processed through a non-linear mathematical transformation, equation (1), to yield RN value(s) for each 0.1 mile or any other desired reporting interval.

The RN is defined by the following equation:

$$RN = 5e^{-160\,PI} \quad \text{.....} \quad (1)$$

Where:

$$PI = \sqrt{\frac{\left(PI_L{}^2 + PI_R{}^2\right)}{2}} \quad \text{.....} \quad (2)$$

PI_L = Profile Index in the Left wheel path (ft/ft)

PI_R = Profile Index in the Right wheel path (ft/ft)

This summary expresses ride quality using Ride Number (RN). Currently. FDOT's smoothness specifications use RN to indicate the level of smoothness present on newly placed asphalt pavements. RN, howevere, is freatly influenced by differences in texture, especially dense-graded versus open-graded pavements.

The full Ride Number edition of this report can be found at the following link and is titled "Flexible Pavement Smoothness Acceptance Report - Ride Number Edition".

http://materials.dot.state.fl.us/smo/administration/resources/library/publications/researchreports/2011-2015.htm

Ride Number Report Observations

Many roadway characteristics and construction practices are being monitored and included in the FDOT's smoothness database. Some of these have proven to be significant contributors to the ride quality of the pavements tested, and some factors have not been so valuable. Below is a summary list of key variables being monitored with a brief explanation of their effect on pavement smoothness.

- Average Annual Daily Traffic (AADT) - Analysis on Interstate pavements has shown that there does not appear to be any correlation between AADT and RN.

- Material Transfer Device (MTD) Usage - Data shows that pavements placed using this equipment can be smoother. Overall, full MTD usage on the entire project shows no significant improvement over no MTD usage, both having an average RN of 4.2. MTD usage on the Interstate system yielded some benefit; 4.2 RN with full-project MTD usage versus 4.0 for Interstate projects where the MTD was not used at all.

- Aggregate Type - Based on summary data from Florida projects, smooth pavements can be constructed regardless of the aggregate type used. However, on average, pavements using Granite aggregate in friction courses are smoother. Granite pavements have an average RN of 4.2, compared to an RN of 4.0 for Limestone pavements.

- Data by Year - No significant improvement was found when comparing the average RN over time.

- Binder Type - No significant difference was found when comparing the smoothness of pavements using polymer-modified binders in the friction course to pavements using other types of binders.

- Paving Time - No significant difference was found when comparing the smoothness of pavements placed at Night to those placed during the Day.

- System - No significant difference was found when comparing the smoothness of Primary and Interstate systems.

- Surface Type - It is well documented that pavements with dense-graded friction courses are consistently smoother than those with open-graded friction courses.. Dense-graded friction courses have an average RN of 4.3, compared to 4.1 for open-graded friction courses.

In addition to these factors, there are many other variables that the data can be subdivided by. If any additional information is needed, please use the contact information located at the bottom of page 7.

Appendix

B

CUSTOMER SERVICE FORM

Customer Service Form

In an effort to continuously improve our customer service, the Pavement Material Systems section of the State Materials Office requests your input by filling out and returning this survey form.

(Optional)

Company/Office/Organization: _____

Address: _____

City: _____ State: _____ ZIP: _____

Your Name: _____ Title: _____

Phone: _____ E-Mail: _____

Please rate each of the following factors using the scale provided. A "1" corresponds to ***Very Poor****, and a "5" corresponds to* ***Excellent****.*

Usefulness of Content	1	2	3	4	5
Organization of Information	1	2	3	4	5
Clarity of Graphical Information	1	2	3	4	5
Format of Tables	1	2	3	4	5
Overall Value of this Report	1	2	3	4	5

Please provide an answer to the following questions. Use additional sheet(s) if necessary.

What was the most useful/informative part of this report? _____

_____

_____

What was the least useful/informative part of this report? _____

_____

_____

What changes would you recommend to improve this report? _____

_____

_____

Detach and mail to:

FDOT State Materials Office

Attn: Stacy Scott

5007 NE 39th Ave.

Gainesville, FL 32609

Or E-Mail to: stacy.scott@dot.state.fl.us