



Ride Quality by Design

Expect it, Plan it, Achieve it

Presented By: Chuck Fuller



What's in it for me?



Contractors



TxDOT



CEI

Design Engineers & Inspectors

What's in it for me?





District	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Change FY 2024-2025	
Abilene (ABL)	88.26	83.30	87.86	87.84	90.62	91.88	92.23	91.95	92.22	92.54	▲	0.32
Amarillo (AMA)	79.29	84.17	85.03	87.18	85.37	87.16	88.33	90.74	90.55	90.03	▼	-0.52
Atlanta (ATL)	92.24	93.10	95.93	94.05	93.46	93.51	93.86	93.83	92.95	92.90	▼	-0.05
Austin (AUS)	92.68	93.19	94.15	92.60	93.53	94.04	93.30	92.45	91.77	91.32	▼	-0.45
Beaumont (BMT)	91.06	89.06	91.42	91.51	90.19	91.63	91.70	91.47	91.83	92.43	▲	0.60
Brownwood (BWD)	94.04	92.82	93.18	91.72	94.04	92.88	92.32	93.38	94.24	94.31	▲	0.07
Bryan (BRY)	85.01	86.04	89.46	90.21	89.35	91.40	93.06	93.60	94.99	95.71	▲	0.72
Childress (CHS)	92.12	90.42	95.46	96.10	96.08	96.59	96.01	96.26	96.09	95.68	▼	-0.41
Corpus Christi (CRP)	76.72	83.62	87.15	85.95	87.11	89.97	88.88	89.65	90.39	91.55	▲	1.16
Dallas (DAL)	78.03	73.93	76.45	77.51	81.02	79.54	80.28	79.81	80.00	81.14	▲	1.14
El Paso (ELP)	88.86	84.18	86.82	85.18	83.70	85.64	85.61	84.04	84.87	85.42	▲	0.55
Fort Worth (FTW)	86.80	83.89	82.39	84.71	85.31	85.88	86.40	86.09	86.47	87.28	▲	0.81
Houston (HOU)	83.28	79.16	82.89	84.10	85.54	83.71	84.08	83.96	84.15	84.41	▲	0.26
Laredo (LRD)	86.11	88.26	86.37	88.03	87.78	87.12	87.35	88.46	88.12	87.81	▼	-0.31
Lubbock (LBB)	89.90	87.91	86.08	87.70	90.45	90.73	90.57	90.55	90.72	91.03	▲	0.31
Lufkin (LFK)	92.67	93.63	95.54	95.09	94.99	95.83	95.20	94.69	94.08	93.76	▼	-0.32
Odessa (ODA)	87.73	84.76	85.10	82.28	81.61	84.62	85.38	85.85	85.44	87.88	▲	2.44
Paris (PAR)	84.41	81.24	86.88	85.58	88.43	88.46	90.23	89.11	89.69	89.57	▼	-0.12
Pharr (PHR)	91.63	93.40	90.68	91.02	89.09	89.32	90.27	89.71	90.08	90.35	▲	0.27
San Angelo (SJT)	91.11	91.11	91.11	91.11	91.11	91.11	91.11	91.11	91.11	91.11	▲	0.48
San Antonio (SAT)	80.11	80.11	80.11	80.11	80.11	80.11	80.11	80.11	80.11	80.11	▲	1.87
Tyler (TYL)	91.11	91.11	91.11	91.11	91.11	91.11	91.11	91.11	91.11	91.11	▲	1.10
Waco (WAC)	91.69	89.58	89.42	89.60	91.62	91.31	92.03	92.11	91.29	91.73	▲	0.44
Wichita Falls (WFS)	92.79	90.27	92.27	91.79	93.65	93.52	93.68	94.19	94.14	96.27	▲	2.13
Yoakum (YKM)	87.00	90.70	91.63	91.32	92.13	92.80	92.71	94.52	93.11	93.53	▼	-0.26
Statewide (ALL)	87.32	86.30	87.93	87.98	88.80	89.31	89.49	89.69	89.71	90.23	▲	0.52

Smooth Roads = PMIS over 90



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TxDOT-TXAPA Quality Asphalt Pavement Awards



Dense Graded Mixes Division

FULL DEPTH LARGE CATEGORY

Gray County - US 60

R.K. Hall Construction

TxDOT Amarillo District

OVERLAY LARGE CATEGORY

Hutchinson County - SH 136

R.K. Hall Construction

TxDOT Amarillo District

OVERLAY MEDIUM CATEGORY

Grayson County - US 82

R.K. Hall Construction

TxDOT Paris District

OVERLAY SMALL CATEGORY

Brooks County - US 281

IOC Company, LLC

TxDOT Pharr District

Complexity Paving Division

DENSE GRADED CATEGORY

San Patricio County - US 181

Bay Ltd.

TxDOT Corpus Christi District

SPECIALTY MIXES CATEGORY

Smith County - IH 20

Drewery Construction Co., Inc.

Longview Asphalt, Inc.

TxDOT Tyler District

Specialty Mixes Division

FULL DEPTH LARGE CATEGORY

Gonzalez County - IH 10

Colorado Materials, Ltd.

Hunter Industries, Ltd.

TxDOT Yoakum District

FULL DEPTH SMALL CATEGORY

Williamson County - RM 1869

Lone Star Paving Company

TxDOT Austin District

OVERLAY LARGE CATEGORY

Travis County - SH 130

Lone Star Paving Company

TxDOT Austin District

OVERLAY MEDIUM CATEGORY

Williamson County - IH 35

Lone Star Paving Company

TxDOT Austin District

OVERLAY SMALL CATEGORY

Rusk County - US 79

Longview Asphalt, Inc.

Madden Contracting, LLC

TxDOT Tyler District

A Joint Effort of the Texas Department of Transportation and the Texas Asphalt Pavement Association

Definitions

IRI

International Roughness
Index (in/mile)

Pay Schedule

Schedule 1, 2, and 3
Differences

PSI

Pavement
Serviceability Index

Smoothness Opportunity

Continuous Level-Up,
Multiple Lifts, etc.

Localized Roughness

Minor, Discernible, Severe

Mill Type

Regular, Profile, and
Diamond Grind

Definitions

Distance = 0.10 mile

PSI = Pavement
Serviceability Index

IRI (L) = Left Wheel Path

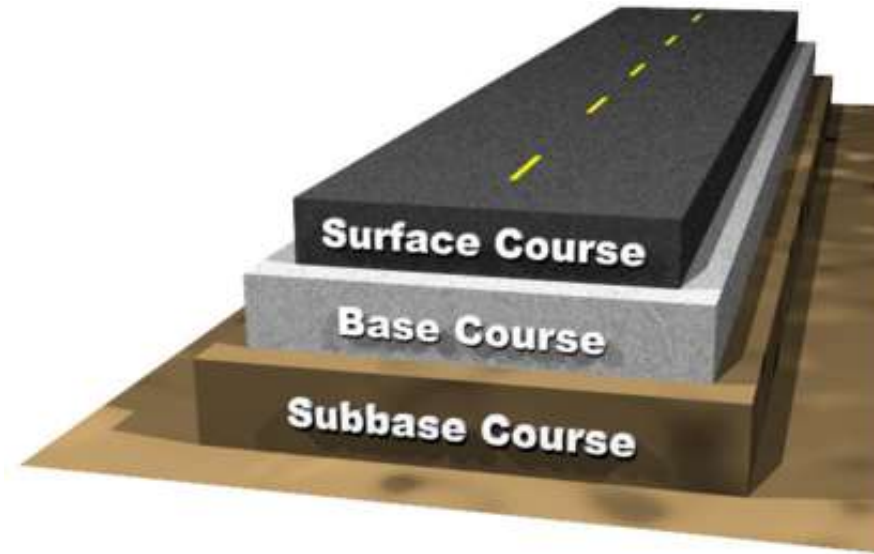
IRI (R) = Right Wheel Path

Avg IRI = Average of the Left
and Right Wheel Path

Pay = 0.10 per mile

Distance	Station	PSI	IRI (L)	IRI (R)	Avg IRI	Pay*SecLen	Pay
00.1000	143+36.0	5.00	33.32	28.45	31.00	\$580*(0.1000/0.10)	\$ 580
00.2000	148+64.0	5.00	15.81	18.13	17.00	\$600*(0.1000/0.10)	\$ 600
00.3000	153+92.0	5.00	16.58	19.43	18.00	\$600*(0.1000/0.10)	\$ 600
00.4000	159+20.0	5.00	18.86	23.02	21.00	\$600*(0.1000/0.10)	\$ 600
00.5000	164+48.0	5.00	23.71	23.86	24.00	\$600*(0.1000/0.10)	\$ 600
00.6000	169+76.0	5.00	23.34	20.42	22.00	\$600*(0.1000/0.10)	\$ 600
00.7000	175+04.0	5.00	15.73	17.17	16.00	\$600*(0.1000/0.10)	\$ 600
00.8000	180+32.0	5.00	15.16	16.34	16.00	\$600*(0.1000/0.10)	\$ 600
00.9000	185+60.0	5.00	15.86	18.37	17.00	\$600*(0.1000/0.10)	\$ 600
01.0000	190+88.0	5.00	17.37	16.25	17.00	\$600*(0.1000/0.10)	\$ 600
01.1000	196+16.0	5.00	14.43	16.51	15.00	\$600*(0.1000/0.10)	\$ 600
01.2000	201+44.0	5.00	12.91	14.49	14.00	\$600*(0.1000/0.10)	\$ 600
01.3000	206+72.0	5.00	15.14	14.33	15.00	\$600*(0.1000/0.10)	\$ 600
01.4000	212+00.0	5.00	15.68	18.32	17.00	\$600*(0.1000/0.10)	\$ 600
01.5000	217+28.0	5.00	17.83	15.44	17.00	\$600*(0.1000/0.10)	\$ 600
01.6000	222+56.0	5.00	15.57	16.28	16.00	\$600*(0.1000/0.10)	\$ 600
01.7000	227+84.0	5.00	15.27	18.99	17.00	\$600*(0.1000/0.10)	\$ 600
01.8000	233+12.0	5.00	24.30	26.59	25.00	\$600*(0.1000/0.10)	\$ 600
01.9000	238+40.0	5.00	20.22	20.13	20.00	\$600*(0.1000/0.10)	\$ 600
02.0000	243+68.0	5.00	18.50	20.33	19.00	\$600*(0.1000/0.10)	\$ 600
02.1000	248+96.0	5.00	19.22	18.90	19.00	\$600*(0.1000/0.10)	\$ 600
02.2000	254+24.0	5.00	18.82	17.62	18.00	\$600*(0.1000/0.10)	\$ 600
02.3000	259+52.0	5.00	18.21	19.10	19.00	\$600*(0.1000/0.10)	\$ 600
02.4000	264+80.0	5.00	35.15	27.85	32.00	\$560*(0.1000/0.10)	\$ 560
02.5000	270+08.0	5.00	19.27	19.79	20.00	\$600*(0.1000/0.10)	\$ 600
02.6000	275+36.0	5.00	18.24	18.10	18.00	\$600*(0.1000/0.10)	\$ 600
02.7000	280+64.0	5.00	19.77	24.27	22.00	\$600*(0.1000/0.10)	\$ 600
02.8000	285+92.0	5.00	21.92	21.33	22.00	\$600*(0.1000/0.10)	\$ 600
02.9000	291+20.0	4.91	36.89	37.73	37.00	\$460*(0.1000/0.10)	\$ 460
03.0000	296+48.0	5.00	19.03	19.49	19.00	\$600*(0.1000/0.10)	\$ 600
03.1000	301+76.0	5.00	22.74	17.86	20.00	\$600*(0.1000/0.10)	\$ 600
03.2000	307+04.0	5.00	16.28	20.43	18.00	\$600*(0.1000/0.10)	\$ 600
03.3000	312+32.0	5.00	16.41	15.26	16.00	\$600*(0.1000/0.10)	\$ 600
03.4000	317+60.0	5.00	25.60	27.59	27.00	\$600*(0.1000/0.10)	\$ 600
03.5000	322+88.0	5.00	17.15	18.80	18.00	\$600*(0.1000/0.10)	\$ 600
03.6000	328+16.0	5.00	17.88	17.29	18.00	\$600*(0.1000/0.10)	\$ 600
03.7000	333+44.0	5.00	17.43	17.82	18.00	\$600*(0.1000/0.10)	\$ 600

Designs



Designs (Obtain existing IRI & Evaluate Roadway)

- Evaluate the existing type of riding surface
 - ACP, Seal Coat, Crack Seal, etc.
- Pavement Failures
 - Identify areas in the field
 - Mark these areas on the existing IRI profile
 - Credit these 0.1-mile section areas on the existing IRI profile
 - The usual credit range is 50 to 70



Original IRI Section

Distance	Station	PSI	IRI (L)	IRI (R)	Avg IRI	Pay*SectLen	Pay
00.1000	5+28.0	2.95	129.56	158.92	144.00	-\$	Corrective Work
00.2000	10+56.0	3.19	142.12	114.38	128.00	-\$	Corrective Work
00.3000	15+84.0	3.37	121.53	111.63	117.00	-\$	Corrective Work
00.4000	21+12.0	2.98	167.27	116.51	142.00	-\$	Corrective Work
00.5000	26+40.0	3.12	123.61	142.00	133.00	-\$	Corrective Work
00.6000	31+68.0	2.89	155.68	141.88	149.00	-\$	Corrective Work
00.7000	36+96.0	3.34	130.15	106.71	118.00	-\$	Corrective Work
00.8000	42+24.0	3.16	122.41	138.36	130.00	-\$	Corrective Work
00.9000	47+52.0	3.47	113.17	108.78	111.00	-\$	Corrective Work
01.0000	52+80.0	3.03	159.68	118.30	139.00	-\$	Corrective Work
01.1000	58+08.0	2.77	156.03	157.94	157.00	-\$	Corrective Work
01.2000	63+36.0	3.03	134.64	142.36	139.00	-\$	Corrective Work
01.3000	68+64.0	2.89	139.20	158.17	149.00	-\$	Corrective Work
01.4000	73+92.0	2.53	140.37	210.57	175.00	-\$	Corrective Work
01.5000	79+20.0	2.30	205.53	183.02	194.00	-\$	Corrective Work
01.6000	84+48.0	2.75	149.36	168.14	159.00	-\$	Corrective Work
01.7000	89+76.0	2.98	148.91	135.10	142.00	-\$	Corrective Work
01.8000	95+04.0	3.11	131.75	135.29	134.00	-\$	Corrective Work
01.9000	100+32.0	3.14	119.93	143.37	132.00	-\$	Corrective Work
02.0000	105+60.0	3.09	153.40	116.62	135.00	-\$	Corrective Work
02.1000	110+88.0	2.97	138.90	147.18	143.00	-\$	Corrective Work
02.1889	115+57.4	2.33	151.51	232.07	192.00	-\$	Corrective Work

Average IRI for 2.1889 Mile Section = 144



After Corrective Work

Distance	Station	PSI	IRI (L)	IRI (R)	Avg IRI	Pay*SectLen	Pay
00.1000	5+28.0	2.95	129.56	158.92	144.00	-\$	Corrective Work
00.2000	10+56.0	3.19	142.12	114.38	128.00	-\$	Corrective Work
00.3000	15+84.0	3.37	121.53	111.63	117.00	-\$	Corrective Work
00.4000	21+12.0	2.98	167.27	116.51	142.00	-\$	Corrective Work
00.5000	26+40.0	3.12	123.61	142.00	133.00	-\$	Corrective Work
00.6000	31+68.0	2.89	155.68	141.88	149.00	-\$	Corrective Work
00.7000	36+96.0	3.34	130.15	106.71	118.00	-\$	Corrective Work
00.8000	42+24.0	3.16	122.41	138.36	130.00	-\$	Corrective Work
00.9000	47+52.0	3.47	113.17	108.78	111.00	-\$	Corrective Work
01.0000	52+80.0	3.03	159.68	118.30	139.00	-\$	Corrective Work
01.1000	58+08.0	2.77	138.02	138.94	138.80	-\$	Corrective Work
01.2000	63+36.0	3.03	134.64	142.36	139.00	-\$	Corrective Work
01.3000	68+64.0	2.89	139.20	158.17	149.00	-\$	Corrective Work
01.4000	73+92.0	2.53	140.37	210.57	175.00	-\$	Corrective Work
01.5000	79+20.0	2.30	208.53	193.82	194.00	-\$	Corrective Work
01.6000	84+48.0	2.75	149.36	168.14	159.00	-\$	Corrective Work
01.7000	89+76.0	2.98	148.91	135.10	142.00	-\$	Corrective Work
01.8000	95+04.0	3.11	131.75	135.29	134.00	-\$	Corrective Work
01.9000	100+32.0	3.14	119.93	143.37	132.00	-\$	Corrective Work
02.0000	105+60.0	3.09	153.40	116.62	135.00	-\$	Corrective Work
02.1000	110+88.0	2.97	138.90	147.18	143.00	-\$	Corrective Work
02.1889	115+57.4	2.33	155.55	238.04	192.00	-\$	Corrective Work



Average IRI for 2.1889 Mile Section = 100

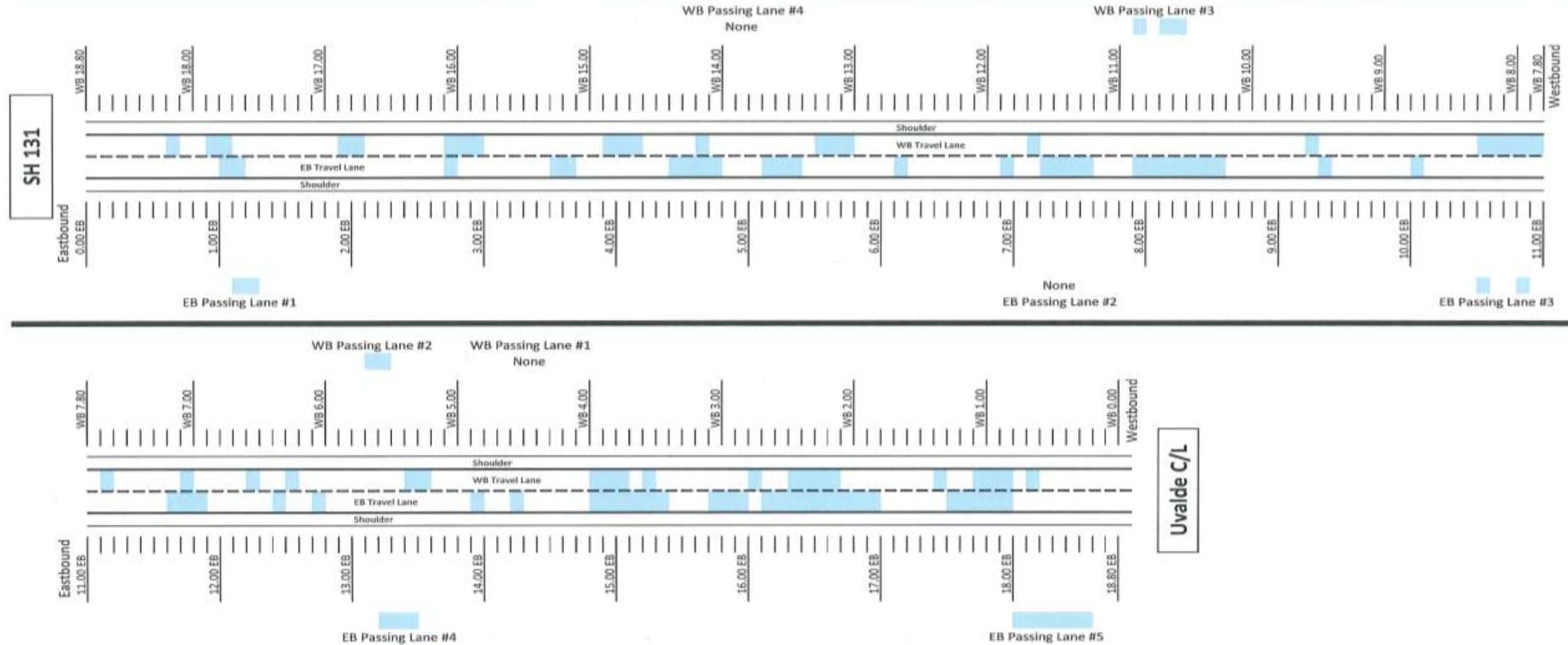
After 2.0" Overlay

Distance	Station	PSI	IRI (L)	IRI (R)	Avg IRI	Pay*SectLen	Pay
00.1000	5+28.0	2.95	129.56	158.92	144.00	-\$	Corrective Work
00.2000	10+56.0	3.19	142.12	114.38	128.00	-\$	Corrective Work
00.3000	15+84.0	3.37	121.53	111.63	117.00	-\$	Corrective Work
00.4000	21+12.0	2.98	167.27	116.51	142.00	-\$	Corrective Work
00.5000	26+40.0	3.12	123.61	142.00	133.00	-\$	Corrective Work
00.6000	31+68.0	2.89	155.68	141.88	149.00	-\$	Corrective Work
00.7000	36+96.0	3.34	130.15	106.71	118.00	-\$	Corrective Work
00.8000	42+24.0	3.16	122.41	138.36	130.00	-\$	Corrective Work
00.9000	47+52.0	3.47	113.17	108.78	111.00	-\$	Corrective Work
01.0000	52+80.0	3.03	159.68	118.30	139.00	-\$	Corrective Work
01.1000	58+08.0	2.77	78.02	78.97	78.50	-\$	Corrective Work
01.2000	63+36.0	3.03	134.64	142.36	139.00	-\$	Corrective Work
01.3000	68+64.0	2.89	139.20	158.17	149.00	-\$	Corrective Work
01.4000	73+92.0	2.53	140.37	210.57	175.00	-\$	Corrective Work
01.5000	79+20.0	2.30	102.77	91.51	97.14	-\$	Corrective Work
01.6000	84+48.0	2.75	149.36	168.14	159.00	-\$	Corrective Work
01.7000	89+76.0	2.98	148.91	135.10	142.00	-\$	Corrective Work
01.8000	95+04.0	3.11	131.75	135.29	134.00	-\$	Corrective Work
01.9000	100+32.0	3.14	119.93	143.37	132.00	-\$	Corrective Work
02.0000	105+60.0	3.09	153.40	116.62	135.00	-\$	Corrective Work
02.1000	110+88.0	2.97	138.90	147.18	143.00	-\$	Corrective Work
02.1889	115+57.4	2.33	75.76	116.04	95.90	-\$	Corrective Work



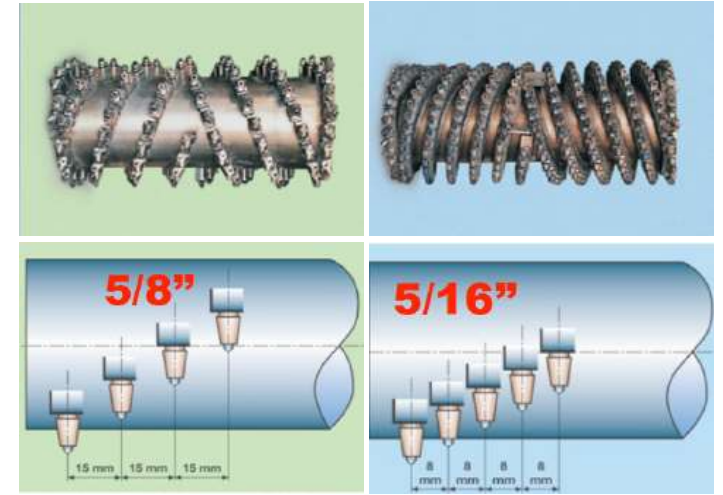
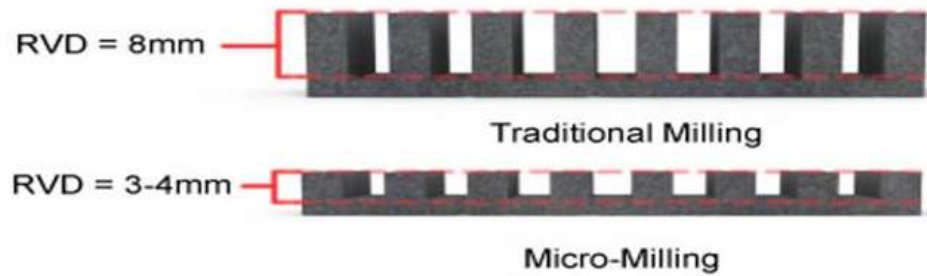
Average IRI for 2.1889 Mile Section = 50

Mark these areas on the existing IRI profile



Construction

Comparison of ridge to valley depth



Pre-Pave Communication



Address final ride with pieced together phased projects.



Different ride schedules for different road types – frontage vs. main lanes

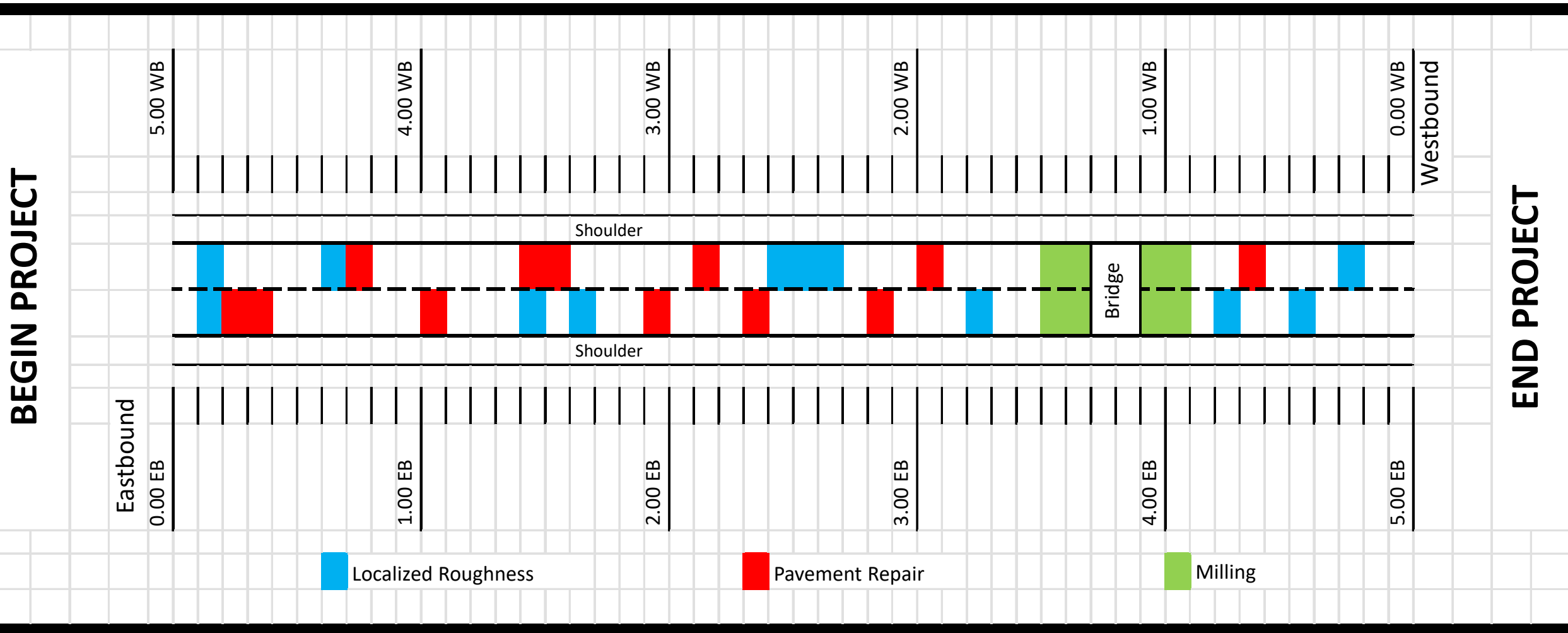


Final surface at one time



Know IRI before construction starts

Prep Work Layout



Daily Debrief

- The Contractor Superintendent/Foreman debriefs daily with the Project Inspector to discuss recommended items, including:
- Traffic control queue
- Straightness of longitudinal joints
- Smoothness of transverse joints
- Overall appearance (segregation) of the roadway
- Smoothness of overall ride
- Any other item that can improve the quality and production of the project



Ride Quality by Design

Expect it, Plan it, Achieve it

Presented By: Chuck Fuller

