

## Falling Weight Deflectometer Analysis Worksheet

Bureau of Materials and Tests, Pavement Management Section  
Alabama Department of Transportation

610e019w  
05/24/13

**Project** I-10 EBL from MP 19.30 to MP 26.306 Ninth Division (Mobile County)  
**Date tested** 05.20.10  
**FWD** 18002-332

**Short-term growth factor** 1.032  
**% commercial** 13 %  
**Lane distribution factor** 70 %  
**Truck factor** 0.99

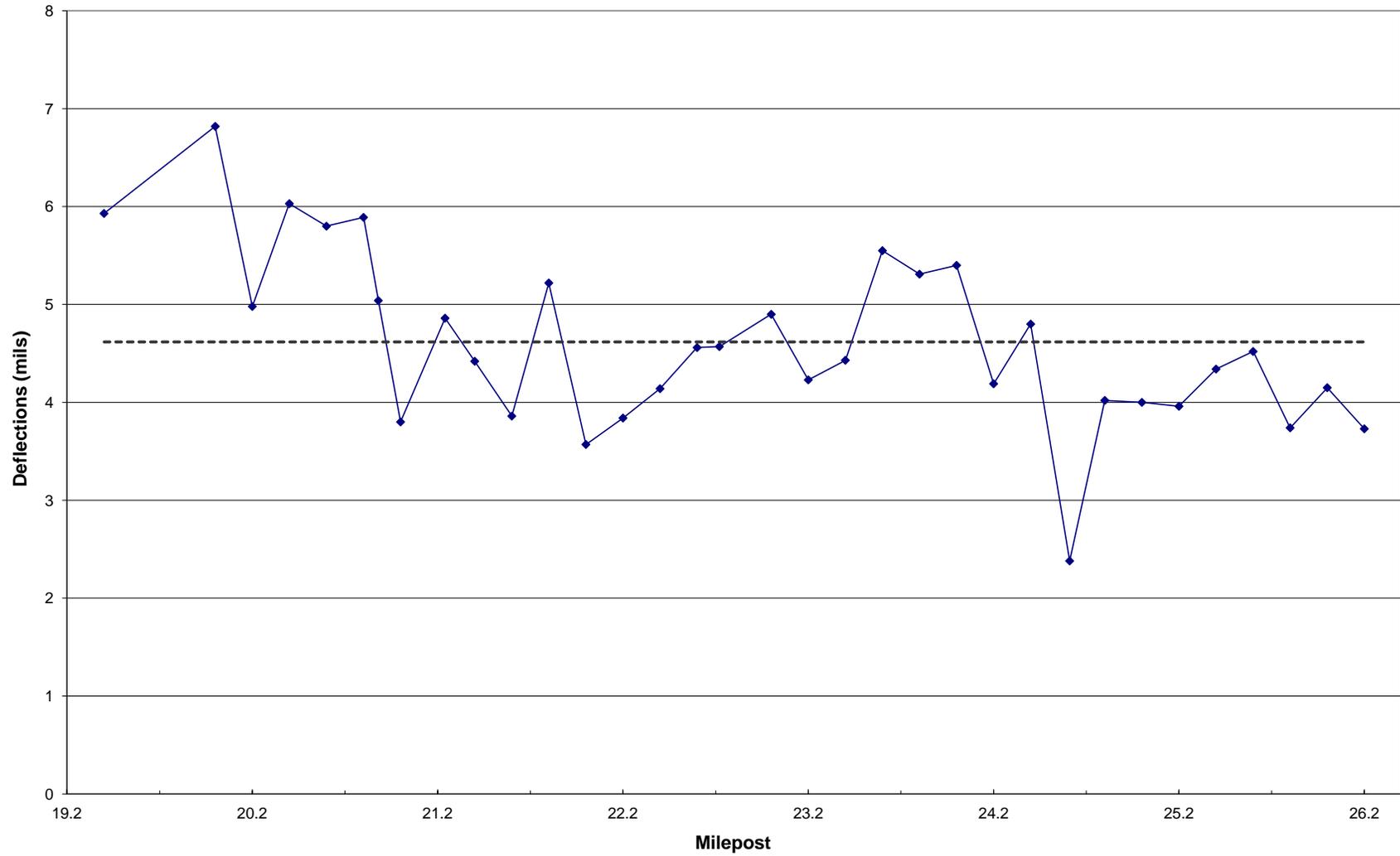
**Reliability** 95 %  
**TSI** 3.5  
**Design Period** 8 years  
**Layer Coefficient** 0.54

#	Direction	Marker	Temperature		FWD Deflections								Traffic	Asphalt Layer Granular Layer		8-year Design	(psi)		(psi)		Overlay SN	(in) Overlay Thickness
			T(°F)	P (lb)	D0 (mils)	D1 (mils)	D2 (mils)	D3 (mils)	D4 (mils)	D5 (mils)	D6 (mils)	AADT		H1 (in)	H2 (in)		ESALs	M <sub>R</sub>	SN <sub>req</sub>	E <sub>p</sub>		
1	E	19.40	94	9026	5.9	3.1	2.8	2.4	2.0	1.7	1.4	86943	13.29	11.15	12805203	7523	7.27	454452	8.46	0.00	0.00	
2	E	20.00	88	8928	6.8	5.3	3.9	2.8	2.1	1.7	1.4	86943	13.29	11.15	12805203	6885	7.47	309159	7.44	0.04	0.07	
3	E	20.20	88	9070	5.0	3.4	2.6	2.0	1.5	1.2	1.0	86943	13.29	11.15	12805203	9913	6.67	418907	8.23	0.00	0.00	
4	E	20.40	88	9048	6.0	3.9	2.7	1.9	1.4	1.0	0.8	86943	13.29	11.15	12805203	10899	6.47	283127	7.22	0.00	0.00	
5	E	20.60	88	8961	5.8	3.8	2.7	1.9	1.4	1.0	0.8	86943	13.29	11.15	12805203	10955	6.46	295935	7.33	0.00	0.00	
6	E	20.80	88	8983	5.9	3.8	2.6	1.8	1.3	1.0	0.8	86943	13.29	11.15	12805203	10805	6.49	292272	7.30	0.00	0.00	
7	E	20.88	88	8983	5.0	3.0	2.2	1.5	1.1	0.9	0.7	86943	13.29	11.15	12805203	12840	6.12	338032	7.66	0.00	0.00	
8	E	21.00	88	8994	3.8	2.5	2.1	1.7	1.3	1.1	0.8	86943	13.29	11.15	12805203	11331	6.39	603086	9.29	0.00	0.00	
9	E	21.24	88	8928	4.9	3.3	2.5	1.9	1.4	1.0	0.8	86943	13.29	11.15	12805203	10600	6.53	404527	8.13	0.00	0.00	
10	E	21.40	88	8939	4.4	2.8	2.2	1.7	1.3	1.0	0.8	86943	13.29	11.15	12805203	11436	6.37	452018	8.44	0.00	0.00	
11	E	21.60	88	9015	3.9	2.7	2.3	1.9	1.6	1.3	1.1	86943	13.29	11.15	12805203	9084	6.86	717273	9.84	0.00	0.00	
12	E	21.80	88	8961	5.2	3.4	2.4	1.6	1.2	0.9	0.7	86943	13.29	11.15	12805203	12484	6.18	323684	7.55	0.00	0.00	
13	E	22.00	88	8972	3.6	2.7	2.3	2.0	1.6	1.3	1.1	86943	13.29	11.15	12805203	8838	6.92	853519	10.43	0.00	0.00	
14	E	22.20	88	8939	3.8	2.5	1.9	1.5	1.1	0.8	0.6	86943	13.29	11.15	12805203	13660	5.99	506412	8.77	0.00	0.00	
15	E	22.40	88	9005	4.1	2.7	2.2	1.7	1.4	1.1	0.9	86943	13.29	11.15	12805203	10769	6.49	539061	8.95	0.00	0.00	
16	E	22.60	88	8972	4.6	3.0	2.4	1.9	1.5	1.2	1.0	86943	13.29	11.15	12805203	9741	6.71	487617	8.66	0.00	0.00	
17	E	22.72	88	8972	4.6	3.0	2.4	1.9	1.5	1.2	1.0	86943	13.29	11.15	12805203	9806	6.69	483086	8.63	0.00	0.00	
18	E	23.00	88	8643	4.9	3.3	2.6	2.0	1.6	1.3	1.0	86943	13.29	11.15	12805203	8971	6.89	427754	8.29	0.00	0.00	
19	E	23.20	88	8972	4.2	2.9	2.4	1.9	1.5	1.2	1.0	86943	13.29	11.15	12805203	9871	6.68	553482	9.03	0.00	0.00	
20	E	23.40	88	9015	4.4	2.8	2.2	1.7	1.3	1.0	0.8	86943	13.29	11.15	12805203	11715	6.32	448887	8.42	0.00	0.00	
21	E	23.60	88	8972	5.6	3.7	2.8	2.1	1.5	1.2	0.9	86943	13.29	11.15	12805203	9678	6.72	346675	7.73	0.00	0.00	
22	E	23.80	88	8983	5.3	3.5	2.7	2.1	1.6	1.2	1.0	86943	13.29	11.15	12805203	9503	6.76	379963	7.97	0.00	0.00	
23	E	24.00	88	8950	5.4	3.2	2.4	1.8	1.3	1.0	0.8	86943	13.29	11.15	12805203	11275	6.40	325935	7.57	0.00	0.00	
24	E	24.20	88	9005	4.2	2.8	2.0	1.4	1.0	0.7	0.6	86943	13.29	11.15	12805203	14714	5.84	420907	8.24	0.00	0.00	
25	E	24.40	88	8884	4.8	3.3	2.7	2.2	1.7	1.3	1.0	86943	13.29	11.15	12805203	8524	7.00	487306	8.65	0.00	0.00	
26	E	24.61	88	8895	2.4	1.7	1.6	1.4	1.1	1.0	0.8	86943	13.29	11.15	12805203	12231	6.22	1369595	12.21	0.00	0.00	
27	E	24.80	88	9048	4.0	2.6	2.1	1.7	1.3	1.1	0.9	86943	13.29	11.15	12805203	11227	6.41	554416	9.03	0.00	0.00	
28	E	25.00	88	9005	4.0	2.8	2.2	1.8	1.5	1.2	1.0	86943	13.29	11.15	12805203	10249	6.60	598667	9.27	0.00	0.00	
29	E	25.20	88	8742	4.0	2.6	2.0	1.5	1.2	0.9	0.8	86943	13.29	11.15	12805203	12124	6.24	504311	8.75	0.00	0.00	
30	E	25.40	88	9005	4.3	2.8	2.2	1.7	1.4	1.0	0.8	86943	13.29	11.15	12805203	11008	6.45	486699	8.65	0.00	0.00	
31	E	25.60	88	8950	4.5	3.0	2.4	1.9	1.5	1.2	1.0	86943	13.29	11.15	12805203	9980	6.66	483678	8.63	0.00	0.00	
32	E	25.80	88	8972	3.7	2.6	2.2	1.8	1.5	1.2	1.0	86943	13.29	11.15	12805203	9952	6.66	693231	9.73	0.00	0.00	
33	E	26.00	88	8961	4.2	3.1	2.6	2.1	1.6	1.3	1.1	86943	13.29	11.15	12805203	9099	6.86	615093	9.35	0.00	0.00	
34	E	26.20	88	8972	3.7	2.5	2.1	1.7	1.4	1.1	0.9	86943	13.29	11.15	12805203	10968	6.45	638780	9.47	0.00	0.00	
<b>Average</b>				8961	4.6	3.1	2.4	1.8	1.4	1.1	0.9					10549	6.57	502869	8.63	0.00	0.00	

These files represents testing conducted in May 2010,  
updated to reflect 2013 traffic.

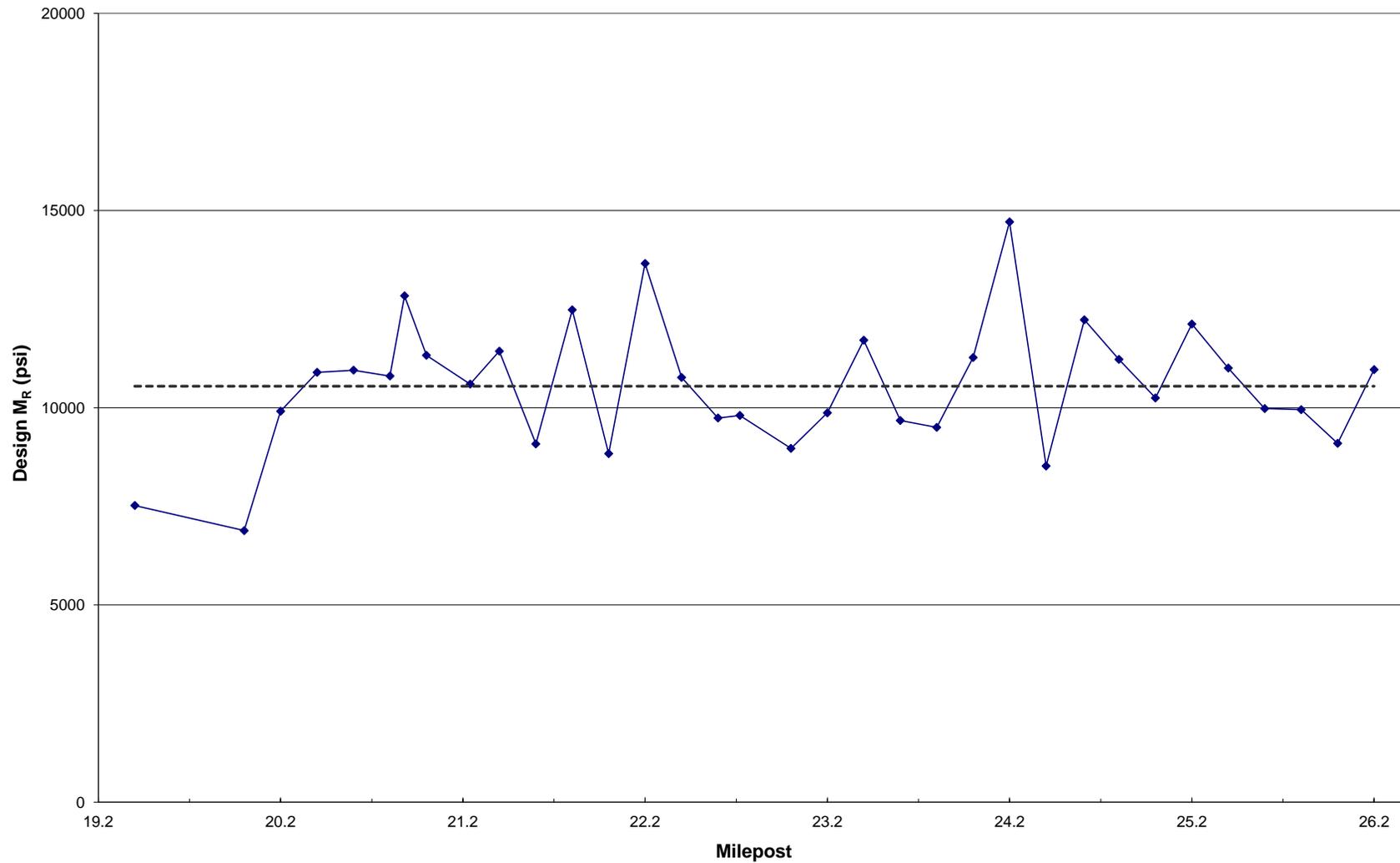
# Load Cell Deflections

I-10 EBL from MP 19.30 to MP 26.306 Ninth Division (Mobile County)



# Design Subgrade Resilient Modulus

I-10 EBL from MP 19.30 to MP 26.306 Ninth Division (Mobile County)



## Falling Weight Deflectometer Analysis Worksheet

Bureau of Materials and Tests, Pavement Management Section  
Alabama Department of Transportation

610w026w  
05/24/13

**Project** I-10 WBL from MP 26.306 to MP 19.50 Ninth Division (Mobile County)  
**Date tested** 05.21.10  
**FWD** 18002-332

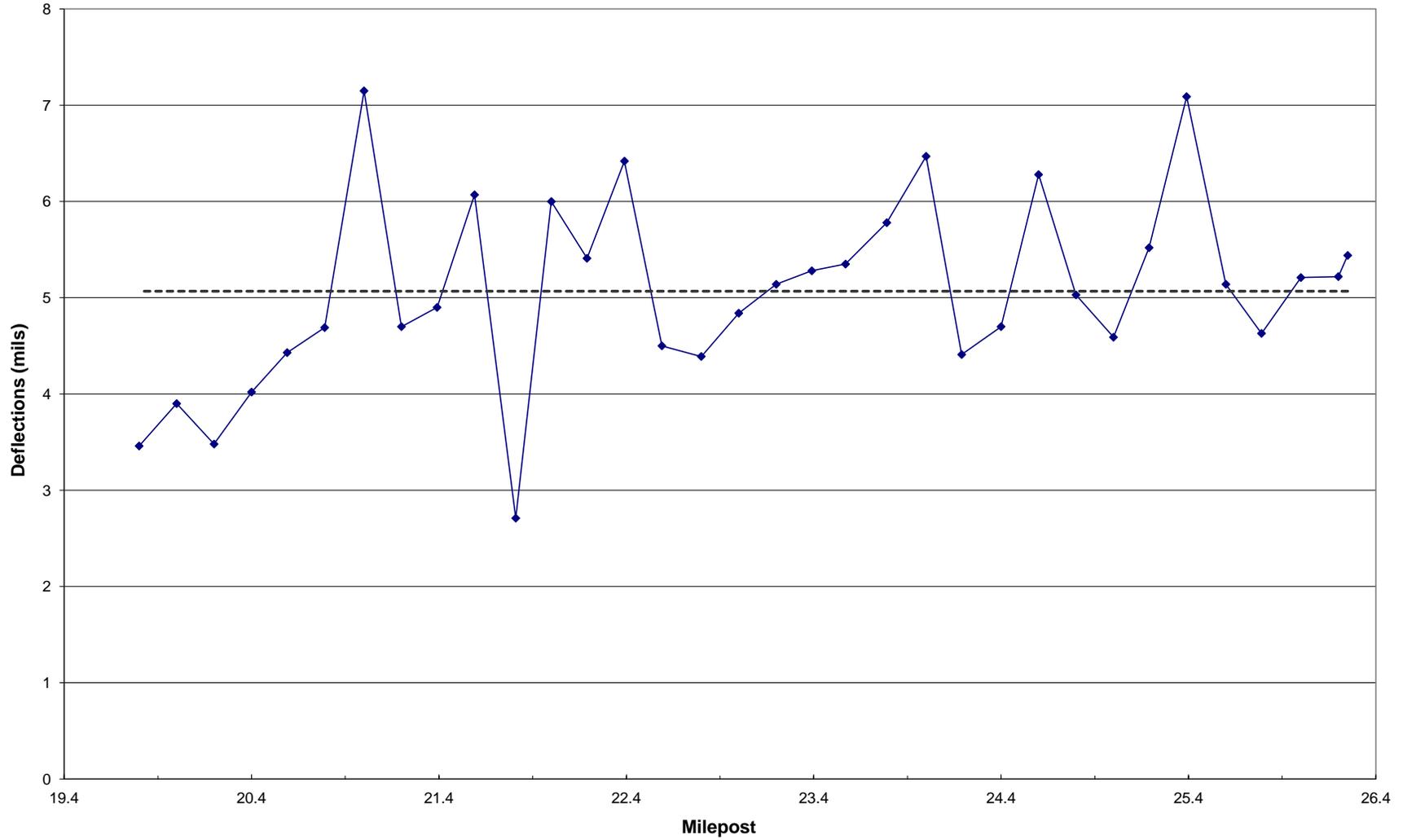
**Short-term growth factor** 1.032  
**% commercial** 13 %  
**Lane distribution factor** 70 %  
**Truck factor** 0.99

**Reliability** 95 %  
**TSI** 3.5  
**Design Period** 8 years  
**Layer Coefficient** 0.54

#	Direction	Marker	Temperature		FWD Deflections								Traffic	Asphalt Layer		8-year Design	(psi)		(psi)		Overlay SN	(in) Overlay Thickness
			T(°F)	P (lb)	D0 (mils)	D1 (mils)	D2 (mils)	D3 (mils)	D4 (mils)	D5 (mils)	D6 (mils)	AADT		H1 (in)	H2 (in)		ESALs	M <sub>R</sub>	SN <sub>req</sub>	E <sub>p</sub>		
4	W	26.25	88	8994	5.4	3.5	2.7	2.1	1.7	1.3	1.0	86943	13.65	10.67	12805203	8996	6.88	384543	7.96	0.00	0.00	
5	W	26.20	88	9005	5.2	3.5	2.8	2.2	1.7	1.4	1.1	86943	13.65	10.67	12805203	8541	6.99	432502	8.28	0.00	0.00	
6	W	26.00	88	9005	5.2	3.5	2.8	2.2	1.7	1.4	1.1	86943	13.65	10.67	12805203	8541	6.99	434017	8.29	0.00	0.00	
7	W	25.79	88	8950	4.6	3.0	2.5	2.0	1.6	1.3	1.0	86943	13.65	10.67	12805203	9232	6.82	499413	8.68	0.00	0.00	
9	W	25.60	88	9005	5.1	3.4	2.7	2.2	1.7	1.4	1.1	86943	13.65	10.67	12805203	8640	6.97	440641	8.33	0.00	0.00	
10	W	25.39	88	9015	7.1	4.2	3.1	2.2	1.6	1.2	0.9	86943	13.65	10.67	12805203	9061	6.86	245051	6.85	0.02	0.03	
11	W	25.19	88	8994	5.5	3.9	3.0	2.3	1.8	1.3	1.1	86943	13.65	10.67	12805203	8434	7.02	394065	8.02	0.00	0.00	
12	W	25.00	88	9005	4.6	3.3	2.7	2.2	1.7	1.4	1.1	86943	13.65	10.67	12805203	8541	6.99	549455	8.96	0.00	0.00	
13	W	24.80	88	8972	5.0	3.3	2.5	1.9	1.5	1.2	0.9	86943	13.65	10.67	12805203	9938	6.67	407468	8.11	0.00	0.00	
14	W	24.60	88	8994	6.3	4.5	3.4	2.5	1.8	1.3	1.0	86943	13.65	10.67	12805203	8201	7.08	320532	7.49	0.00	0.00	
15	W	24.40	88	8972	4.7	3.2	2.5	1.9	1.4	1.0	0.8	86943	13.65	10.67	12805203	10652	6.52	435546	8.30	0.00	0.00	
16	W	24.19	88	8961	4.4	2.9	2.1	1.6	1.2	1.0	0.8	86943	13.65	10.67	12805203	12122	6.24	441388	8.33	0.00	0.00	
17	W	24.00	88	8994	6.5	4.5	3.2	2.2	1.6	1.2	0.9	86943	13.65	10.67	12805203	9576	6.75	273761	7.11	0.00	0.00	
18	W	23.79	88	9005	5.8	3.4	2.6	1.9	1.4	1.1	0.9	86943	13.65	10.67	12805203	10320	6.58	314790	7.44	0.00	0.00	
19	W	23.57	88	8994	5.4	3.7	2.8	2.1	1.5	1.1	0.9	86943	13.65	10.67	12805203	9765	6.70	372298	7.87	0.00	0.00	
20	W	23.39	88	8950	5.3	3.7	2.9	2.2	1.6	1.3	1.0	86943	13.65	10.67	12805203	9006	6.88	401586	8.07	0.00	0.00	
21	W	23.20	88	8961	5.1	3.6	2.8	2.1	1.6	1.2	1.0	86943	13.65	10.67	12805203	9243	6.82	413736	8.15	0.00	0.00	
22	W	23.00	88	8994	4.8	3.3	2.6	2.0	1.6	1.3	1.1	86943	13.65	10.67	12805203	9454	6.77	455675	8.42	0.00	0.00	
23	W	22.80	88	8928	4.4	2.9	2.3	1.9	1.5	1.2	1.0	86943	13.65	10.67	12805203	9758	6.70	523360	8.82	0.00	0.00	
24	W	22.59	88	8994	4.5	2.9	2.3	1.9	1.5	1.2	0.9	86943	13.65	10.67	12805203	10167	6.62	490182	8.63	0.00	0.00	
25	W	22.39	88	8972	6.4	4.1	2.9	2.1	1.6	1.2	0.9	86943	13.65	10.67	12805203	9553	6.75	276604	7.13	0.00	0.00	
26	W	22.19	88	8983	5.4	3.4	2.7	2.1	1.7	1.3	1.1	86943	13.65	10.67	12805203	8772	6.94	395144	8.03	0.00	0.00	
27	W	22.00	88	9015	6.0	4.0	3.1	2.4	1.9	1.5	1.2	86943	13.65	10.67	12805203	7914	7.16	358410	7.77	0.00	0.00	
28	W	21.81	88	8961	2.7	1.9	1.6	1.4	1.1	0.9	0.7	86943	13.65	10.67	12805203	13442	6.03	986520	10.89	0.00	0.00	
29	W	21.59	88	9059	6.1	4.1	3.3	2.7	2.2	1.8	1.5	86943	13.65	10.67	12805203	6734	7.52	404861	8.10	0.00	0.00	
30	W	21.39	88	8972	4.9	3.2	2.4	1.9	1.5	1.2	0.9	86943	13.65	10.67	12805203	10142	6.62	420132	8.20	0.00	0.00	
31	W	21.20	88	8950	4.7	3.1	2.3	1.7	1.3	1.0	0.8	86943	13.65	10.67	12805203	11540	6.35	409040	8.12	0.00	0.00	
32	W	21.00	88	9015	7.2	4.8	3.4	2.4	1.8	1.3	1.0	86943	13.65	10.67	12805203	8502	7.00	251790	6.91	0.09	0.17	
33	W	20.79	88	8950	4.7	3.0	2.3	1.8	1.4	1.1	0.9	86943	13.65	10.67	12805203	10402	6.57	443251	8.34	0.00	0.00	
34	W	20.59	88	9005	4.4	2.9	2.3	1.8	1.4	1.1	0.9	86943	13.65	10.67	12805203	10540	6.54	490942	8.63	0.00	0.00	
35	W	20.40	88	9048	4.0	2.6	1.9	1.5	1.1	0.9	0.7	86943	13.65	10.67	12805203	13099	6.08	497766	8.67	0.00	0.00	
36	W	20.20	88	8994	3.5	2.5	2.1	1.8	1.5	1.3	1.1	86943	13.65	10.67	12805203	9498	6.76	850951	10.37	0.00	0.00	
37	W	20.00	88	8994	3.9	2.8	2.4	2.0	1.7	1.4	1.2	86943	13.65	10.67	12805203	8603	6.98	747941	9.93	0.00	0.00	
39	W	19.80	88	8983	3.5	2.3	1.9	1.6	1.3	1.0	0.8	86943	13.65	10.67	12805203	11766	6.31	701649	9.72	0.00	0.00	
<b>Average</b>					8988	5.1	3.4	2.6	2.0	1.6	1.2	1.0					9667	6.75	454853	8.32	0.00	0.01

# Load Cell Deflections

I-10 WBL from MP 26.306 to MP 19.50 Ninth Division (Mobile County)



# Design Subgrade Resilient Modulus

I-10 WBL from MP 26.306 to MP 19.50 Ninth Division (Mobile County)

