

# SLIC is Slick

## FWD Data Screening

Presenter: Richard Stubstad

It's 10:00 O'clock – Do You Know  
Where Your Sensors Are?



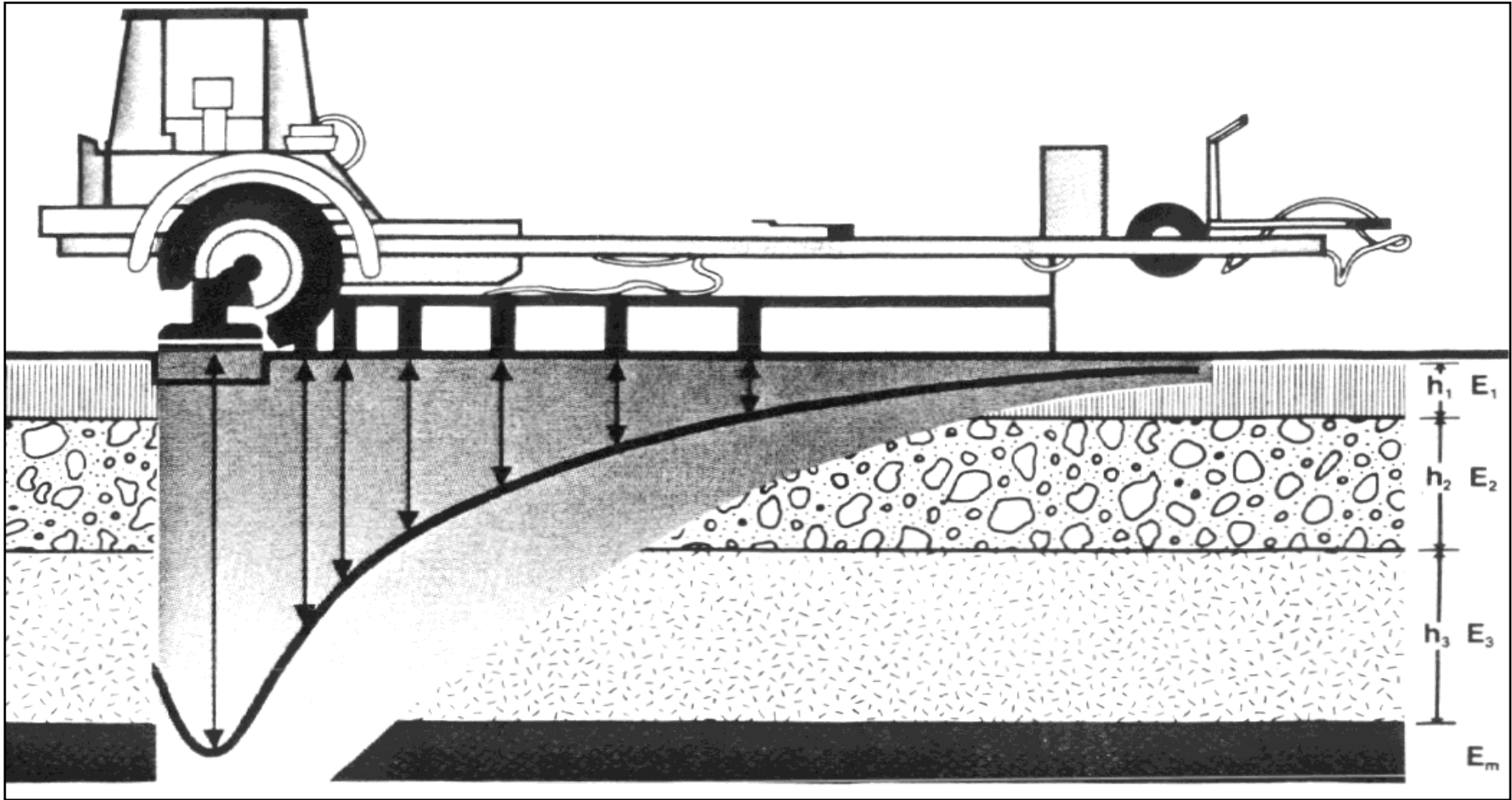
**APPLIED  
RESEARCH  
ASSOCIATES, INC.**

An Employee-Owned Company

# Dynatest FWD



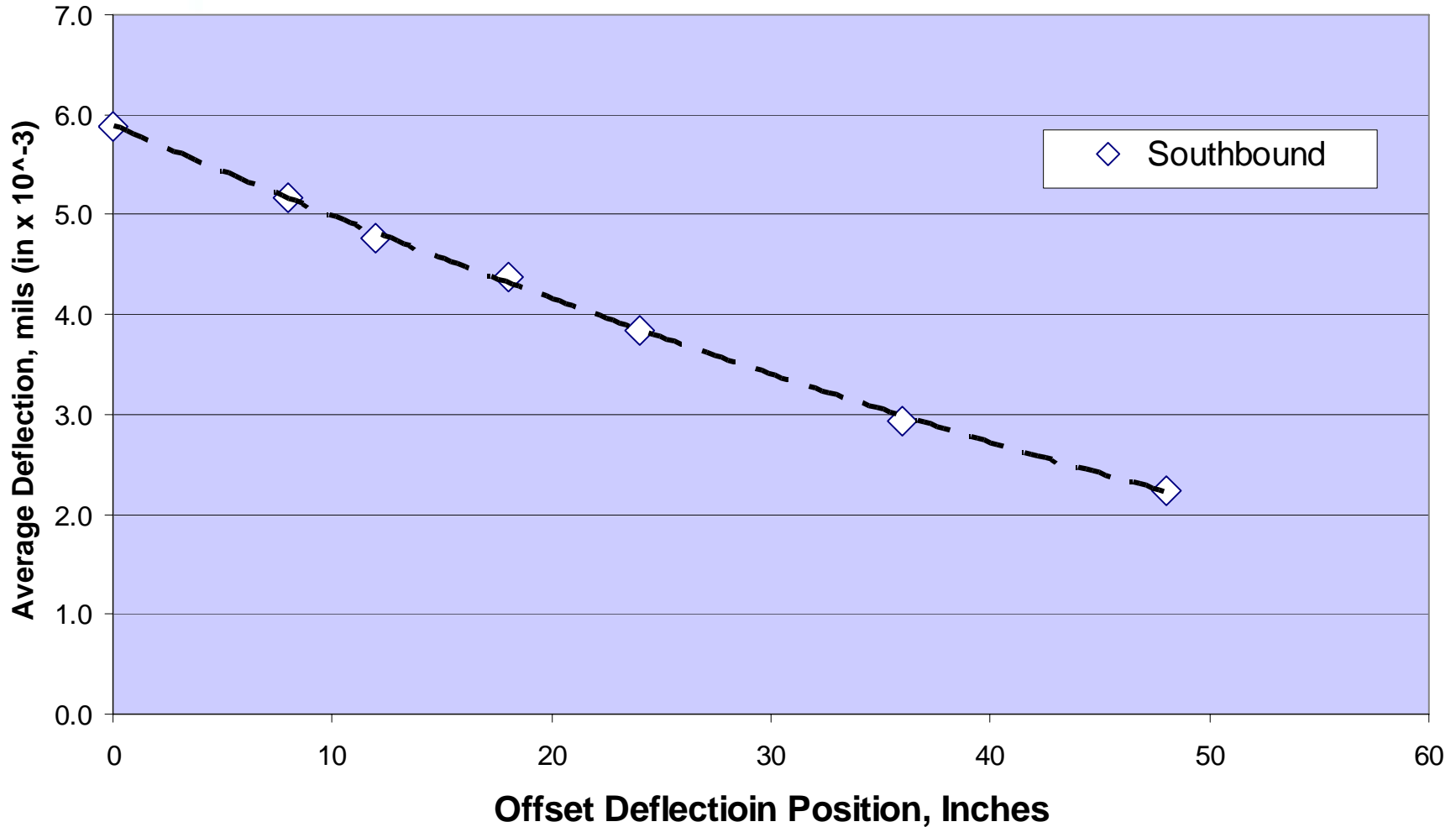
# FWD Devices



# Southbound Load & Deflections

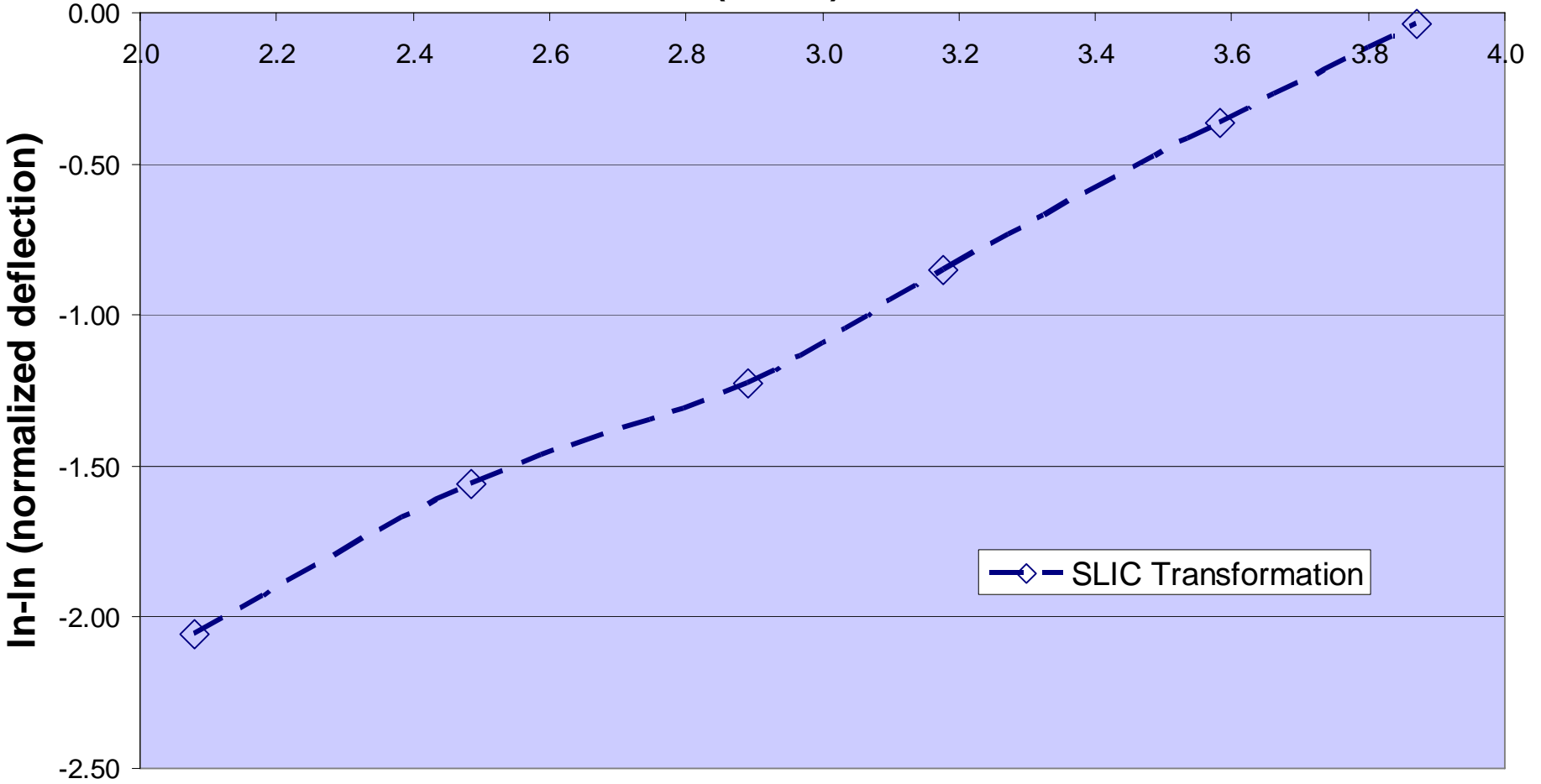
								<u>Ld</u>	<u>d1</u>	<u>d2</u>	<u>d3</u>	<u>d4</u>	<u>d5</u>	<u>d6</u>	<u>d7</u>
HR	SB	8/10/2004	11:00	JILS FWD	1100	OWP	1	8,360	5.40	4.40	4.09	3.86	3.48	2.87	2.36
HR	SB	8/10/2004	11:00	JILS FWD	1155	OWP	1	8,130	3.97	3.57	3.24	3.07	2.77	2.23	1.82
HR	SB	8/10/2004	11:00	JILS FWD	1203	OWP	1	8,540	5.80	5.33	5.03	4.72	4.20	3.28	2.55
HR	SB	8/10/2004	11:00	JILS FWD	1251	OWP	1	8,020	5.44	5.14	4.84	4.57	4.07	3.19	2.50
HR	SB	8/10/2004	11:00	JILS FWD	1301	OWP	1	8,130	7.09	6.45	5.91	5.42	4.73	3.57	2.71
HR	SB	8/10/2004	11:00	JILS FWD	1349	OWP	1	8,260	8.96	8.21	7.63	7.02	6.20	4.74	3.68
HR	SB	8/10/2004	11:00	JILS FWD	1404	OWP	1	8,260	5.05	4.73	4.42	4.16	3.69	2.86	2.22
HR	SB	8/10/2004	11:00	JILS FWD	1452	OWP	1	8,510	6.54	6.06	5.50	4.96	4.22	3.38	2.38
HR	SB	8/10/2004	11:00	JILS FWD	1499	OWP	1	8,240	7.29	6.68	6.20	5.70	4.93	3.62	2.67
HR	SB	8/10/2004	11:00	JILS FWD	1544	OWP	1	8,540	6.56	6.07	5.57	5.13	4.49	3.42	2.62
HR	SB	8/10/2004	11:00	JILS FWD	1600	OWP	1	8,440	3.61	3.11	2.89	2.76	2.51	2.08	1.71
HR	SB	8/10/2004	11:00	JILS FWD	1652	OWP	1	8,450	3.57	3.16	2.93	2.78	2.50	2.00	1.61
HR	SB	8/10/2004	11:00	JILS FWD	1700	OWP	1	8,510	4.90	4.33	3.95	3.58	3.06	2.21	1.60
HR	SB	8/10/2004	11:00	JILS FWD	1767	OWP	1	8,510	5.51	5.13	4.64	4.19	3.58	2.54	1.83
HR	SB	8/10/2004	11:00	JILS FWD	1797	OWP	1	8,530	7.41	6.22	5.29	4.34	3.47	2.36	1.68
HR	SB	8/10/2004	11:00	JILS FWD	1856	OWP	1	8,640	5.79	4.44	4.19	3.95	3.47	2.68	2.06
HR	SB	8/10/2004	11:00	JILS FWD	1900	OWP	1	8,900	7.07	4.95	4.64	4.28	3.78	2.84	2.12

# Deflection Averages, Southbound

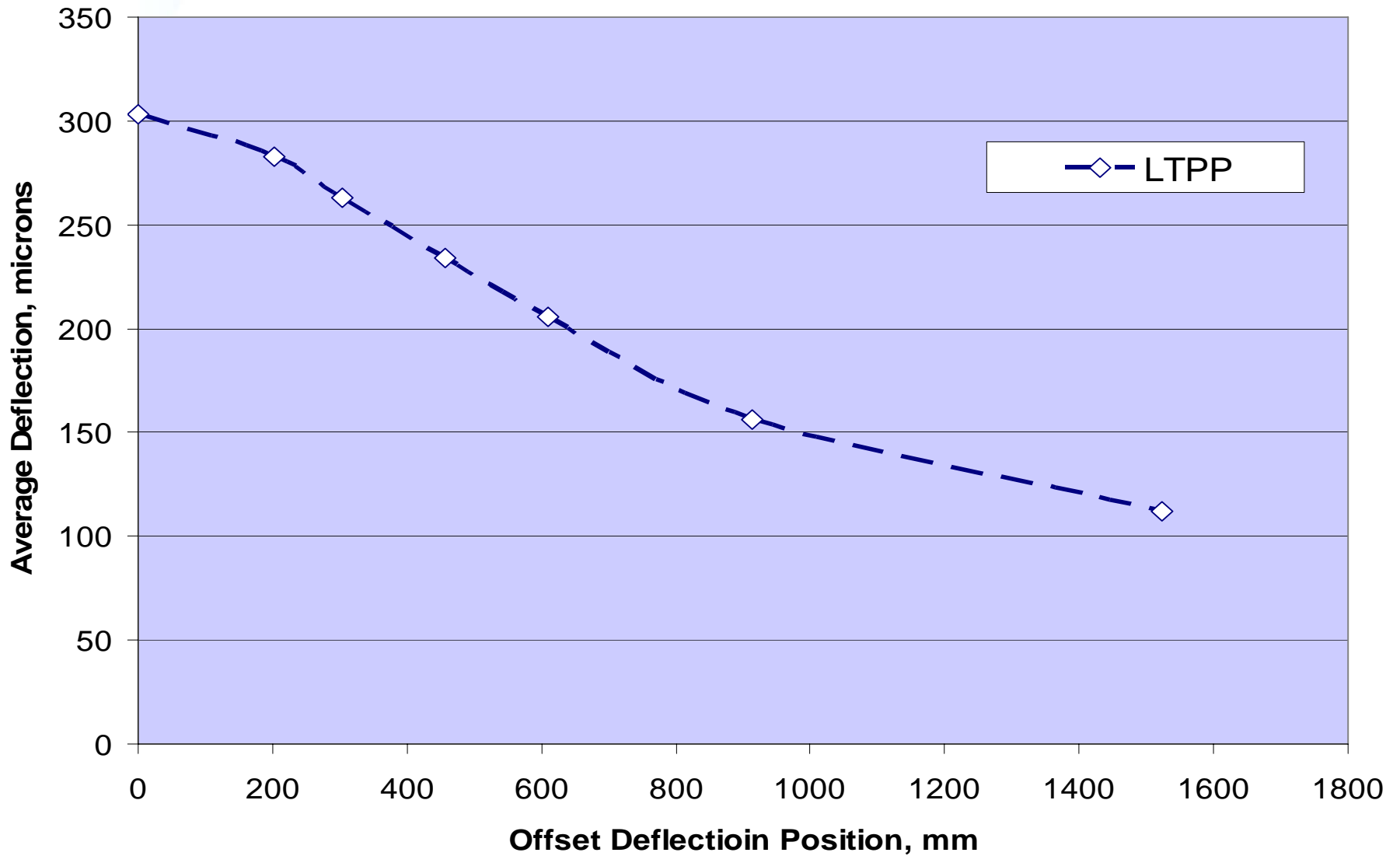


# SLIC Transformation

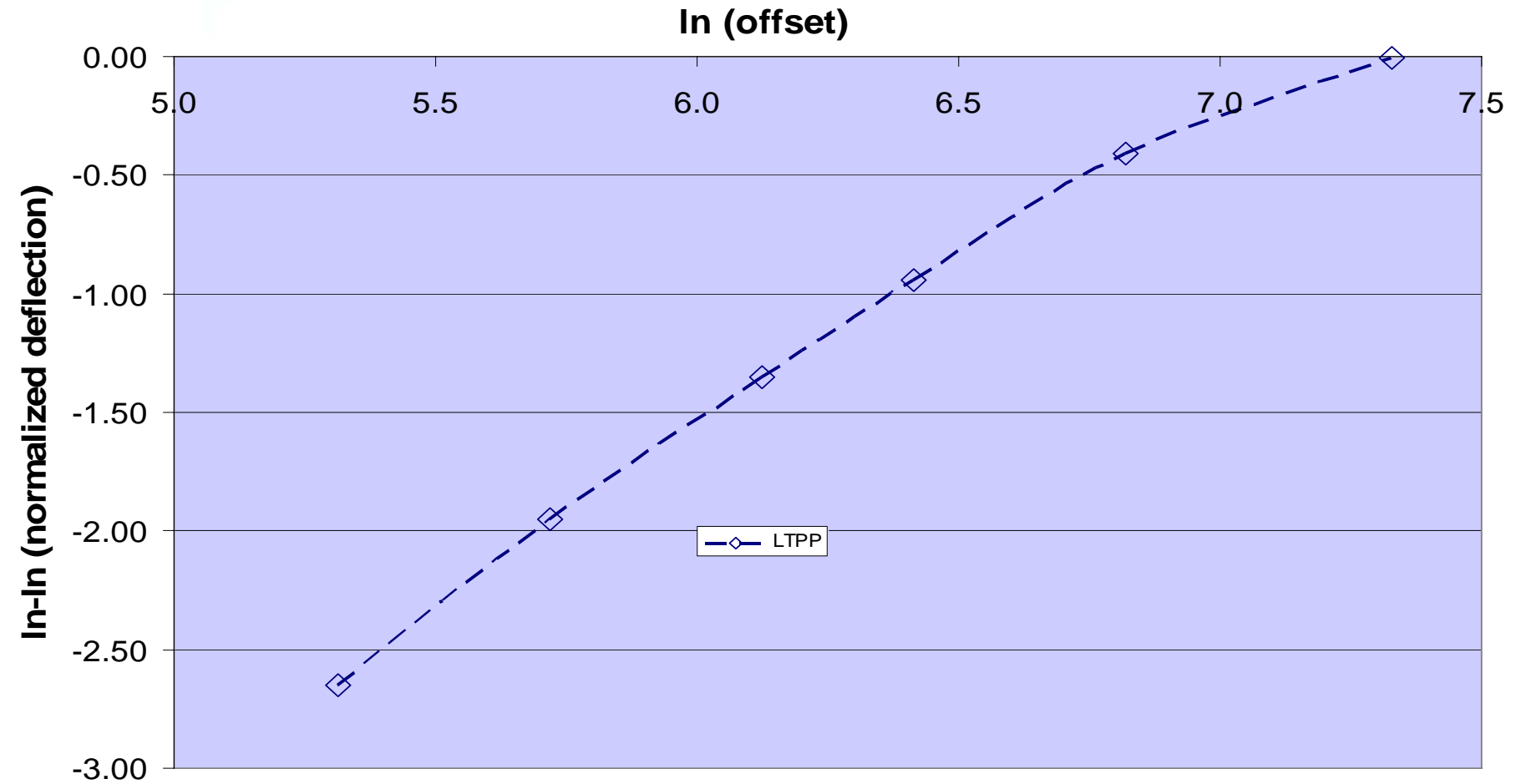
In (offset)



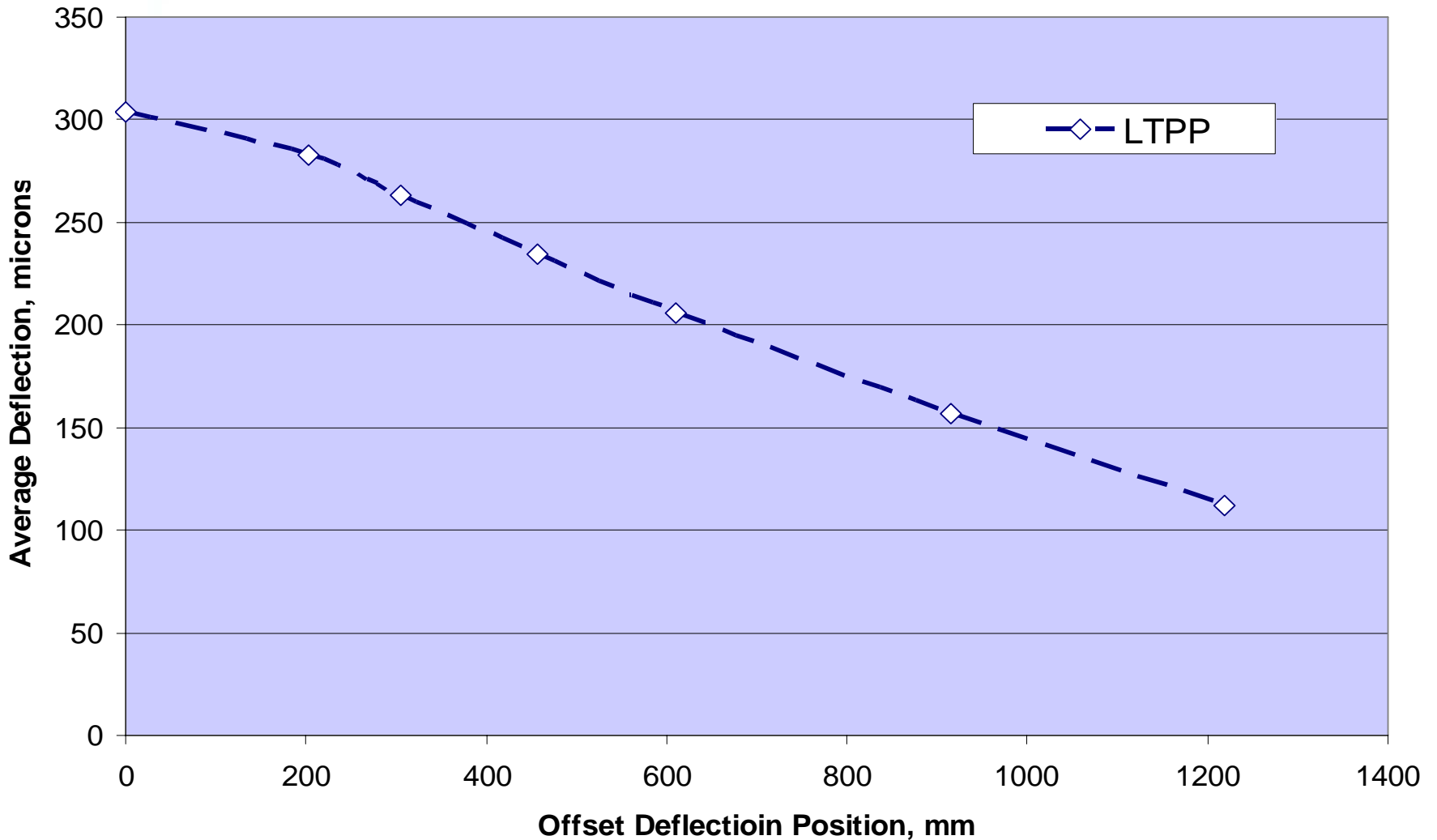
# Deflection Averages, LTPP Test Point



# SLIC Transformation

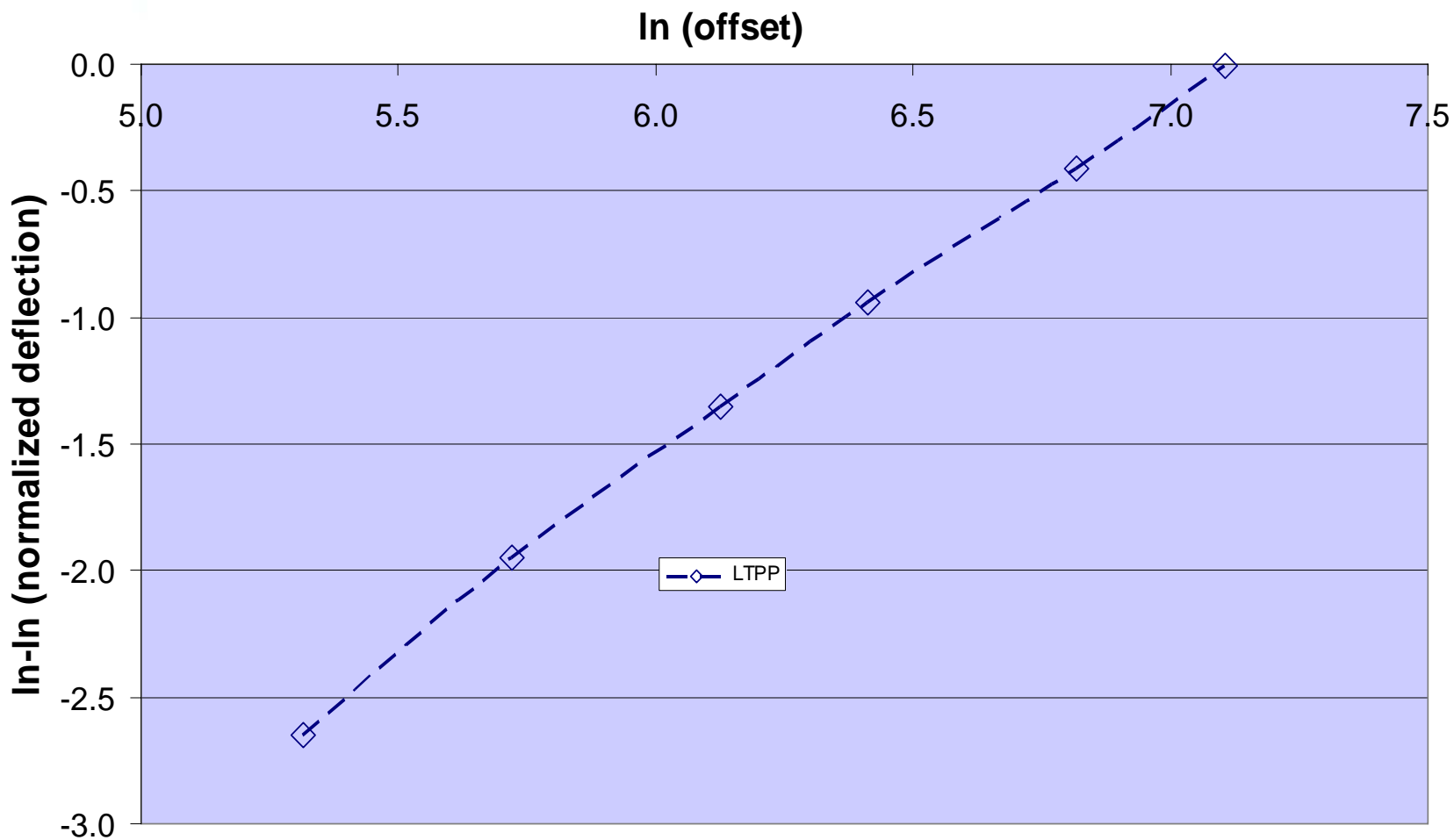


# Deflection Averages, LTPP Test Point [Sensor 7 at 48" or 1219 mm]



# SLIC Transformation

[Sensor 7 at 48" or 1219 mm]



# So what if Sensor 7 is mispositioned, or in error?

- The deflections are still decreasing.
- The subgrade (if represented by Sensor 7's reading) should be affected, but really only by some  $1/7^{\text{th}}$  or 14% (or less).
- NBD = No big deal, eh?
- [The buzzer sounds ... ] **!!! WRONG !!!**

# Effect of a 12" (305 mm) Sensor 7 error on backcalculated moduli

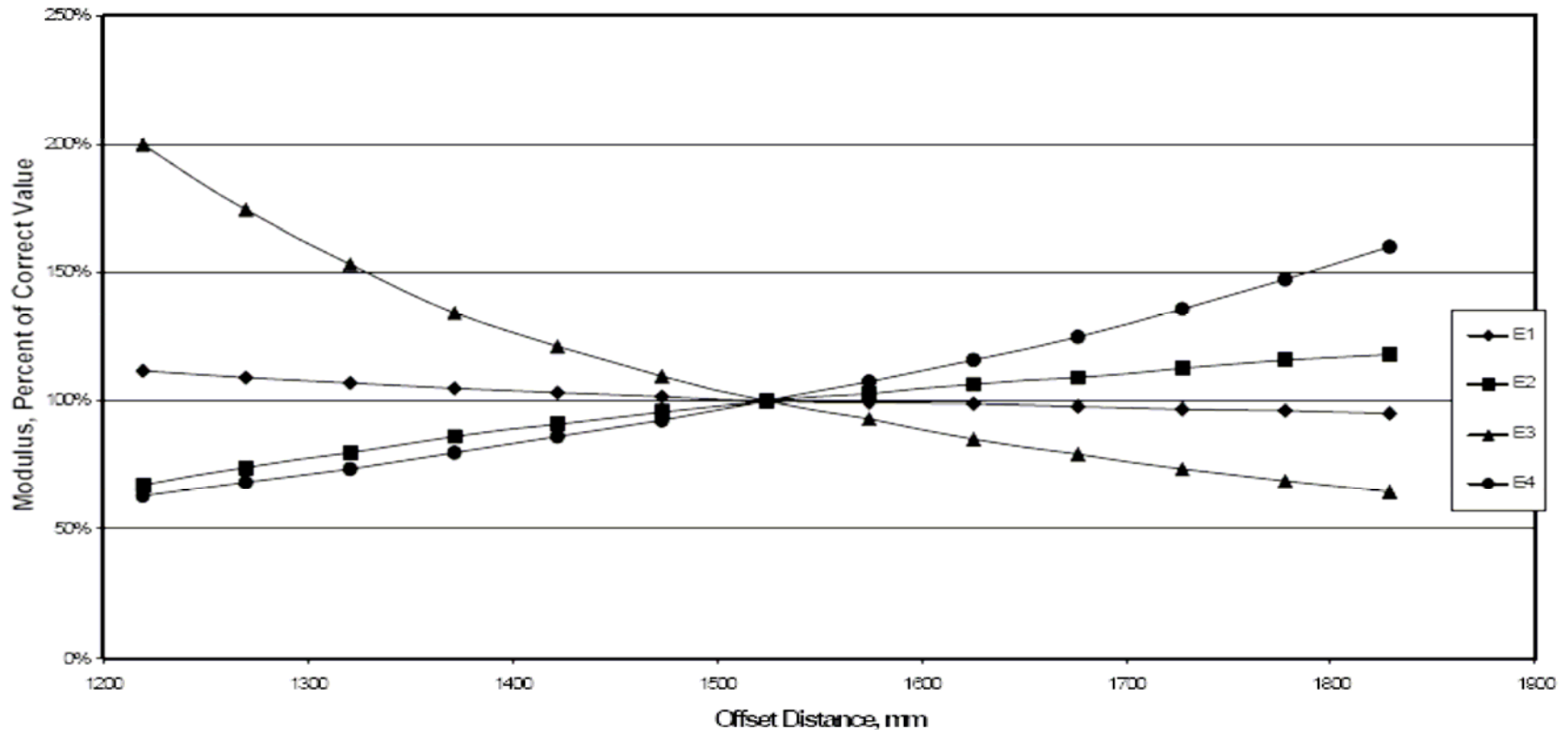


FIGURE 3b. Deviations in Layer Moduli for Positioning Errors in Sensor 7 - Thin Pavement Section (Correct Position of Sensor 7 = 1524 mm)

TABLE 2. Backcalculation Results For Example Seasonal Monitoring Program Site

Station Number	AC Modulus	Base Modulus	Upper Subgrade Modulus	Lower Subgrade Modulus
MODCOMP5:				
4+75	4740 ( <b>5040</b> ) MPa	452 ( <b>316</b> ) MPa	215 ( <b>384</b> ) MPa	337 ( <b>217</b> ) MPa
5+00	3860 ( <b>4040</b> ) MPa	260 ( <b>190</b> ) MPa	206 ( <b>341</b> ) MPa	574 ( <b>340</b> ) MPa
ELMOD4:				
4+75	3998 ( <b>4458</b> ) MPa	466 ( <b>351</b> ) MPa	201 ( <b>286</b> ) MPa	255 ( <b>286</b> ) MPa
5+00	2737 ( <b>3174</b> ) MPa	457 ( <b>301</b> ) MPa	130 ( <b>193</b> ) MPa	231 ( <b>267</b> ) MPa

Note: Moduli in the table in parentheses and **bold type** are based on using the *incorrect* (1524 mm) offset location for sensor 7.

# How does the SLIC transform look for the same test area, with the same FWD, and on different dates when Sensor 7 is mispositioned?

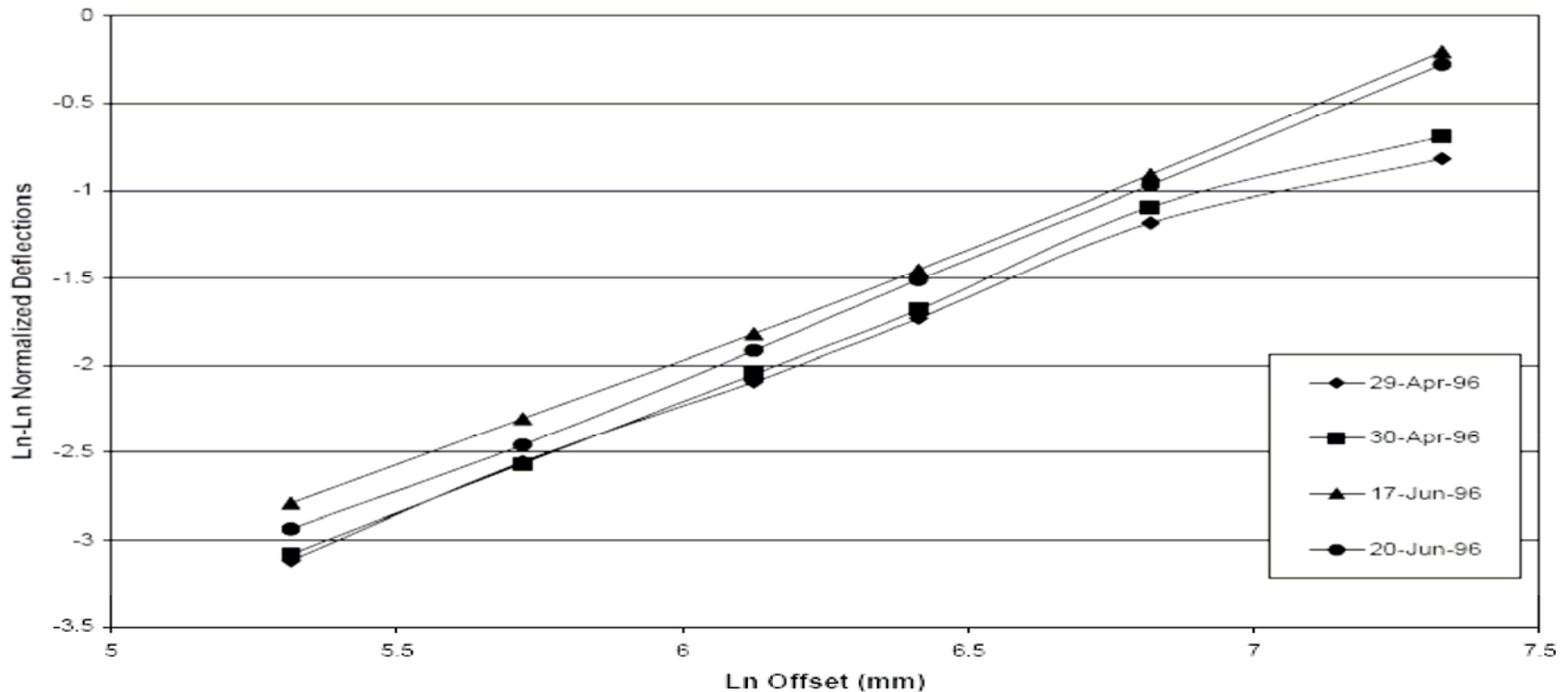


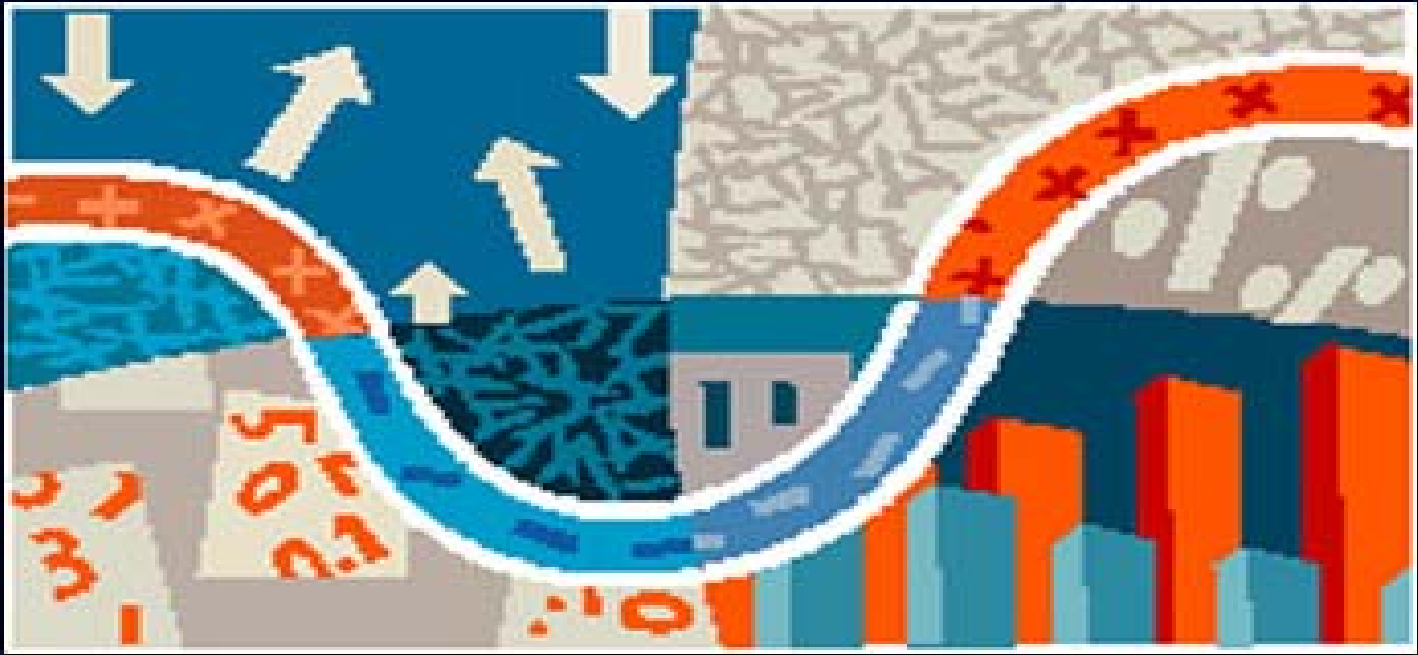
FIGURE 4b. SLIC Transforms of Data from FWD "C"

# OTHER USES FOR SLIC

- Can SLIC be modified for use in routine data screening or backcalculation routines?
- Can SLIC be modified for use in FWD field programs.
- Yes, of course !!!

# DEMO WITH MODTAG

Loading...



ModTag Version: 4.0.3

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