STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS
INTRADEPARTMENTAL CORRESPONDENCE
September 20, 1973

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ROUGHNESS MEASUREMENTS
I-10 LAPLACE - KENNER
I-10 HENDERSON - GROSSE TETE

M E M O R A N D U M T O:

MR. S. L. POLEYNARD
ASSISTANT DIRECTOR

Enclosed is an Interim Report on the roughness measurements being taken on the two sections of I-10 captioned above.

This report covers an 18 month period of time and indicates that there is not much difference in the riding qualities of the two sections. The Henderson section is rated slightly higher than the LaPlace section.

We will continue to take measurements on these sections periodically for some time until a definite rating can be established. It is also planned to take measurements for a 24 hour period on each section to determine change in riding qualities with change in temperature throughout the day.

If there are any questions concerning this report please let us know.

Verdi Adam
Materials & Research Engineer

By: J. W. Lyon, Jr.
Research & Development Engineer

HBR:mm
Enclosure
cc: Mr. A. B. Ratcliff, Jr.
Mr. Jack Reid
Mr. J. C. McGrew
Mr. W. C. Vincent
Mr. David Huval

Copied for Jake Myers

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HIGHWAY RESEARCH REPORT

INTERIM REPORT ON ROUGHNESS MEASUREMENTS

OF

ELEVATED ROADWAY SECTIONS

I-10 LAPLACE - KENNER
I-10 HENDERSON - GROSSE TETE

September, 1973

Louisiana Department of Highways - Research & Development Section

REPORT ON ROUGHNESS MEASUREMENTS OF ELEVATED ROADWAY SECTIONS

Two sections of Interstate 10 have been selected for study to determine the initial roughness and subsequent change in roughness with time. The two sections represent different design and construction procedures.

Section 1 is located on I-10 between LaPlace and Kenner and is approximately 12 miles in length. This section was constructed with precast prestressed monolithic girder spans resting on precast caps with 54 inch precast prestressed piles. Eight one mile segments were selected for measurements with four being on the eastbound roadway and four being on the westbound roadway. All measurements are taken in the outside lane only.

Section 2 is located on I-10 between Henderson and Grosse Tete and is approximately 18 miles in length. This section was constructed with precast prestressed monolithic girder spans made continuous through four 70 foot spans by 12 feet slab sections poured in place and resting on precast caps with 54 inch precast prestressed piles. Four one mile segments were selected for testing with two segments on the eastbound roadway and two on the westbound roadway. All measurements are taken in the outside lane only.

Two methods of measuring the roughness were used in collecting this data. They are the PCA Road Meter and the Mays Ride Meter. The PCA Road Meter indicates Present Serviceability Indices and the Mays Ride Meter indicates inches of roughness per mile. Both devices are installed in the same vehicle and can be operated at the same time. Both measurements were taken at a vehicle speed of 50 mph. The tables below indicate the results obtained from the testing program to date. The results are averages of all segments tested.

LAPLACE - KENNER				HENDERSON - GROSSE TETE			
Date	Temperature	PCA PSI	Mays Rough. in./mile	Date	Temperature	PCA PSI	Mays Rough. in./mile
11/4/71	75°	3.46		10/28/71	80°	3.97	69
1/4/72	76°	3.26	127	2/11/72	58°	4.19	72
4/11/72	80°	3.30		4/12/72	76°	3.89	72
6/15/72	88°	3.26	120	6/14/72	86°	3.95	70
8/29/72	80°	3.29	121	8/23/72	85°	3.97	68
10/31/72	81°	3.30	127	10/26/72	50°	3.78	70
1/29/73	37°	3.27	113	12/27/72	59°	3.79	77
5/18/73	74°	3.47	114	5/11/73	90°	4.22	64

PCA - PSI Measurements

Figure 1 is a graphical representation showing the comparison of PCA/PSI values for the two sections of roadways. It can be noted that the overall change on both roadways has been relatively minor during the 18 months of the study. However the results indicate that the Henderson section is somewhat smoother than the LaPlace section. The generally accepted criteria defining PCA/PSI values is as follows:

PCA - PSI Value	Rating
4.0 - 5.0	Very Good
3.0 - 3.9	Good
2.0 - 2.9	Fair
1.0 - 1.9	Poor
0 - 0.9	Very Poor

The Henderson section is very borderline between good and very good depending on the time of the year the tests are made. The LaPlace section has a solid good rating.

Mays Ride Meter Measurements

Figure 2 is the graphical representation showing the comparison of Mays Ride Meter values for the two elevated roadways. The same trend is evident here as was discussed for the PCA/PSI measurements. Very little change has occurred throughout the 18 months and the trend has been toward a smoother ride. Once again the measurements indicate a smoother ride for the Henderson section. The Mays Ride Meter is a relatively new device and a definite rating scale has not been finalized. However based on the information gathered to date the Henderson section would be rated very good while the LaPlace section would be rated good.

Conclusions

The only conclusion that can be reached at this time is that there is very little difference in the riding qualities of the two sections under evaluation. The Henderson section would be rated slightly higher than the LaPlace section.

Measurements will continue to be made on these two sections until a definite conclusion can be attained.

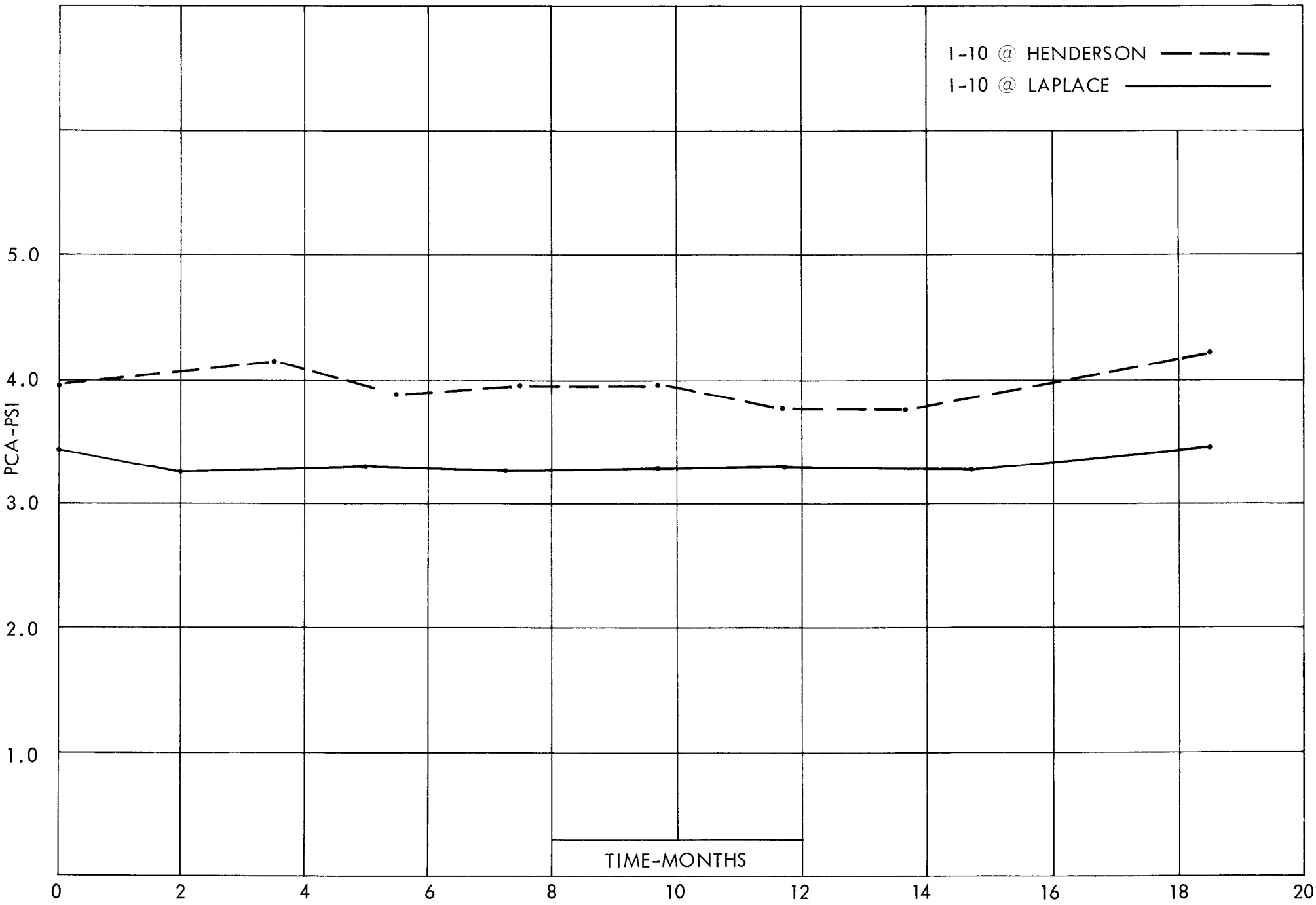

FIGURE 1 - PCA-PSI MEASUREMENTS

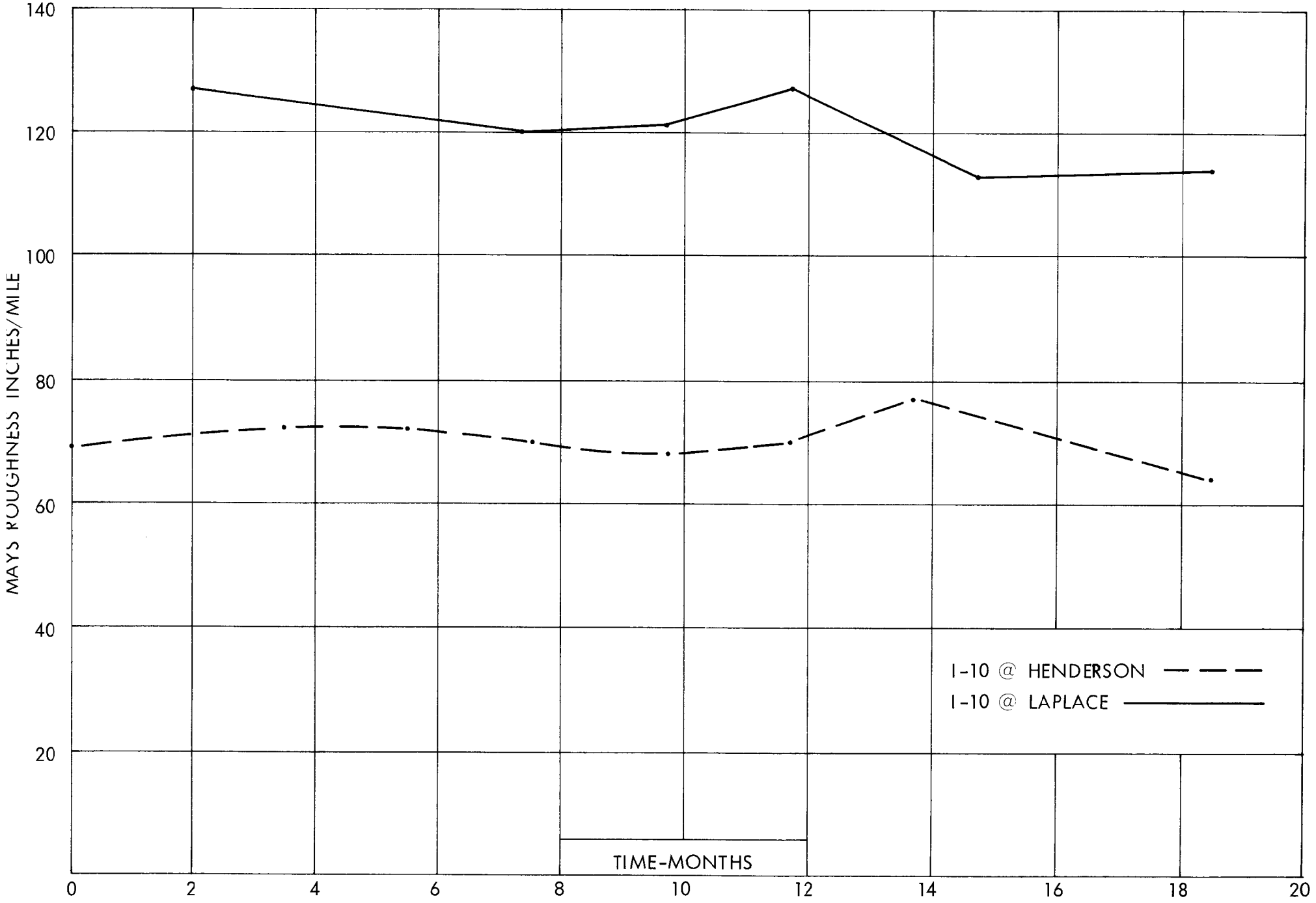

FIGURE 2 - MAYS RIDE METER MEASUREMENTS