AN EVALUATION OF THE SUBJECTIVE ASSESSMENT
OF ROAD PAVEMENT CONDITIONS

BY

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B. Sc. ( YARMOUK UNIVERSITY,
IRBID, JORDAN, 1984

Thesis submitted in partial fulfilment of the require-
ments of the degree of

MASTER OF SCIENCE
IN
CIVIL ENGINEERING
AT YARMOUK UNIVERSITY

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Sept., 1986
ABSTRACT

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The results of a study that attempted to determine a method in order to evaluate conditions of road pavements in Jordan are reported. Five principal tasks were undertaken: scale selection, site selection, panel selection, design and conduct of the experiment, and analysis and interpretation of the results.

Twelve flexible road sections covering a wide range of roughness (Uniform within each site) were selected, and a four-Kilometer route that could be traversed easily at a speed of forty-kilometer per hour using a bus as a transport mode was selected. Two candidate scales were selected for evaluation: the original AASHTO rating scale, PSR-scale (0 - 5 scale) and Canadian scale, RCR scale (0 - 10 Scale).

Thirty-four raters of the same technical background which are referred to here as 'unqualified' were randomly given one of the two scales. After adequate training sessions, they were asked to rate pavement individually. Five members with good background which are referred to here as "qualified" were given PSR-scale and they were asked to rate pavement individually. Level and staff was used to obtain roughness measurements for each section. The analysis was designed to:

(a) determine which scaling method (0 - 5 scale or 0 - 10 scale) resulted in the greatest agreement.
among raters.
(b) determine which of the two scaling methods resulted in the best correlation between subjective and objective measures of road roughness.
(c) determine the difference in rating pavement between unqualified engineers and qualified ones.

The results indicated that using RCR-scale provides high agreement between raters and show high correlation ($R^2$) with roughness. Qualified raters tend to rate pavement more critical than unqualified raters, but the difference was insignificant.

Stepwise multiple regression was used to investigate the relationship between subjective and objective assessment. The following two equations were adopted to measure the conditions of road pavements in the study area.

\[
\begin{align*}
\text{PSI} & = 19.369 - 6.617 \left( \log RF \right) - 0.14\sqrt{(CR + P)}; R^2 = 0.85294 \\
\text{RCI} & = 42.411 - 15.674 \left( \log RF \right); R^2 = 0.89978
\end{align*}
\]

Where, $RF$ = roughness measured by level (cm/ km ),
$CR$ = alligator cracking ( m/1000 m$^2$ ),
$P$ = patching ( m$^2$/ 1000 m$^2$ )

The study indicated that adoption of a simple survey instrument, like level and staff, to measure road roughness is a sufficient method, because of shortage and high cost of other equipments.