ARIZONA
TRANSPORTATION
RESEARCH
CENTER

RUSCOE 983
JOINT SEALANT

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Phoenix, Arizona 85007

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PRODUCT EVALUATION

84-10

RUSCOE 983 JOINT SEALANT

JULY 10, 1986

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16. ABSTRACT

This report contains a product evaluation of Ruscoe's 983 joint sealant. Ruscoe 983 is an asphalt base single compound joint sealant. It contains an aluminum fortified adhesive and is designed for use on highway expansion joints, bridge joints, and random cracks in both flexible pavement and portland cement concrete.

Two different test sections of Ruscoe 983 were placed in Phoenix. One section was placed to evaluate the sealant capability in concrete joints. The other test section was asphalt cracks and asphalt to concrete joints. Both sections were placed using tubes of sealant and a caulking gun.

The Ruscoe 983 joint sealant did not perform satisfactorily in any of the applications. The sealant didn't adhere well to either concrete or asphalt. Portions of the joint sealant were completely torn out.

Based on field performance the Arizona Transportation Research Center recommends not using Ruscoe 983 joint sealant in Arizona pavement.

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I. INTRODUCTION

Joint breakouts are becoming an ever increasing problem along Arizona's Black Canyon Freeway (I-17). Spalling, cracking and deflection at the joints has become the main form of pavement damage. A number of companies have produced joint sealants in an attempt to inhibit joint failures. Some of these sealants are performing very well, while others have failed within a short period of time. Currently there is a large amount of research being done throughout the country in the area of joint failures. Arizona is in the process of evaluating a number of test sections utilizing different products.

W. J. Ruscoe Company produces an asphalt base single compound joint sealant called Ruscoe 983. It has an aluminum fortified adhesive and is silver in color. It becomes tack-free in a few minutes and is non-hardening. It's uses include highway expansion joints, bridge joints, and random cracks in both flexible pavement and portland cement concrete.

II. CONSTRUCTION REPORT

W. J. Ruscoe Inc. demonstrated their product on February 14, 1984, at two locations in the Phoenix area. In attendance were Don Cornelison, Bill Briscoe, Bob Crowley, Mike Sarsam, and Brady Smithson of ADOT and Paul Micholec of Ruscoe.

Both test sections were located at the I-17 and Bell Road overpass. The first location is in the southbound passing lane of I-17, just south of the Bell Road overpass. The 1st and 3rd joints south of the structure were sealed with Ruscoe 983. The

other test section is at the on-ramp of I-17 S.B. from Bell Road. The locations of both sections are shown in Figure 1.

The demonstration was performed by the Ruscoe representative. Before application, joints were cleaned with compressed air (Figure 2). The joint and crack sealant was placed by hand using caulking guns (Figure 3 and 4). However, the sealer is available in 5 gallon buckets for application with spray wands. Three different types of applications were demonstrated: 1) concrete- concrete joints; 2) concrete- asphalt joints; and 3)asphalt cracks.

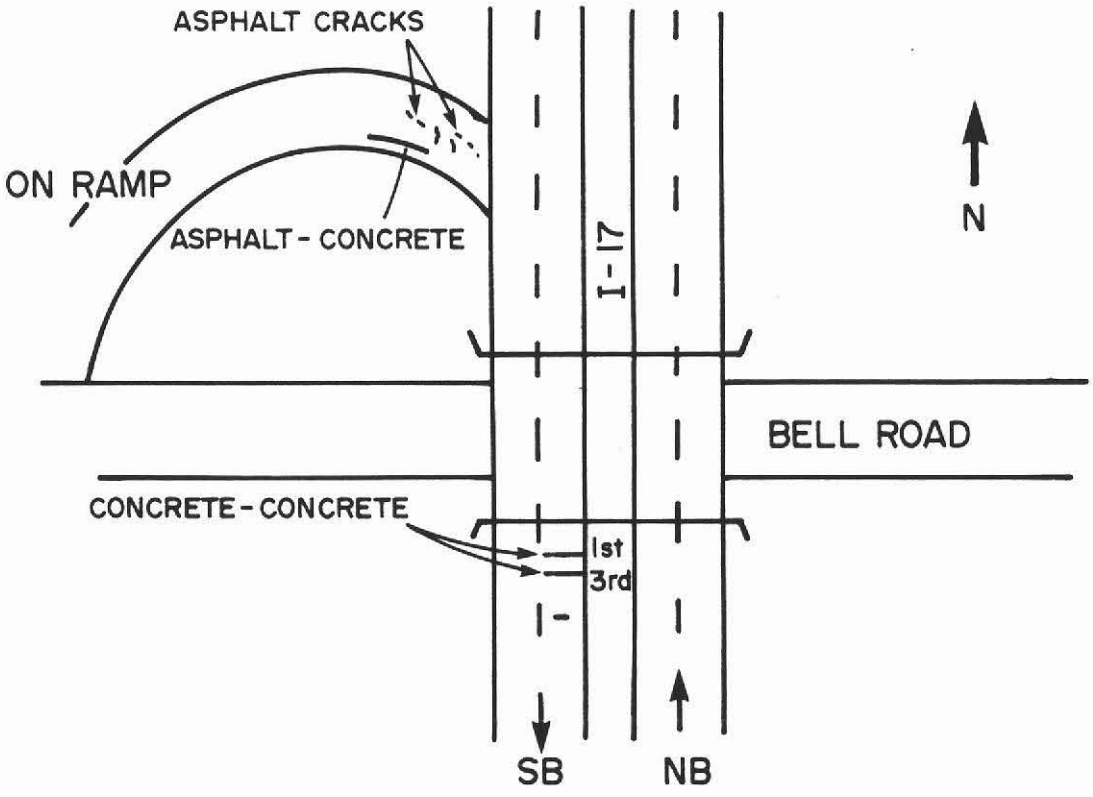


FIGURE 1 - LOCATION OF TEST SECTIONS

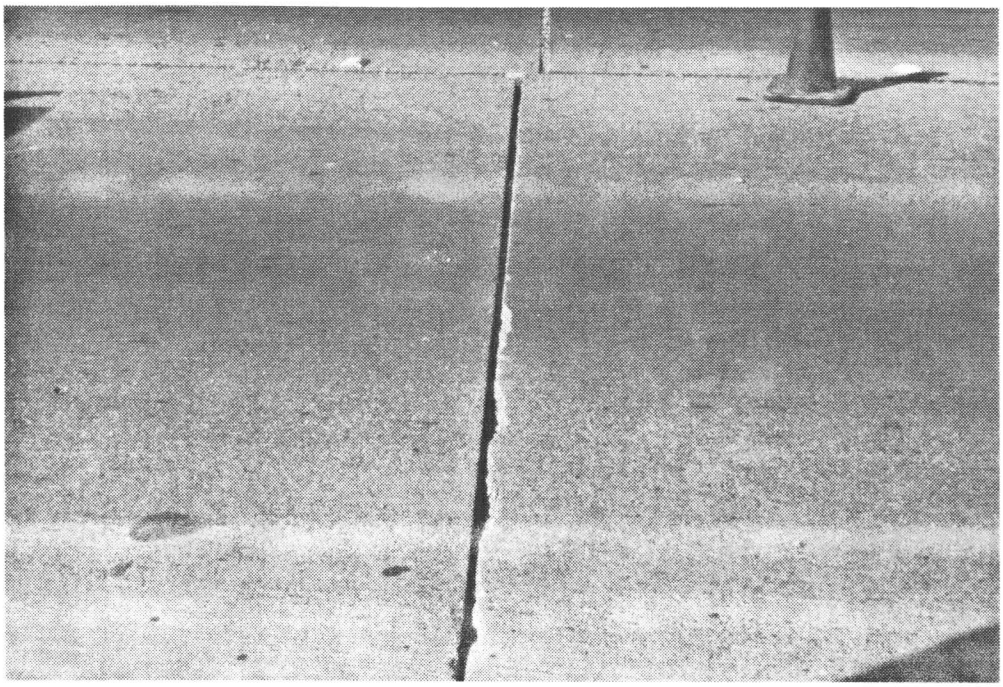


FIGURE 2 - PREPARED JOINT

FIGURE 3 - APPLYING JOINT AND CRACK SEALER

FIGURE 4 - APPLYING JOINT AND CRACK SEALER

III. EVALUATIONS

The day after application the material was very soft with a surface skin that prevented it from being sticky. It appeared to have excellent flow properties and there was no sign of tracking onto the pavement. One week later the sealant in the asphalt cracks appeared to be debonding. It was concluded that the applied bead of sealant was too thin.

The second evaluation of the test sections was made on February 12, 1985. The on-ramp material appeared to be bonding alright and was still pliable. The mainline joints had incompressables embedded in the sealant; however, due to excessive traffic, a closer evaluation could not be made.

A third evaluation was made on June 20, 1985. The material in the asphalt cracks had been torn in a number of places from

the traffic. The concrete-asphalt joint was also not holding up well. There was no adhesion between the concrete and the sealant. The concrete joints on the mainline were in poor shape. Portions of the sealant had been completely torn out.

A final evaluation on April 7, 1986, confirmed that all three types of applications were performing poorly (Figure 5).

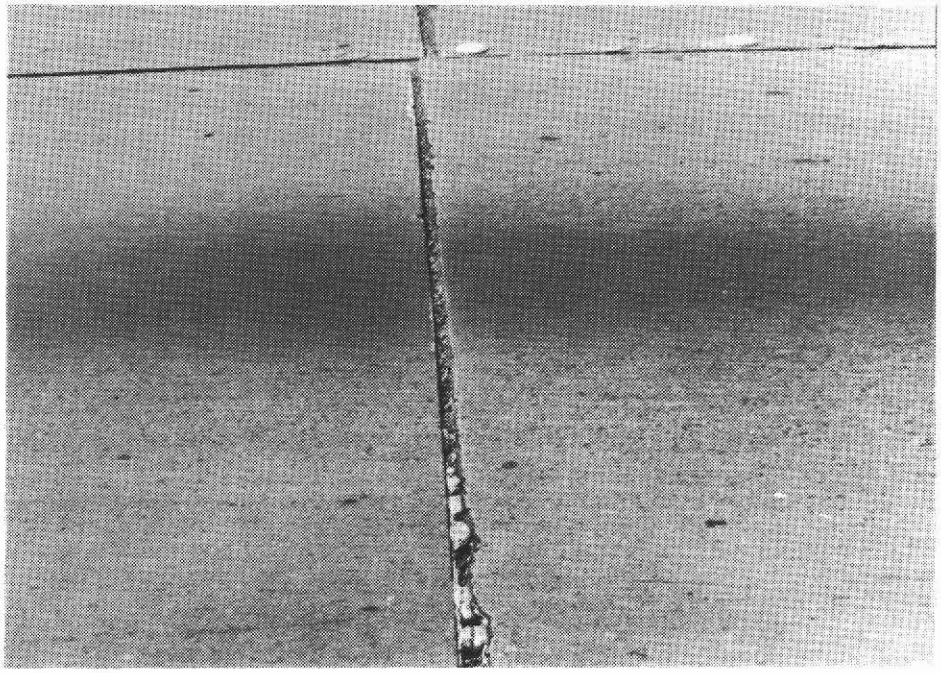
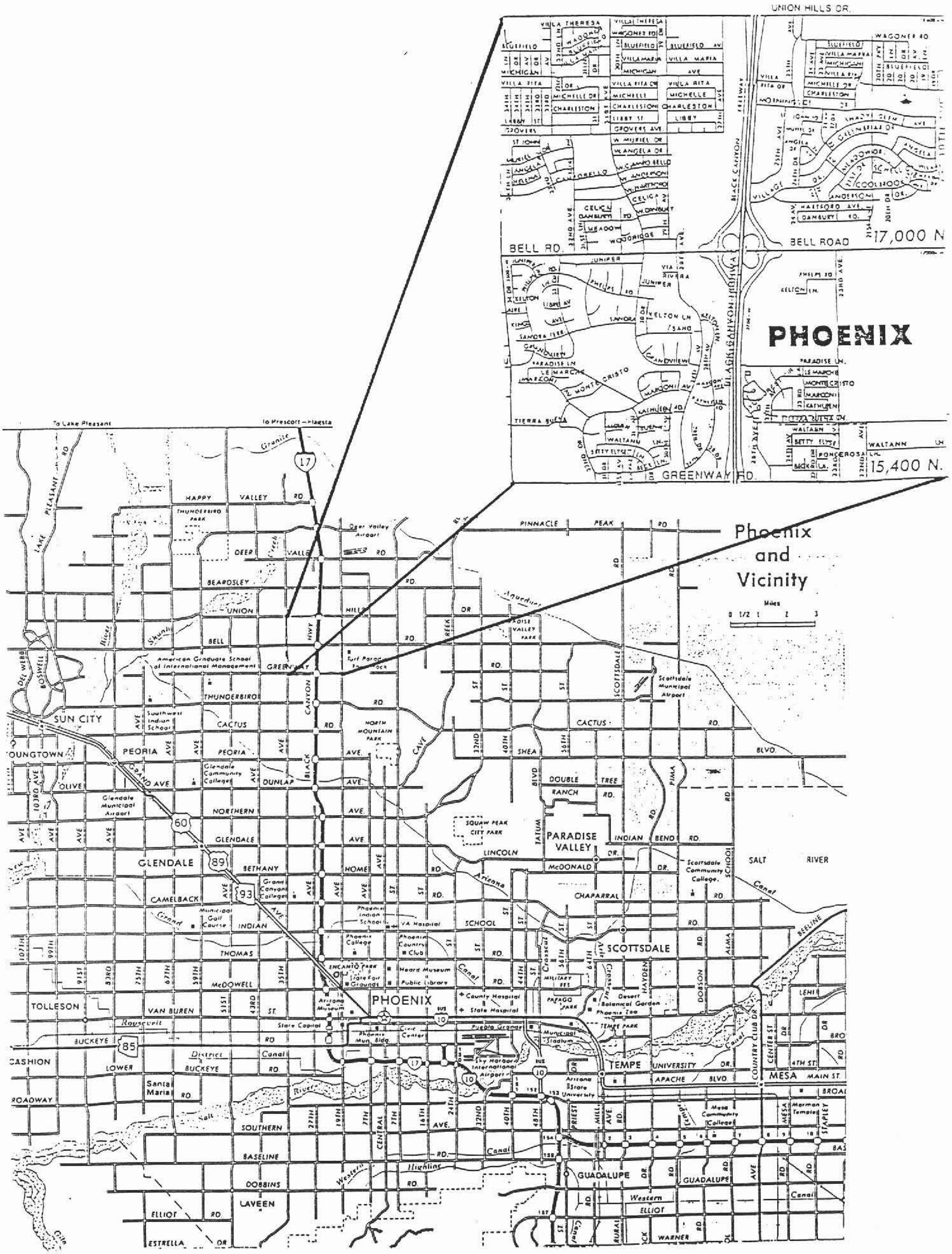


FIGURE 5 - POORLY PERFORMING JOINT SEALER

IV. RECOMMENDATIONS

The Arizona Transportation Research Center recommends not using Ruscoe 983 as a joint sealant or crack filler due to its poor performance in the above mentioned field tests. The sealant did not hold up well under traffic and exhibited poor bonding capabilities. No further evaluation will be performed on this product.

APPENDIX


Phoenix and Vicinity
Miles
0 1/2 1 2 3
PHOENIX
UNION HILLS DR.
BELL RD.
BELL ROAD
17,000 N
GREENWAY RD.
15,400 N.
BLACK CANYON
To Lake Pleasant
To Prescott – Flagstaff
HAPPY VALLEY RD.
PINNACLE PEAK RD.
DEER VALLEY RD.
BEARDSLEY RD.
UNION HILLS DR.
BELL RD.
GREENWAY
THUNDERBIRD RD.
CACTUS RD.
PEORIA AVE.
DUNLAP AVE.
NORTHERN AVE.
GLENDALE AVE.
BETHANY HOME RD.
CAMELBACK RD.
INDIAN SCHOOL RD.
THOMAS RD.
McDOWELL RD.
VAN BUREN ST.
BUCKEYE RD.
LOWER BUCKEYE RD.
SOUTHERN AVE.
BASELINE RD.
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TEMPE
MESA
GUADALUPE
LAVEEN
SALT RIVER
CENTRAL
BLACK CANYON HWY
GRAND AVE
Sky Harbor International Airport
Arizona State University
Scottsdale Municipal Airport
Glendale Community College
North Mountain Park
Squaw Peak City Park
Phoenix Zoo
Desert Botanical Garden
Papago Park
Encanto Park
Heard Museum
State Capitol
Arizona Museum
Mesa Community College
Mormon Temple

W.J. RUSCOE COMPANY

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INTERIM REPORT #2

Technical Information On:

PERMANENT SEALER

HIGHWAY JOINT SEALANT

DESCRIPTION

PERMANENT SEALER Highway Joint Sealant is a one part nitrile rubber material based on an aluminum fortified adhesive formula incorporating the protective and elastic qualities of the synthetic elastomer. The product does not require a primer and can be applied at relatively low temperatures and skin over to form a protective seal.

PERMANENT SEALER readily extrudes over a wide temperature range and cures to produce a durable, tough, flexible, adhesive rubber joint seal. The product is weatherproof, self cleaning and has excellent aging qualities.

Because of its adhesive characteristics and excellent extension/compression recovery, PERMANENT SEALER Highway Joint Sealant gives outstanding performance in highway expansion joint and bridge joints in which extreme movement occurs. Highway Joint Sealant can also be used as a sealant in random cracks in both flexible pavement and Portland cement concrete.

PACKAGING

29 Fluid Oz. Cartridges

5-Gallon Pails

55-Gallon Nonreturnable Drums