FINAL REPORT

ON SITE EVALUATION OF BRIDGE DECK EXPANSION JOINTS

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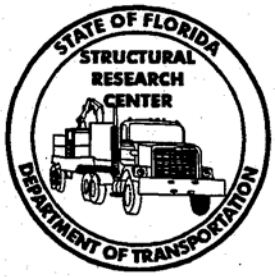

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ABSTRACT

Throughout the United States, there are many bridge expansion joint manufacturers and systems. Properly designed expansion joint systems will allow bridge structures to expand and contract without causing-excessive strains and stresses. This' will eliminate premature deterioration (spalling or cracking) of superstructures which may be caused by excessive restraint.

To assist bridge engineers in the State of Florida in selecting expansion joint systems, the Florida Department of Transportation/Structural Research Center (FDOT/SRC) has just concluded a two year bridge expansion joint evaluation program. The Products Evaluation Section of the Construction Office, the Fort Pierce Maintenance Office, the State Materials Office and the District IV Office of Structures and Facilities were all involved in this research project. This project consists of four components: 1) Performance Evaluation, 2) Load Test Evaluation, 3) Installation & Maintenance Evaluation, and 4) State Materials Office Product Evaluation. The test elements include seals, compression seal joints, strip seal joints, and buried joint systems:

This two (2) year test program began in Spring 1993 and concluded in December 1995. Twelve (12) joint suppliers volunteered to participate in the program. This group installed a total of seventeen (17) joints (or seals) in eight (8) bridges on 1-95 in Saint Lucie County, District IV. Joint suppliers installed the first joints in April 1993' and installed the last seal in early November 1994.

All of the bridges in the test program have prestressed concrete AASHTO girders and concrete deck slabs. All the bridges had armored compression seals at the end bents prior to the test: program. In general, the test joint systems or seals were installed at the end bent joints (replacing the original material). The original design joint opening at 70°F was one inch (1") for the end bent joints. Using criteria recommended by FDOT engineers and the Structures Design Guidelines, the SRC evaluated the test expansion joint sealants or systems.

From the results of the evaluation program, the SRC and the Product Evaluation Section will establish a Qualified Products List(QPL) for bridge expansion joints for the- FDOT. This comprehensive research report, which is being distributed to design, construction and maintenance engineers; participating joint suppliers; and other interested parties, is the final report for the test program. In the future, the SRC will monitor the joints periodically and will issue report updates as needed. As a result of this study, more information is available to help FDOT engineers . select expansion joint systems for both new and old bridges.

This final report gives the results of the test program from the time the products were initially installed to November 1995. This report provides guidance concerning the selection of expansion joint systems for both new construction and maintenance construction. Joint seals and systems which have performed well in the test program include the Dow Corning RCS Joint Sealant, the XJS Expansion Joint System, Delcrete Elastomeric Concrete/ Steelflex Strip Seal System, the Koch BJS System, Expandex Buried Joint System, the Ceva 300 Joint System and the Jeene Seal. The following test elements developed problems during the test program: Ceva 250 Joint System, RESURF IV, Jeene Structural Sealing Joint System (PC35 and PC92M), Sylcrete 10 Minute Joint Sealant, Flexcon 2000 Joint Sealing System and Chemcrete 1000 Expansion Joint System. These problems ranged from cracks, seperationof headers, punctures and seperation of seals to total failures. The Techstar strip seal was installed in November 1994 and was in good condition in November 1995.

Based upon information from the test program, the Structures Research Center recommends products for the Qualified Products List. The Products Evaluation Section of the Construction Office, which has the final responsibility for producing the QPL, will use the SRC recommendations to produce the initial Qualified Products List for bridge expansion joint systems and seals.

After the initial Qualified Products List (QPL) is established, other joint systems maybe added to the QPL in the future. To determine which expansion joint systems maybe added to the QPL, the FDOT will consider the following information: Product Evaluation Preliminary Application, FDOT criteria for expansion joints, test data and specifications provided by the manufacturer, performance history for the product, and , if deemed: necessary, a demonstration installation. If all of this information for a particular joint system is satisfactory, the FDOT will add the system to the Qualified Product List. After being added to the QPL, if an expansion joint system fails to demonstrate its adequacy (i.e. performs unsatisfactorily in the field), it may be removed from the QPL.

After the final report, the SRC will monitor the joints periodically and will issue report updates as needed. From the results of the SRC evaluation program, the Product Evaluation Section will establish a Qualified Products List (QPL) for bridge expansion joints for the FDOT. As a result of this, study, more information will be available to help FDOT engineers select expansion joint systems for both new bridge construction and existing bridge rehabilitation.

CHAPTER I

INTRODUCTION

1.0 BACKGROUND

Expansion joints are necessary for highway bridge structures to avoid stresses due to temperature changes and deformations under live loads. When expansion joints allow water below the bridge deck, both superstructure and substructure deterioration (i.e., corrosion of steel girders) may result. To prevent such damage, since 1914 attempts were made to seal these joints and as early as 1936 special expansion joint designs were used.

Over the years, joint manufacturers have made several modifications to improve and enhance the performance and installation of bridge expansion joints and seals. These improvements were based on experience, research and testing on many bridges by several state highway departments and joint manufacturers. In 1983, the Federal Highway Administration initiated a project to examine and evaluate bridge expansion joints which involved six highway agencies (Arkansas, Maine, Michigan, Nebraska, Ohio and Pennsylvania). The results indicated that improvements in joint devices and seals were possible and desirable.

In 1990, a test facility was built by the Department of Civil and Environmental Engineering at the University of Central Florida under the sponsorship of the Florida Department of Transportation (FDOT). This facility was built to monitor the performance of actual bridge joints (sections of full-scale models) under known loads that simulate highway truck loads. Recently, this facility was used to evaluate joint products and determine which were suitable for use on a bridge joint rehabilitation program for Interstate 4 bridges in FDOT District 5.

While the UCF facility provides information on the overall behavior of the joints, the test conditions at the facility do not accurately represent realistic traffic loads and field conditions. For example; only small sections of the expansion joints are modeled and the radius of the test track is very short (atypical of normal bridge configurations) which results in significant torsion stresses. A full scale evaluation of expansion joints under real traffic loads and environmental conditions is a better performance test.

At present, there are several types of expansion joints and joint sealing systems from which designers may. select. These types range from simple to complex configuration and include systems with or without armor steel nosing. Recognizing that wear and deterioration at the edges of the adjacent slabs pose a problem to expansion joints, some joint manufacturers have replaced the high stress zones near the joint with elastomeric or polymeric nosing materials.

In Florida, steel armored expansion joints with neoprene compression seals have been used frequently on bridges. While these systems function well at times, there are also performance problems associated with these designs. These problems include leaky seals, missing seals, displaced angles, and missing angles. Figure 1 shows an armored joint on I-95 with the steel angle missing and the concrete deck broken at the edge. Failures of this type are potentially very hazardous to a motorist.

The Department recognizes the need f 6r improved expansion joint systems on the State's bridges. Thus, deciding that a full scale evaluation was warranted, the FDOT Structures Research Center (FDOT/SRC) developed a test program to evaluate bridge joint systems and seals under actual field conditions, and real traffic loads on Interstate 95 bridges in Saint Lucie County, Florida, District IV. In this investigation, all the joints are approximately subjected to the same traffic loads and environmental conditions and are judged based on actual field performance.

Most of the information of an August 1994 progress report concerning the test program will be presented in this final report. The SRC inspected all installed test joints in March 1994, August 1994, November 1994, June 1995 and November 1995. During resurfacing of Interstate 95, the contractor removed the Koch BJS system in March 1995. This brought the evaluation of the joint to a premature end. However, the Koch BJS system was performing very well at the time of its removal.

To ascertain the response of the bridge spans and test joints due to vehicular traffic, the SRC conducted two dynamic load tests. The SRC performed the first test in March 1994 and the second test in June 1995.

1.1 OBJECTIVES

The main objectives of the study are to:

1. Evaluate bridge expansion joint options and determine how well each works in real traffic situations (How well is the joint system designed and how well does it perform?);

2. Compare the performance of particular joint systems with the,,performance of bther systems designed for similar uses;

3. Recognize which joint systems (and seals) are well suited for particular applications (Many different situations exist and arise in Florida.);

4. Broaden the pool of joint systems and seals -that District Engineers can choose from with confidence that the elements will perform well (as demonstrated by the field performance);

5. Increase the knowledge base in Florida and the country concerning bridge expansion joint systems and; their performance; and

6. Develop-a Qualified Products List (QPL) for bridge expansion joints for the Florida Department of Transportation.

1.2 SCOPE OF THE PROJECT

The Products Evaluation Section of the Construction Office, the Fort Pierce Maintenance Office, the-State Materials Office and the District IV Structures and Facilities Offices are all helping in this study. The SRC will evaluate seventeen (17) expansion joint sealants or systems using criteria recommended by, FDOT engineers and the Structures Design Guidelines. These joints were evaluated and tested for two (2) years to establish their performance.

This test program began in Spring 1993 and concluded in December 1995. The program consists of four components: 1) Field Performance Evaluation; 2) Load Test Evaluation,) Installation and Maintenance Evaluation, and 4) State Materials Office Product Evaluation. The test elements include seals, compression seal joints, strip seal joints, and buried joint systems.

This final report discusses results from March 1993 to November 1995. This comprehensive report will be distributed to FDOT design, construction and maintenance engineers; participating joint suppliers; and other interested parties. After the final report, the SRC will monitor the joints periodically and will issue report updates as needed. Because of this study, more information is available to help FDOT engineers select expansion joint systems and seals for both new and old bridges.

1.3 LOCATION OF PROJECT

The group of suppliers has installed a total of seventeen (17) test elements (joint systems and seals) on eight (8) bridges on I-95 in Saint Lucie County, District IV. The location of the bridges used in the test program are shown in Figures 2a and 2b. All of the bridges used in the test program have prestressed concrete AASHTO girders and concrete deck slabs. These bridges all had armored compression seals at the end bents before the test program. In general, the test joint systems or seals were installed at the end bent joints (replacing the existing material). Summary information concerning the bridges is shown in Table 1.

1.4 EVALUATION CRITERIA

At the beginning of this project, the Structures Research Center-(SRC), requested information on expansion joint systems and suppliers from the FDOT design and district engineers. These experienced individuals were asked to identify performance criteria for bridge expansion joints. Using this information and the Department's Structure's Design Guidelines, the SRC established a set of criteria for evaluating the test joints. Expansion joints should satisfy the following criteria:

A. Accommodate the full range of structure movements without exceeding the manufacturer's recommended clear span at deck surface level when at maximum opening.

B. Provide proper anchorage and structural capacity to resist the anticipated loads.

C. Have a good riding surface.

D. Should not impart undue stress to the structure due to structure expansion and contraction?

E. Be reasonably silent and vibration free:

F. Facilitate maintenance repair, removal and replacement.

G. Be leak proof with the sealing element continuous for the entire structure width.

H. Be corrosion resistant.

I. Not be a -catalyst or vehicle for electrolytic action.

In. addition, the following factors should be considered when selecting bridge expansions joints:

1. System life, for mechanical integrity and integrity of a seal.
2. Material cost.
3. Installation cost.
4. Time required to install (length and degree of traffic interruption).
5. A mechanical failure mechanism - danger to traffic on failure.
6. Construction tolerance; Skill or care required for installation (can typical road crews get consistently good installations?).
7. Expansion/ contraction range.
8. Availability of parts and repair. Are parts and repairs available from the supplier only?

Information concerning some of these factors is included in this report. Since the cost of joint systems are dependent upon many factors (i.e., size of joint opening, movement range, material quantity, time period), specific cost data for each joint seal or system will not be presented or discussed.

1.5 PARTICIPATING JOINT SUPPLIERS

To compile a thorough list of joint systems and suppliers; the SRC asked FDOT engineers to identify expansion joint systems and suppliers that should be asked to participate in the test program. The SRC contacted each of the recommended joint suppliers. Of the recommended joint suppliers contacted, thirteen (13) volunteered to participate in the program.

This group includes the following companies: Chemplex Products, Incorporated; The D. S. Brown Company; Dow Corning Corporation; The Fred: R. Hiller: Company of Georgia, Incorporated; Silicon Specialties, Incorporated; Epoxy Industries, Incorporated; Hydrozo/Jeene Incorporated; Sylvax Corporation; Polymer Concrete, Incorporated; Watson Bowman and ACME Corporation; Pavement Technology & Maintenance, Incorporated; R. J: Watson, Incorporated; Techstar, Incorporated.

1.6 TYPES OF JOINT SYSTEMS EVALUATED

The joint sealants and expansion joint systems used in the test program are applicable for the small joint openings and movement ranges needed on the test bridges. However, in general, the systems can accommodate both larger joint opening and movement. The particular limits vary

depending upon the system. Each installed system, was used as recommended by the joint supplier (or a manufacturer).

Using criteria recommended by FDOT engineers and the Structures Design Guidelines; the SRC evaluated the following expansion joint sealants or systems:

1. Chemcrete 1000 Expansion Joint System
   (Chemplex Product, Incorporated)
2. Delcrete Elastomeric Concrete/Steelflex Strip Seal System
   (The D. S.Brown Company)
3. Dow Corning 902 RCS Joint Sealant
   (S.S.I. / Coastal Construction Products, Inc.,)
4. X.J.S. Expansion Joint System
   (Dow Corning Corporation/ Coastal Construction.Products, Inc.,)
5. Ceva 250 Joint System
   (Epoxy Industries, Incorporated),
6. Ceva 300 Joint System
   (Epoxy Industries, Incorporated),
7. Evazote 380 ESP
   (Epoxy Industries, Incorporated),
8. Jeene Structural Sealing Joint System (PC35)
   (Harris Specialty Chemicals, Inc.,):
9. Jeene Structural Sealing Joint System (PC92M)
   (Harris Specialty Chemicals, Inc.,)
10. Sylcrete 10 Minute Joint Sealant
    (Sylvax Corporation),
11. Resurf IV
    (Polymer Concrete, Incorporated),
12. Expandex Buried Joint System
    (Watson Bowman and ACME Corporation),
13. Wabocrete ACM Expansion Joint
    (Watson Bowman and ACME Corporation),
14. Koch 2000 SL -Bridge Joint Sealant
    (Pavement Technology & Maintenance, Incorporated),
15. Koch BJS Joint System
    (Pavement Technology & Maintenance, Incorporated),
16. Flexcon 2000 Joint Sealing System
    (R. J. Watson, Incorporated),
17. Techstar Elastomeric Strip Seal (Techstar, Incorporated).

The Expandex Buried Joint System and the Koch BJS Joint System are the only two buried joint systems in the project. Other complete joint systems included on the project are the following: Chemcrete 1000 Expansion Joint System, Delcrete Elastomeric Concrete/ Steelflex Strip Seal System, X.J.S. Expansion Joint System, Ceva 250 System, Ceva 300 System, Jeene Structural Joint System, Hydrozo/Jeene PC92M, Wabocrete ACM Expansion Joint, and Flexcon 2000 Joint Sealing System. Dow Corning 902 RCS Joint Sealant, Evazote 380 ESP, Koch 2000 SL Bridge Joint Sealant, Sylcrete 10 Minute Joint Sealant, and Techstar Elastomeric Strip Seal are seals only. However, the first three seals listed are components of joints that are also included in the test program. RESURF IV is a polymeric header material. In the initial installation, a Hydrozo/Jeene seal was installed with the RESURF IV material.

The location and installation dates for each test element are shown in Table 2:, The contact persons and numbers for each joint system or seal are provided in Appendix A. Joint suppliers installed the first joint systems in April 1993. The Techstar strip seal was the last system to be installed in November 1994.

TABLE 1 : SUMMARY INFORMATION FOR BRIDGES									
BRIDGE NAME: I-95 OVER...	BR.#	DIR	ADT	END	BENT	APPROX. LENGTH	SKEW	TOTAL MOVEMENT	OPEN RANGE *
GLADES ROAD	940115	SB	14277	S	1	80'	45.26	0.500"	.750-1.25"
GLADES ROAD	940115	SB	14277	N	7	80'	45.26	0.500"	.750-1.25"
GLADES ROAD	940116	NB	15169	S	1	80'	45.26	0.500"	.750-1.25"
GLADES ROAD	940116	NB	15169	N	7	80'	45.26	0.250"	.750-1.25"
TEN MILE CREEK	940122	SB	15169	S	1	73'	39.01	0.250"	.875-1.125"
TEN MILE CREEK	940122	SB	15169	N	13	57'	7.16	0.250"	.875-1.125"
TEN MILE CREEK	940123	NB	15169	S	1	63'	25.92	0.250"	.875-1.125"
TEN MILE CREEK	940123	NB	15169	N	10	58'	11.01	0.375"	.875-1.125"
MIDWAY ROAD	940112	SB	15522	S	1	62'	22.85	0.375"	.813-1.188"
MIDWAY ROAD	940112	SB	15522	N	5	62'	22.85	0.375"	.813-1.188"
MIDWAY ROAD	940112	SB	15522	N	AS	62'	BEGINNING OF APPROACH SLAB		
MIDWAY ROAD	940111	NB	15169	S	1	62'	22.85	0.375"	.813-1.188"
MIDWAY ROAD	940111	NB	15169	N	5	62'	22.85	0.375"	.813-1.188"
THE TURNPIKE	940126	SB	15522	S	1	62'	25.25	0.375"	.813-1.188"
THE TURNPIKE	940126	SB	15522	N	3	62'	25.25	0.375"	.813-1.188"
BELCHER CANAL	940093	SB	12302	N*	6	57'	44.75	0.500"	-

NOTE: MOST BRIDGES ARE 58'9" WIDE FROM COPING TO COPING. ALL BRIDGES HAVE 5% TRUCK TRAFFIC. TWO BRIDGES HAVE HORIZONTAL CURVES: BRIDGE #940122 (D=00°59'33", e=0.039 ft/ft) AND BRIDGE #940123 (D=02°1'52", E=0.075 FT/FT). *THIS OPENING RANGE WAS ASSUMED FOR THE NEW JOINTS. N*= BENT 6, SECOND BENT FROM THE NORTH END.

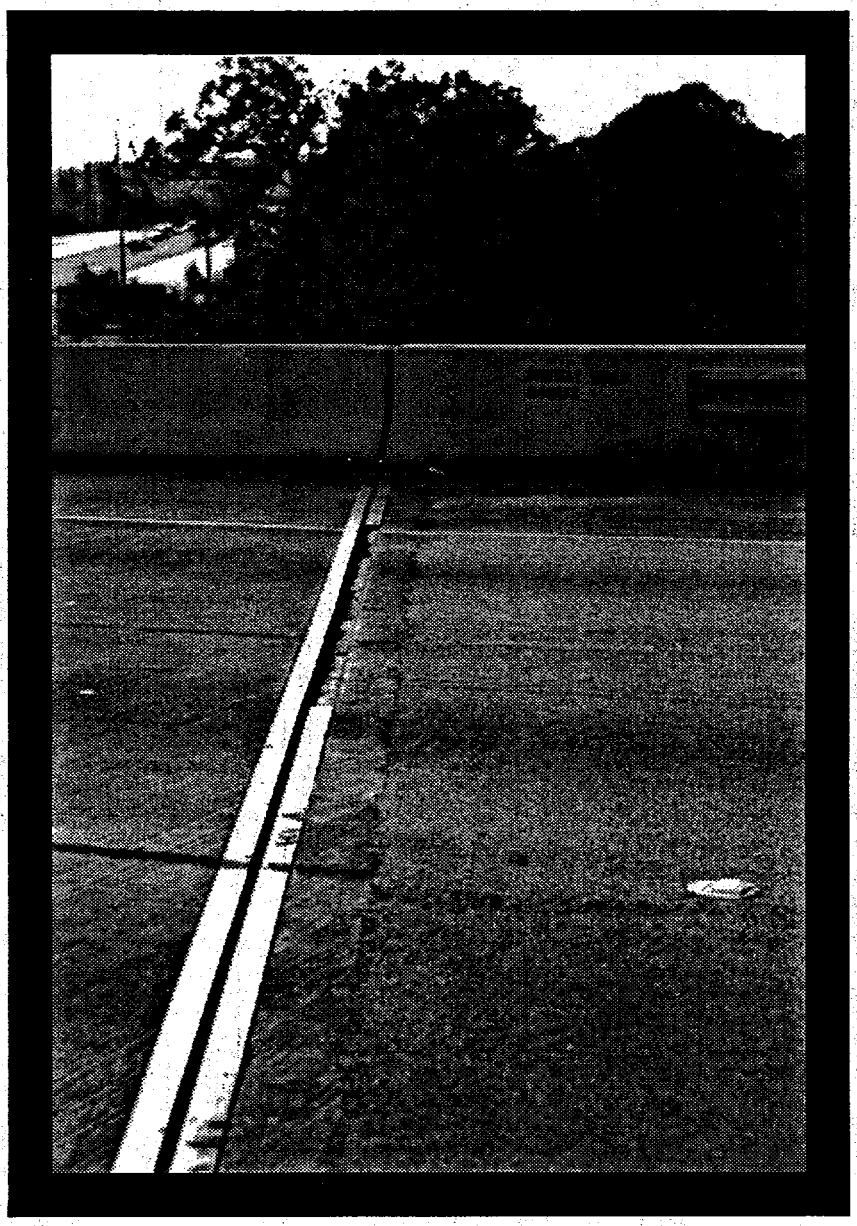
TABLE 2 : BRIDGE EXPANSION JOINTS: LOCATIONS AND INSTALLATION DATES

JOINT INSTALLATIONS ON I-95 SAINT LUCIE COUNTY

JOINT SYSTEMS AND SEALS	COMPANY/SUPPLIER *	BRIDGE#	BRIDGE NAME (I-95 OVER..)	DIR.	BENT	DATE
X.J.S. EXPANSION JOINT SYSTEM	S.S.I./ COASTAL CONSTRUCTION PRODUCTS, INC.	940115	GLADES ROAD	SB	SE	4/93
DOW 902 RCS JOINT SEALANT	DOW CORNING CORPORATION/COASTAL CONSTRUCTION PRODUCTS, INC.	940115	GLADES ROAD	SB	NE	4/93
CEVA 250 JOINT SYSTEM/ CEVA 300 JOINT SYSTEM	EPOXY INDUSTRIES,INCORPORATED	940116	GLADES ROAD	NB	SE	7/93
CHEMCRETE 1000 EXPANSION JOINT SYSTEM	CHEMPLEX PRODUCTS,INCORPORATED	940116	GLADES ROAD	NB	NE	7/93
EXPANDEX BURIED JOINT SYSTEM	WATSON BOWMAN ACME CORPORATION/ HARRIS SPECIALTY CHEMICAL, INC.	940122	TEN MILE CREEK	SB	SE	8/93
WABOCRETE ACM EXPANSION JOINT	WATSON BOWMAN ACME CORPORATION/ HARRIS SPECIALTY CHEMICAL, INC.	940122	TEN MILE CREEK	SB	NE	8/93
SYLCRETE 10 MINUTE JOINT SEALANT	SYLVAX CORPORATION	940123	TEN MILE CREEK	NB	SE	7/93
EVAZOTE 380 ESP (SEAL)	EPOXY INDUSTRIES,INCORPORATED	940123	TEN MILE CREEK	NB	NE	7/93
KOCH 2000 SL BRIDGE JOINT SEALING SYSTEM	KOCH/STRUCTURES MAINTENANCE INC.	940112	MIDWAY ROAD	SB	SE	7/93
KOCH BJS JOINT SYSTEM	KOCH/STRUCTURES MAINTENANCE INC.	940112	MIDWAY ROAD	SB	NA	7/93
FLEXCON 2000 JOINT SEALING SYSTEM	R.J. WATSON, INCORPORATED	940112	MIDWAY ROAD	SB	NE	7/93
DELCRETE ELASTOMERIC CONCRETE/STEELFLEX STRIP SEAL SYSTEM	THE D.S. BROWN COMPANY	940111	MIDWAY ROAD	NB	NE	8/93
JEENE STRUCTURAL JOINT SEALING SYSTEM(PC35)	HARRIS SPECIALTY CHEMICAL, INC.	940111	MIDWAY ROAD	NB	SE	8/93
JEENE STRUCTURAL JOINT SEALING SYSTEM(PC92M)	HARRIS SPECIALTY CHEMICAL, INC.	940126	THE TURNPIKE	SB	NE	8/93
RESURF IV	POLYMER CONCRETE,INCORPORATED	940126	THE TURNPIKE	SB	SE	8/93
TECHSTAR W300 SEAL	TECHSTAR, INCORPORATED	940093	BELCHER CANAL	SB	BENT 6	11/94

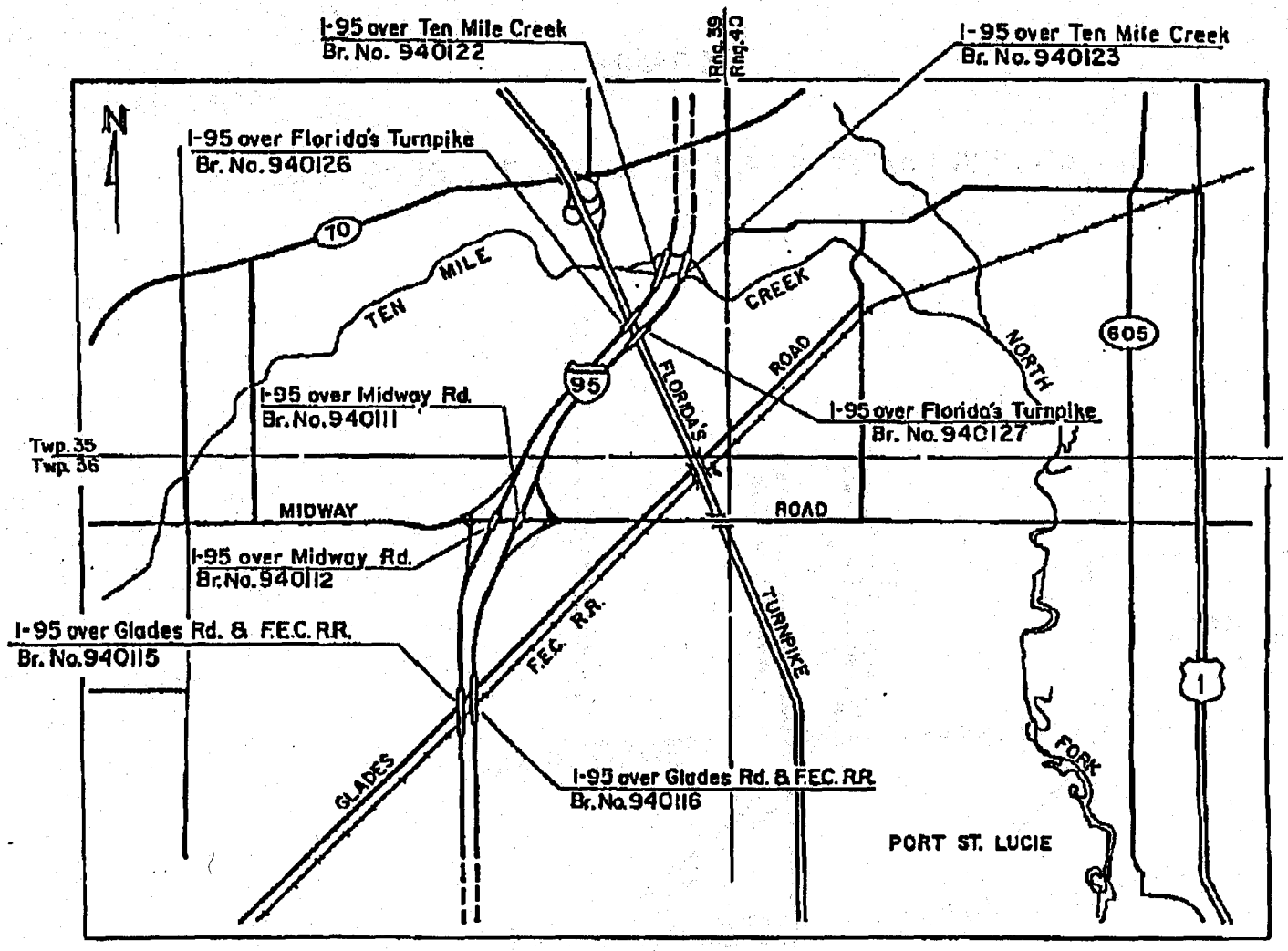
SB=SOUTHBOUND, NB=NORTHBOUND, SE=SOUTH END BENT, NB=NORTH END BENT, NA=NORTH APPROACH SLAB

*NOTE SEVERAL COMPANIES HAVE CHANGED NAMES. HARRIS SPECIALTY CHEMICAL, INC ACQUIRED HYDROZO/JEENE AND WATSON BOWMAN ACME CORPORATION. PAVEMENT TECHNOLOGY AND MAINTENANCE, INC. CHANGED ITS NAME TO STRUCTURES MAINTENANCE, INC.



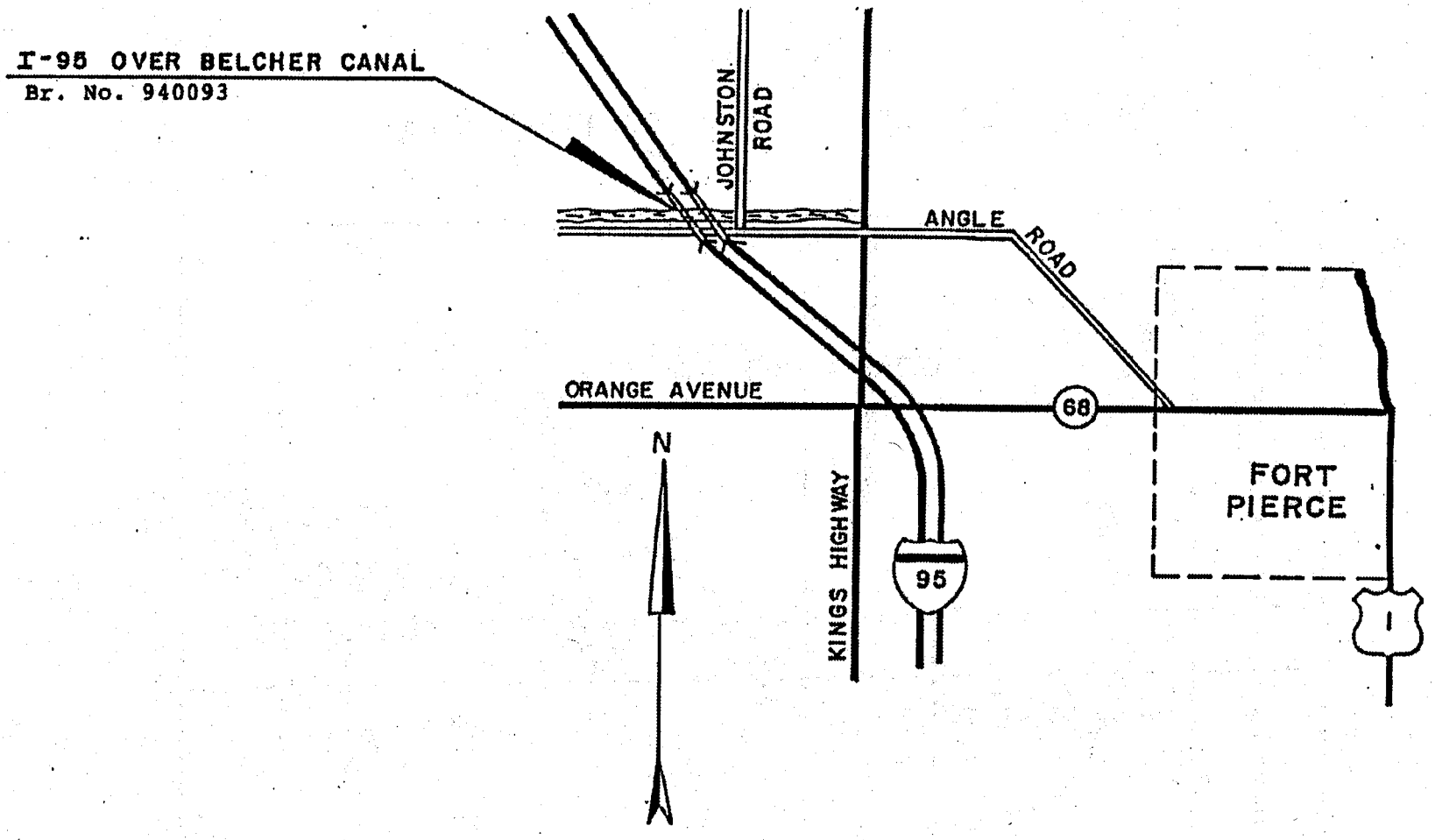
Problem Armored Joint on I-95:
Missing Angle & Broken Concrete

Figure 1.



Bridge Locations on I-95 in Saint Lucie County

Figure 2a



Bridge #940093 Location on I-95 in Saint Lucie county

Figure 2b

CHAPTER II

EVALUATION PROCEDURES

2.0 GENERAL

The bridge expansion joint test program consists of four components: (1) Field Performance Evaluation, (2) Load Test Evaluation, (3) Installation and Maintenance Evaluation, and (4) State Materials Office Product Evaluation. Each of the four components of the test program is important. While all components will be considered for the development of the initial, Qualified Products List, the major two components of the test program are the Field Performance Evaluation and the State Materials Office Product Evaluation. The four components of the test program are described in more detail in the following paragraphs.

2.1 FIELD PERFORMANCE EVALUATION

The Department evaluated the performance of test joints using the FDOT performance criteria listed in the previous section of this report. The Department periodically- monitored each test element. FDOT personnel inspected each jointand recorded a rating for each of the established joint performance criterion on an evaluation form designed for this purpose. For each joint, the SRC used the ratings for each criterion to evaluate the field performance. of each system or seal. Based on these results,: the SRC will recommend-test elements,for the initial Qualified Products List(QPL).

2.2 LOAD TEST EVALUATION

The SRC used the FDOT's load test trucks to note the performance of the joints and bridges several times during the test program. This load testing provided information concerning actual joint performance under traffic loads. In addition, test results were used to help monitor for any future signs of deterioration. The SRC monitored the joints during and after test loading to determine strains,_ accelerations and deflections. The bridges and joints were instrumented with a variety of strain and displacement gages to provide the necessary data.

The first load tests were done during the week of March 7, 1994. Loaded with 24 or 30 testing blocks (100.8 kips, and 113.7 kips, respectively), the Departments load test vehicles traveled at 55

and 60 mph to test the bridges dynamically; The dimensions and weights of the Departments two load test vehicles are shown in Figure 3. Strain gauges, accelerometers, and linear voltage displacement' transducers (LVDT), were used to monitor the strains, vibrations, and displacements of the bridges and expansion joint elements. Some typical instrumentation used are shown in Figures 4 through 6. Data from the test was collected and recorded using a high speed data acquisition system. The details and results for the Load Test Evaluation will be presented and discussed in Chapter V of this report.

2.3 STATE MATERIALS OFFICE PRODUCT EVALUATION

The State Materials Office (SMO) was asked to evaluate the products according to the FDOT's specifications, the specifications and test data provided by the joint suppliers, and the criteria and suggestions made by the SRC:

The tests identified below are some which the State Materials Office was asked to do depending upon the materials under consideration:

1. Compressive Strength (ASTM C 579/ ASTM C 39)
2. Tensile Strength (ASTM D 638/ASTM D 412)
3. Durometer Hardness (ASTM D 2240)
4. Shear Strength / Tear Strength (ASTM D -1004/ ASTM D 624)
5. Bond Strength of Epoxy (ASTM C 882)/ Adhesion (ASTM D 903/ ASTM C 29)
6. Skin over Test / Gel Time (AASHTO M200)
7. Cure Time/ Dry Time/Extrusion Test/ Tack Free Test (MIL S 8802)
8. Material Reaction to Extreme Temperatures (ASTM D 2628)/ Softening Point (ASTM D 36)
9. Modulus of Elasticity
10. Permeability Test / Water Absorption (ASTM D 570
11. Abrasion Resistance (ASTM C 501/ ASTM D 4060)
12. Weather Test (Federal Specification HH-F-341A)
13. Ozone and Ultraviolet Resistance (ASTM C-793-75/ASTM D1171)
14. Linear Shrinkage and Coefficient of Thermal Expansion (ASTM C531)
15. Corrosion Test

As explained in the letter appearing in Appendix F, the SMO did not complete materials evaluations. Therefore, the joint systems were evaluated based upon field performance only.

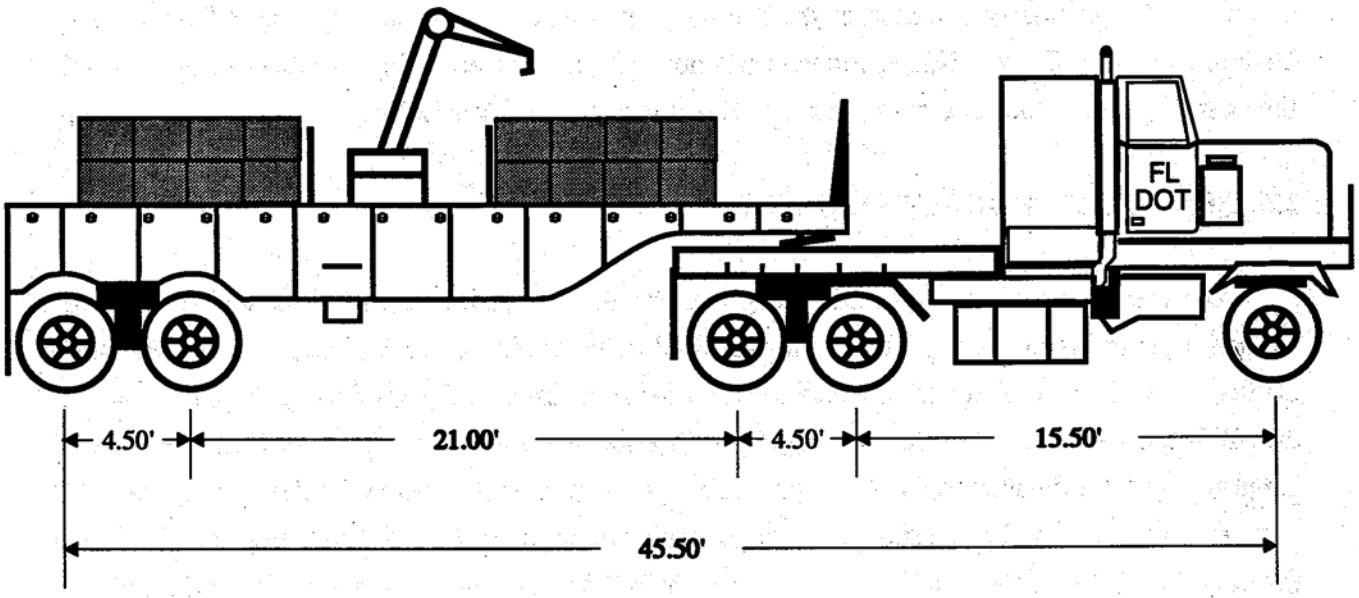
2.4 OTHER CRITERIA EVALUATION

Cost, maintenance, installation, life expectancy, mechanical failure mechanism, construction tolerance, and availability of parts and repair, are factors that engineer or other appropriate parties may consider when selecting bridge expansion joint systems. Some of these factors will be discussed, compared and evaluated for each of the test elements. Much of this information is from product literature and FDOT observations during installation. Since there are many variables associates with the cost of joint systems and seals, cost is not included in the discussion.

2.5 QUALIFIED PRODUCTS LIST (QPL)

From the results of the evaluation program, the Structures Research Center will recommend expansion joint systems and seals for the Qualified Products List (QPL). The Product Evaluation Section of the Construction Office, which has the final responsibility for producing the QPL, will use the SRC recommendations to establish the initial Qualified Products List (QPL) for bridge expansion joints and seals for the Florida DOT. A joint system or seal must do well in the field test for two (2) years and must satisfy the other components of the evaluation program before being recommended for the initial QPL. Later, the Product Evaluation Section may add other products to the QPL.

Bridge Testing Vehicle



WEIGHTS:

	24 Blocks	30 Blocks
Ballest blocks	51,600 lb.	64,500 lb.
Equipment	8,200 lb.	8,200 lb.
Trailer	24,000 lb.	24,000 lb.
Tractor	17,000 lb.	17,000 lb.
Total	100,800 lb.	113,700 lb.

LOAD TRANSFER:

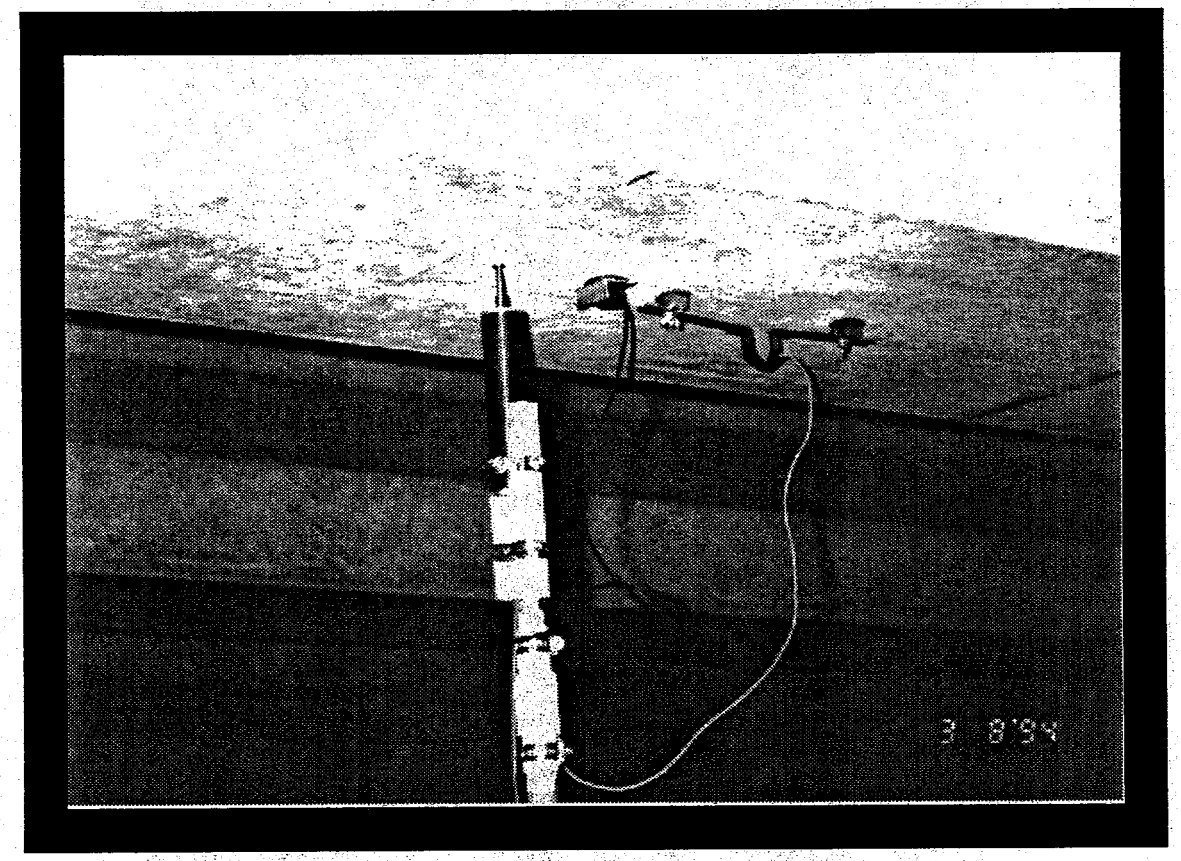
	24 Blocks	30 Blocks
Steering axle	13,100 lb.	13,400 lb.
Drive tandem	41,140 lb.	46,500 lb.
Trailer tandem	46,560 lb.	53,800 lb.

Detailed Dimensions of Testing Vehicle With Loads For 24 Blocks And 30 Blocks

Figure 3

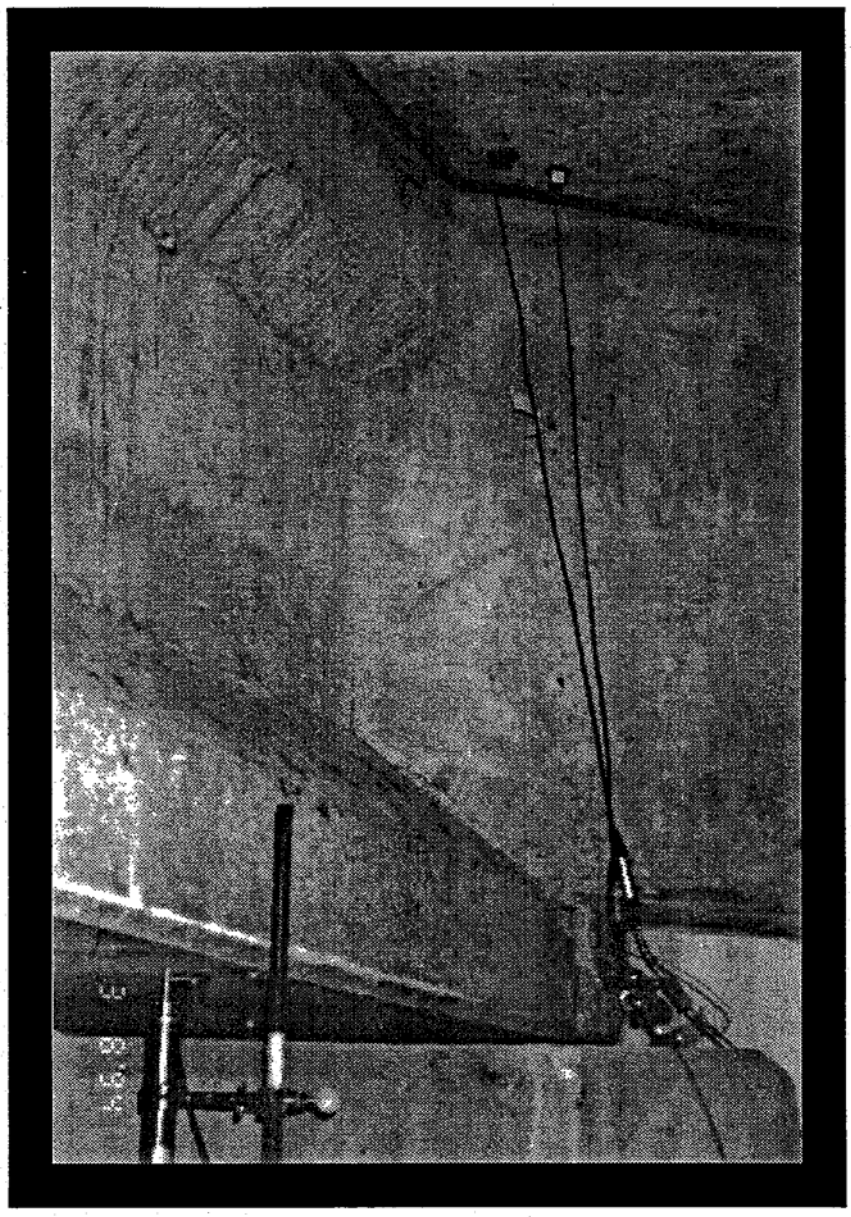
Load Test Typical Joint Instrumentation: LVDT

Figure 4



Load Test Typical Joint Instrumentation:
LVDT, Accelerometer, Strain Gauge

Figure 5



Load Test Typical Joint Instrumentation:
LVDTs & Accelerometers

Figure 6

CHAPTER III
DESCRIPTION OF JOINT SEALS AND SYSTEMS

3.0 GENERAL

This chapter describes each joint system or seal installed in the test program. For each system, the discussion includes a brief summary of information concerning the product composition, uses, installation and performance. Quotes from product literature are! included in this section since the manufacturers are the best source of information concerning product composition, intended uses and anticipated performance. All information provided will help readers in forming judgments about the tested products.

Figures in this chapter show typical sections and photos for the test joints and seals. For locations where only the seal was replaced, the joint opening ranged from 1" to 1.375".

For complete joint systems, the dimensions shown in the typical sections are the dimensions provided in manufacturer's literature describing the joint system. The actual dimensions of the test joints are related to the openings produced by the removal of the original joint systems. Thus, the actual dimensions of test joint systems (especially regarding the depth) vary from those dimensions shown in the typical sections.

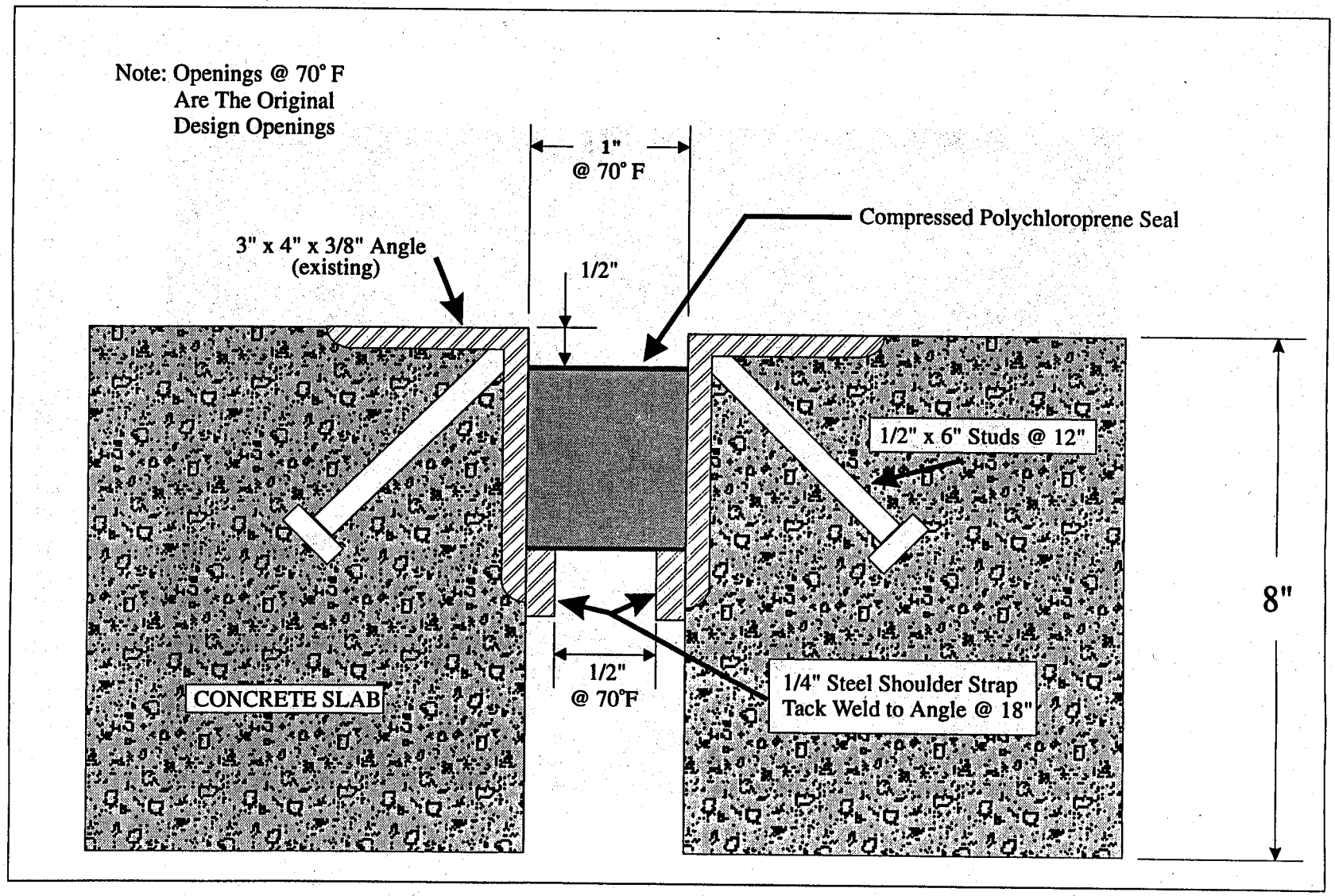
The cross-section and a photo of a typical armored joint with a compression seal, as the original expansion joint system, are shown in Figure 7 and Figure 8, respectively. As indicated in Figure 7 angles (3"x4"x3/8") existed in the original joints. Since the original joint systems were removed by saw cutting, the concrete deck, the resulting block out was approximately 4"x4" or larger. Therefore, most often, the actual depth of the nosing material is greater than the depth shown in the typical section.

Where excessively deep voids resulted, the supplier's representatives, filled the voids with the nosing material and proceeded to install the joint system. In several locations, the actual opening (after: the removal of the original joint system) was much larger than anticipated and the supplier ran out of materials as a result. Sometimes, the depth of the void (much larger than required for the test joint system) prolonged the installation time.

In the following sections of this chapter, ;the general information concerning the installations (unless otherwise noted) pertains to the actual installations of the test elements on the test bridges in Saint Lucie County. Therefore, this information may, differ from the installation information provided in the manufacturer literature. If necessary, any major differences or causes for delay are mentioned in the Installation Notes/Comments subsection.

Tables 3 through 7 of chapter IV present the bridge expansion joints field performance evaluation.
Table 3 presents the bridge expansion joints field performance evaluation for March 1994.
Table 4 presents the bridge expansion joints field performance evaluation for August 1994.
Table 5 presents the bridge expansion joints field performance evaluation for November 1994.
Table 6 presents the bridge expansion joints field performance valuation for June 1995.
Table 7 presents the bridge expansion joints field performance evaluation for November 1995.
The results of these tables will be discussed in Chapter IV of this document.

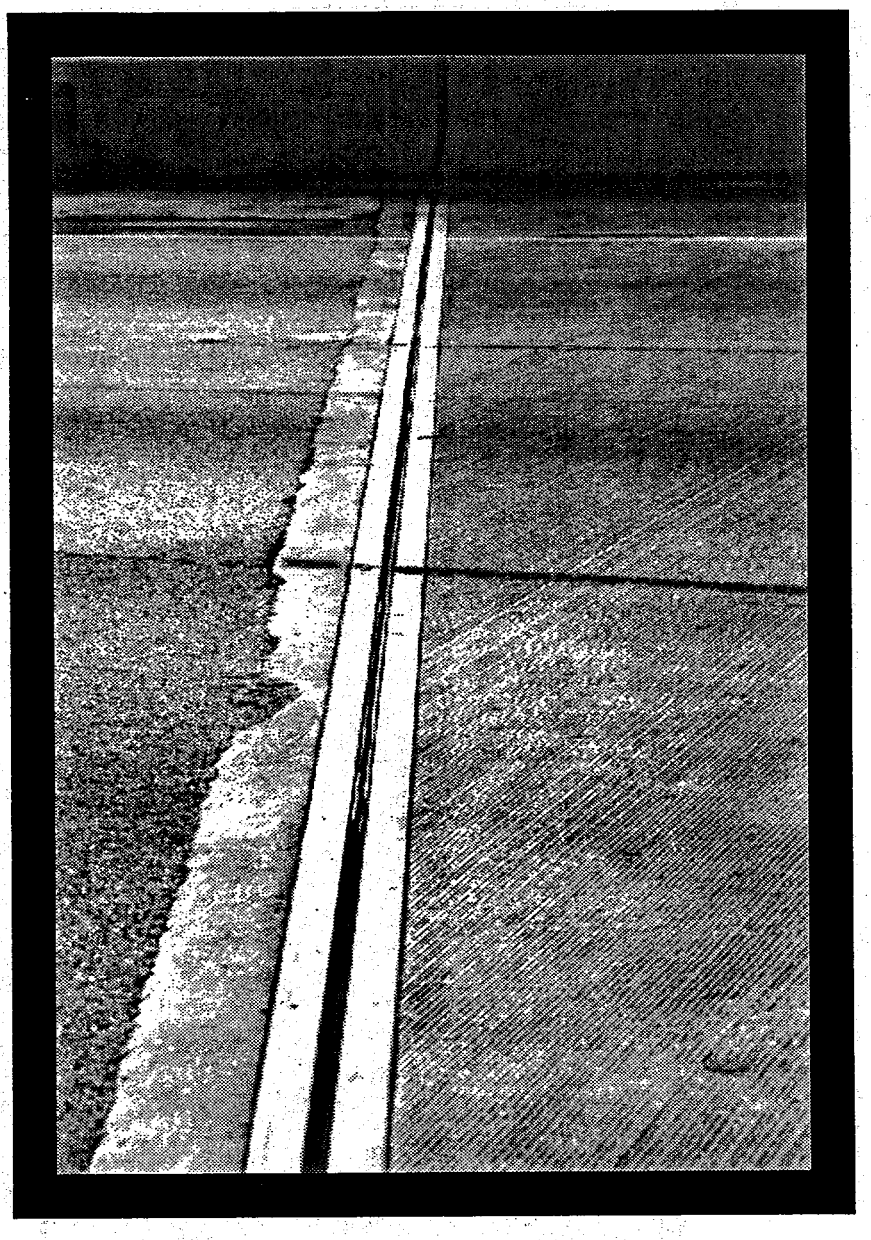
In Appendix B, a Joint Summary Sheet is provided for each test element. The information on this sheet comes from three major sources: 1) manufacturer literature, 2) FDOT observations during installations, and 3) the Preliminary Product Evaluation Application completed by the supplier. These sheets are described in more detail in Appendix B.



Existing Armored Joint with Compression Seal

(Typical Section)

Figure 7



Typical Armored Expansion Joint on I-95

Figure 8

3.1 CHEMPLEX PRODUCTS, INC.:

CHEMCRETE 1000 EXPANSION JOINT SYSTEM

Chemcrete 1000 is a high tensile strength, two component, thermosetting, polyurethane elastomer, especially formulated to achieve outstanding abrasion resistance; superior tear strength and elongation properties. Chemcrete 1000 is a highly cross-linked formula of 100% solids polyurethane and other proprietary ingredients mixed with a blend of specific mineral aggregates to produce a dense concrete like material designed specifically for trowel: application.

Chemcrete 1000 is free of any known carcinogens, is nontoxic when cured and contributes to no known long term environmental hazard. The thermosetting or cold cure characteristics of the material eliminate the requirement for artificial heat in the mixing, installation or cure process. The unique material packaging system eliminates any requirement for field measuring of components, thus eliminating mistakes by field personnel and simplifying the installation procedures.

"Chemcrete 1000 was specially formulated for use as a header or edging material in various types of new or existing expansion joint systems, including expansion joints for bridge, parking decks and other concrete deck surfaces".[6] The Chemcrete Expansion Joint System has a standard five (5) year guarantee. A typical section of a Chemcrete 1000 Expansion Joint System is shown in Figure 9. Other information concerning the system is in Appendix B. This information includes general notes, product physical properties, installation instructions, Santoprene Seal details, Material Safety Data Sheets and installation photographs.

3.1.1 Installation Notes/Comments

The Chemplex joint was the second joint system installed on the project. Joint removal created much larger openings than anticipated by the joint supplier. As a result; Chemplex Products, Inc. ran out of materials and was unable to complete the joint installation on the first visit in July 1993. Mr. Ken Maxcy returned to the site to complete the joint installation in August 1993.

During the first visit, Mr. Maxcy and two assistants installed forty-five feet (45') of the eighty feet (80') joint. On the second visit in August 1993, Mr. Maxcy and one assistant completed the remaining thirty-five feet (35') of the joint. However, due to malfunction of a specialized piece of equipment; the two ends of the Santoprene seal were not fused together. This was not done until March 1994.

During both the July and August 1993 installations the size of the joint opening and the water left by the contractor prolonged the new joint installation. Mr. Maxcy and his assistants worked in a very systematic way to install the joint system. There were several installation steps:

1. Remove any loose concrete.
2. Dry wet concrete using heat lance.
3. Use compressed air to clean the opening.
4. Place tape on the concrete deck along both sides of the joint (for a clean finished joint).
5. Place blockout/form (wood and card board) to form joint opening.
6. Apply epoxy primer (a two part mix, Part A and Part: B) to bottom and sides of concrete.
7. Heat sand and rock aggregate.
8. Mix Part A and B resin/epoxy.
9. Mix sand/aggregate to the epoxy mixture.
10. Pour the mixture into the joint.
11. Place sanoprene seal and top with a small board (1/4" or less thick).
12. Place epoxy mixture (Part A and Part B without aggregate).
13. Place aggregate mixture (Part A, Part B and aggregate).
14. Use a trowel to finish the top surface of the joint.
15. Allow the joint to cure for 1.5 to 2 hours.

3.1.2 Field Performance

March/August 1994 Evaluation (see Tables 3 and-4)

This joint looks O.K. except it had four, (4) cracks in the header material. All cracks were approximately parallel to the seal and approximately one and a half inch (1.5") from the edge of the seal on the south header. Two of these cracks were visible in March 1994. Since then, these two cracks have propagated and two more cracks have developed. In March 1994, one crack was approximately five inches (5") long in the outside wheel path of the right traffic lane. Another smaller crack was about three feet (3') away into the right traffic lane. Mr. Ken Maxcy was present at the site when the SRC inspected the joint in Marchg to Mr. Maxcy, the joint is still waterproof at these cracks since the seal material has a horizontal end embedded in the nosing material.

In August 1994, the cracks first noticed in March were longer. One crack was approximately 15" long and 1/16" wide. The other cracks were approximately 24" long and 1/32" wide. See Figure 10. In addition, two more cracks were visible, one in the middle traffic lane and one in the left traffic lane. Near the left wheel path of the center traffic lane, the crack was approximately eight inches long (8"). In the left traffic lane, a crack approximately twelve inches (12") long was in the right wheel path.

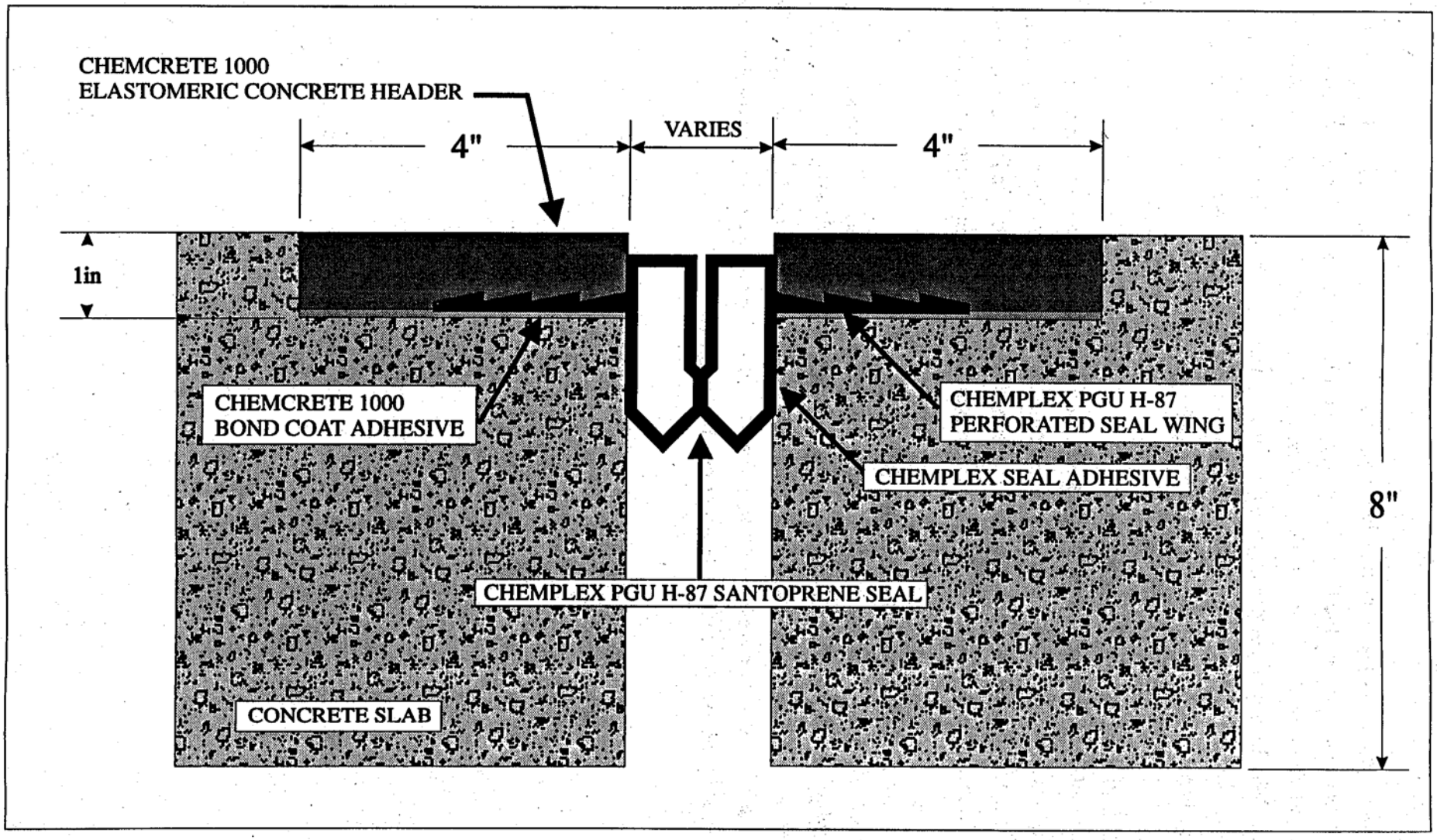
Before the fusing of the joint seal in early March, FDOT inspectors reported (in Jan. 1994) signs of leakage in the vicinity where the two seal sections meet (between beams 3 and 5). The two ends of the seal were fused together in March 1994. It was anticipated that fusing the seal would eliminate leakage. The May 1994 joint performance evaluation (submitted by district inspectors) did not note any signs of leakage. However, in August 1994, there was an indication (wet sand under the deck) that leakage is occurring at girder 2 and between girders 2 and 3.

November 1994 Evaluation, (see ***Table S,l***

The joint looked fair except for the development of four(4) cracks: two cracks in the right traffic lane near right wheel paths, one crack m the middle lane (at the transition of two seal sections), and one crack in the left traffic lane near the right wheel path. In the right traffic lane the nosing was broken but held in place by the seal. There was a slight debris buildup in the right shoulder.

June/November 1995 Evaluation (see Tables -6 and Z

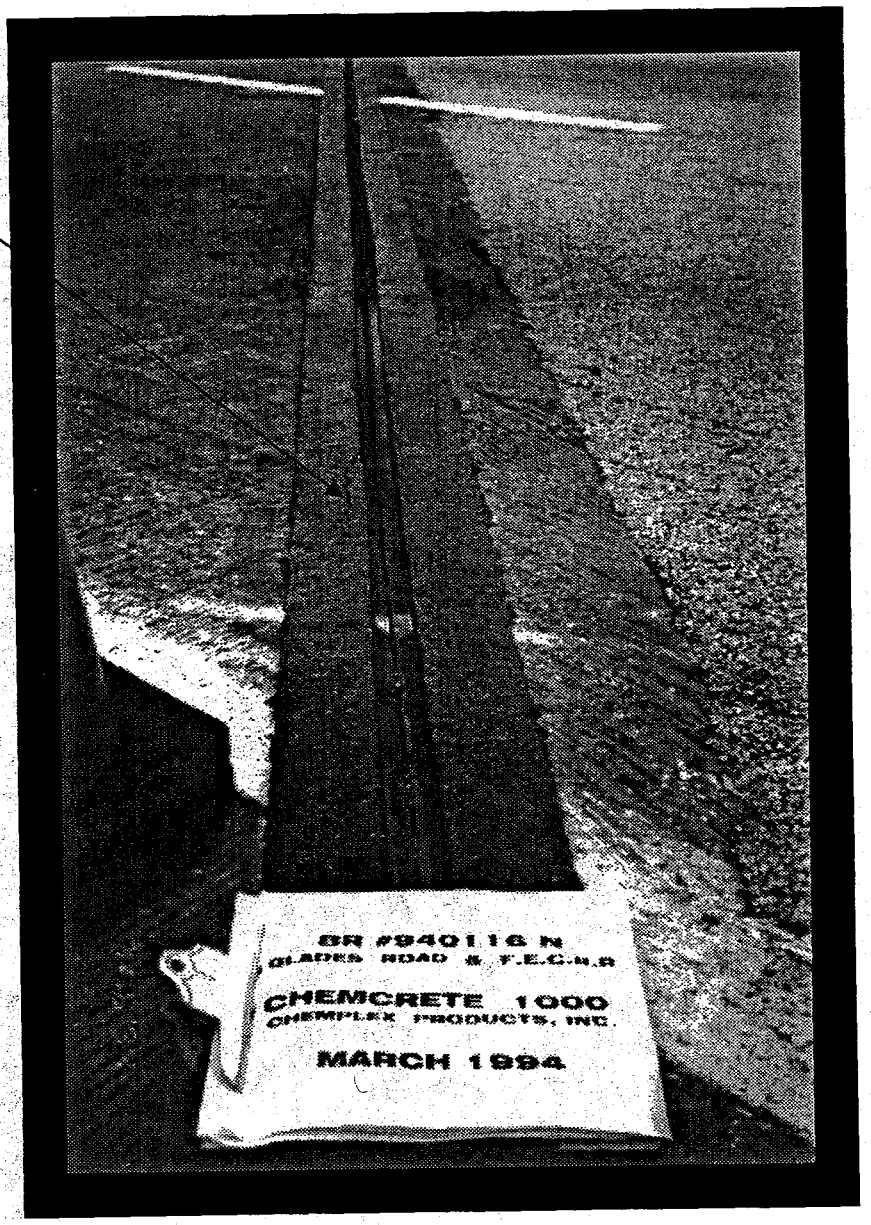
The joint system was spalling on both headers in all three traffic lanes. In the shoulders the nosing looked good. In the right traffic lane, there was a spall in the right wheel path. In the center lane there was a 12" spall in the left wheel path. The spall extended throughout the depth of the nosing. In the left lane there were three spalls; a 6" spall and a 7" spall near the right wheel path and a 12" spall near the left wheel path. See Figures 11 through 13.



Chemplex Products: Chemcrete 1000 Expansion Joint System

(Typical Section)

Figure 9



Chemplex Products: Chemcrete 1000 Expansion Joint System

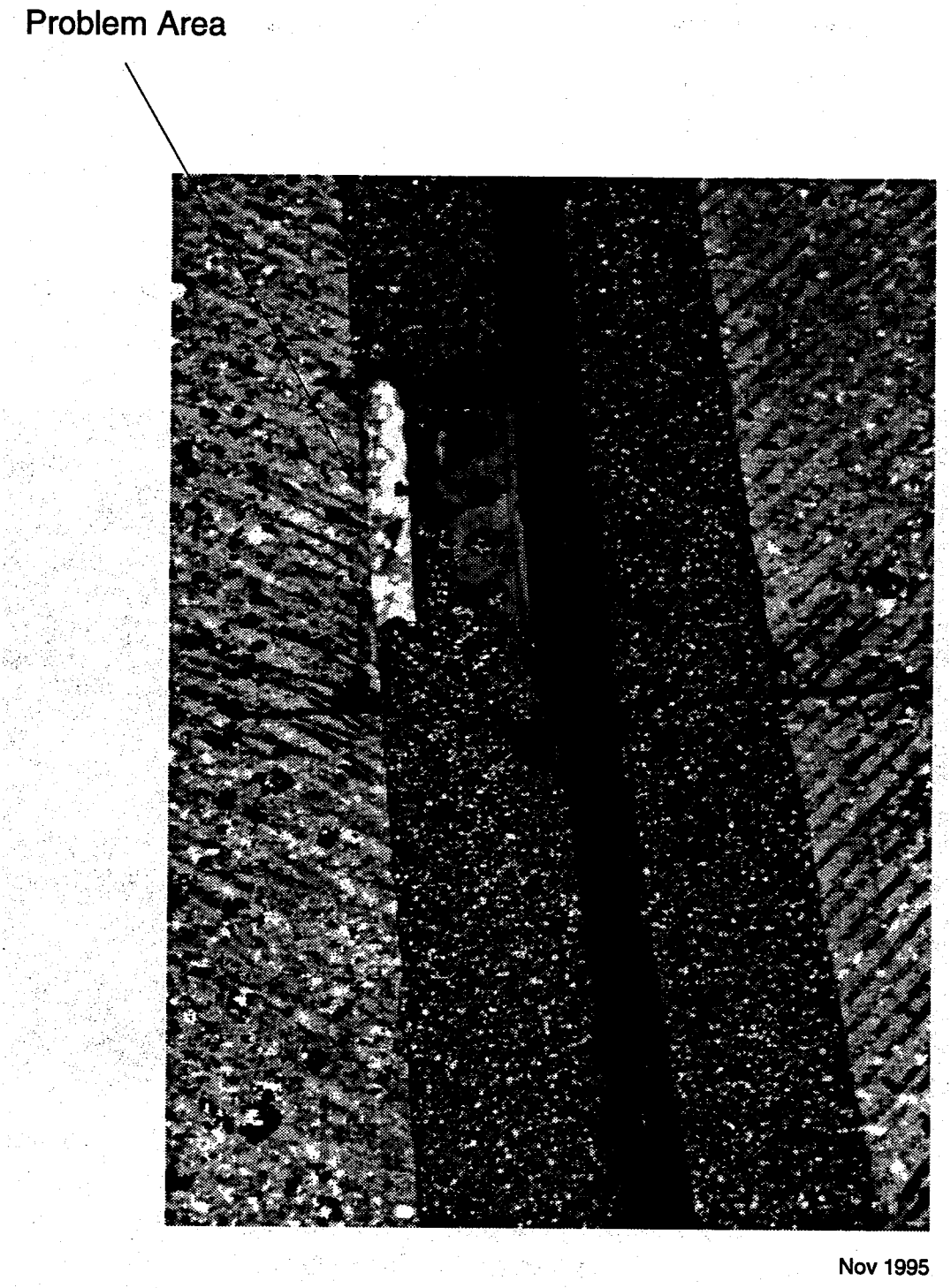
Figure 10

Problem Areas

June 1995

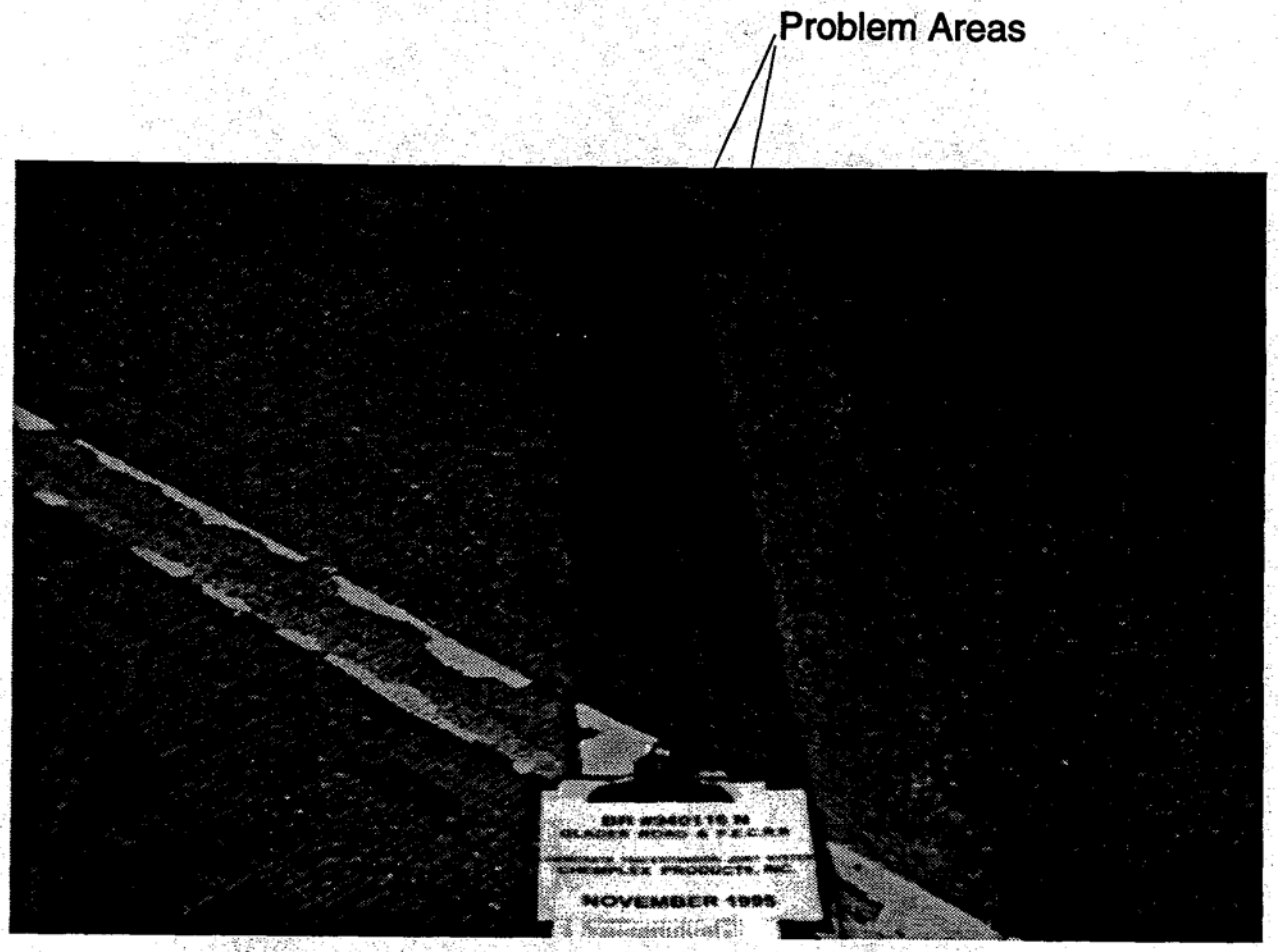
Chemplex Products: - Chemcrete 1000
Expansion Joint System

Figure 11



Chemplex Products: - Chemcrete 1000
Expansion Joint System

Figure 12



Nov 1995

Chemplex Products: - Chemcrete 1000
Expansion Joint System

Figure 13

3.2 DOW CORNING: 902 RCS JOINT SEALANT

"DOW CORNING 902 RCS (rapid cure silicon) joint sealant is a self-leveling, cold applied, rapid cure, two-part, easy to install, ultra-low-modulus, 100 percent silicone rubber sealant-designed to seal expansion joints that experience thermal and/or vertical movements due to traffic Loading. DOW CORNING 902 RCS joint sealant can be used for new and remedial applications. Its rapid cure- is especially well suited for maintenance work, such as bridge joint resealing that must be completed within a short time (i. e., less than 8 hours) to reduce traffic disruption."[7] Figure 14 shows a typical section of the joint sealant placed in an armored joint.

"The ultra low modulus of DOW CORNING 902 RCS joint sealant allows it to accommodate the high degree of movement associated with expansion joints on bridges. Its rapid cure means it will cure fast enough to accommodate typical daily thermal movements caused by traffic without being damaged (Dow Corning, 1991).

3.2.1 Installation Notes/ Comments

The Dow Coning 902 RCS Joint Sealant and the Silicon Specialties, Inc. (SSI) X.J.S. Expansion Joint System was installed in April 1993. These installations took place months before the start of the other installations because the suppliers choose not to wait for the Structures Research Center (SRC) to hire a contractor for joint removal. All costs, except costs for maintenance of traffic (MOT), were paid by the suppliers. Therefore, the installation of the sealant and system took place before the official start of the SRC's replacement program.

The installation procedure for the sealant was quick and simple. The steps consisted of sand blasting the joint opening, applying a primer, installing a backer rod and placing the sealant. The time required from start to finish was one (1) hour for 35 feet of joint and one and a half (1.5) hours for 45 feet of joint. Workers used a special pump applicator to combine the two parts of the sealant and to place the mixture in the joint opening. This pump applicator was used to install the sealant for the X.J.S. Expansion Joint System.

To avoid having the sealant in contact with vehicular traffic, workers placed the sealant with a one half inch (1/2") recess into the joint in the traffic lanes. Although, the sealant was not completely cured when it was placed in the joint, traffic could be placed on the bridge immediately. Overall, within 4 to 6 hours the sealant will be 50% cured and within 48 to 160 hours the sealant will be 100%

cured. During the actual test installation, traffic was not placed on the bridge until work was finished on both end bent joints of the bridge (#940115).

3.2.2 Field Performance

March/August 1994 Evaluation (see Tables 3 and 4)

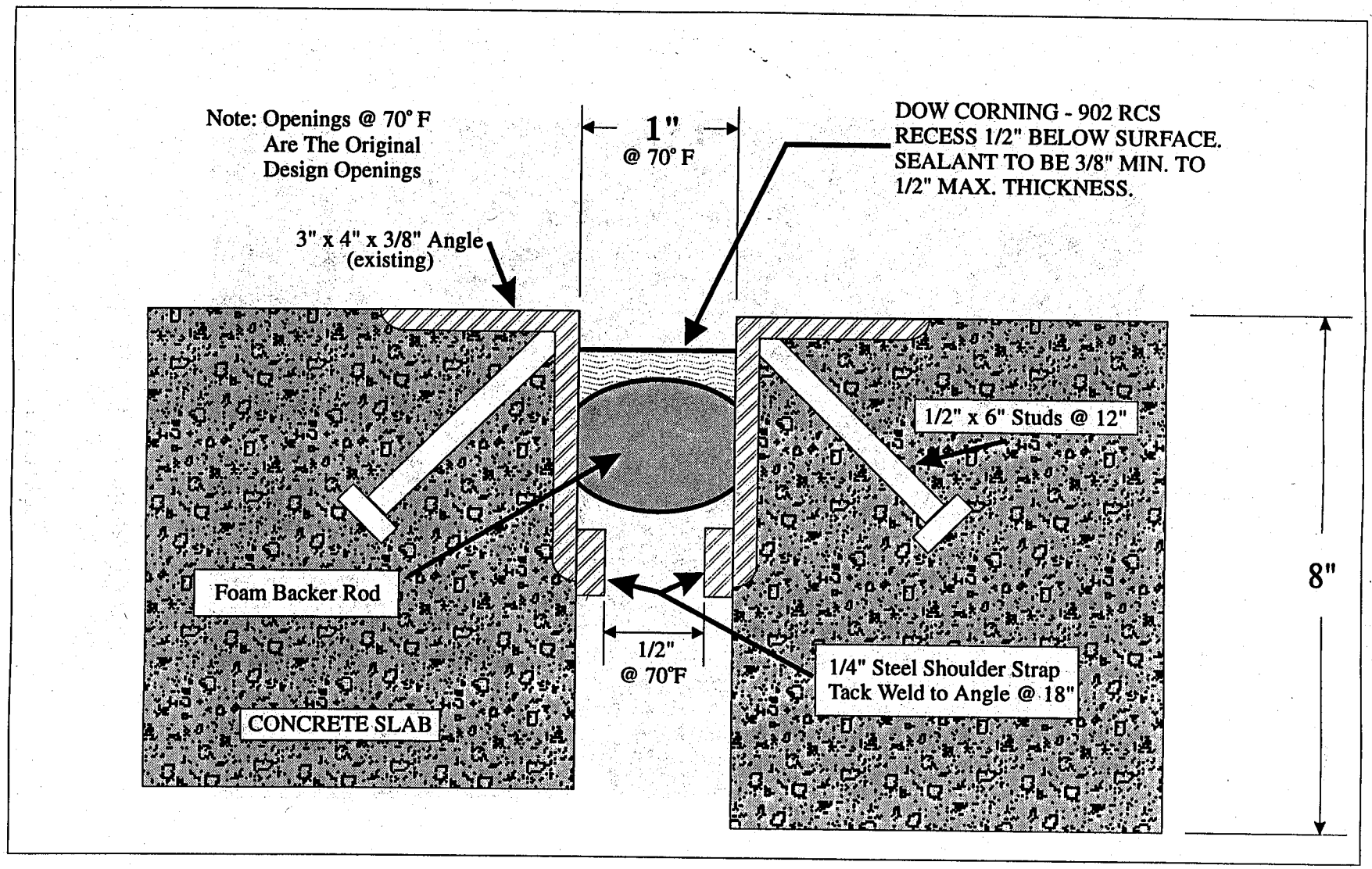
The sealant was doing well. The joint looked very good. A small amount of debris was accumulating in the shoulders near the barrier walls (within one foot (1') or so). The debris was deposited on top of the seal and was not damaging the seal. There Appears to be leakage at the second beam from the right shoulder. However, the seal was completely intact and bonded at this location. The seal looked very strong without any signs of wear. The material still had an appearance very similar to its original appearance. Therefore, we suspect that the leakage occurs at the interface of the armor angle and the deck slab. Near the leak, the angle was displaced at the deck interface. Thus, far, the sealant is a very good product.

November 1994 Evaluation (see Table S)

The sealant in right and center shoulders looked very good. There was no visible damage to the seal. Water was passing through joint. Since the sealant was intact without any signs of damage, apparently the leakage was due to the displacement of the angle.

June/November 1995 Evaluation (see Tables 6 and 7,)

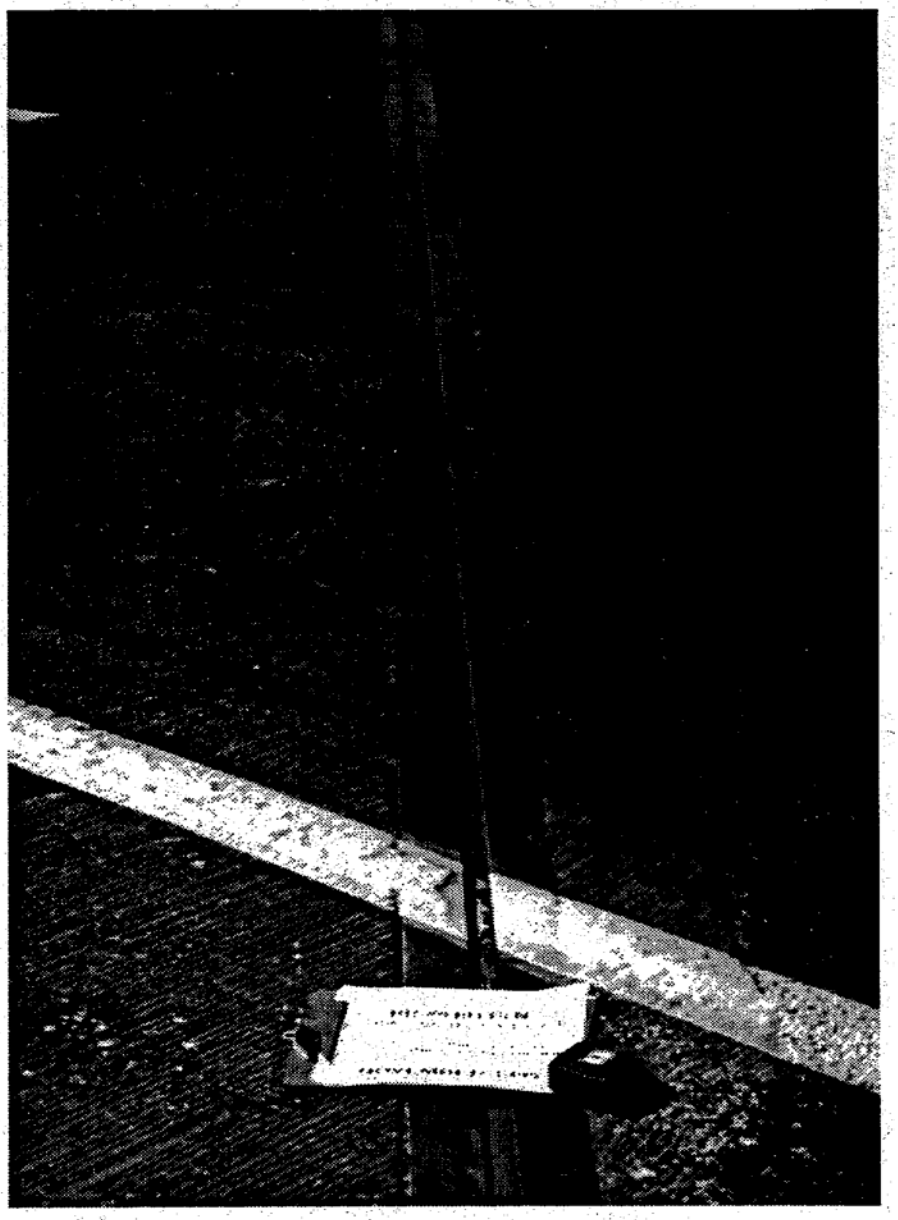
The 902 RCS sealant looked excellent. On the south side header, the armor angle was displacing downward in few places. There was slight debris on the deck in the shoulders. The joint sealant was very near the deck surface in the shoulders. See Figure 15.



Dow Corning: 902 RCS Joint Sealant

(Typical Section in Existing Armored Joint)

Figure 14



Nov 1995

DOW CORNING: JOINT SEALANT
RCS JOINT

Figure 15

3.3 DOW CORNING CORP./ S.S.I.: X.J.S. EXPANSION JOINT SYSTEM

"X.J.S. Expansion Joint System is a revolutionary new concept in expansion joint construction and rehabilitation, combining a tough, wear-resistant polymer for expansion joint nosing and a rapid-curing, high movement silicone for joint sealing. The system, which is cold-applied, is specially designed to provide a watertight, chemical-resistant seal to accommodate high traffic loads and remain pliable in cold and warm temperatures. Also, the silicon sealant in the system will bond to itself. This is ideal for maintenance applications where only one traffic lane canoe sealed at a time, but where a continuous seal is required when the adjacent lanes are eventually sealed."[10]

"The-rapid-curing ability of the X.J.S.: System makes it an excellent choice for highways, bridges, airfields, parking decks, and other high-volume traffic areas that require short closure times. Non-rush hour installation time is possible, helping avoid traffic backups and costly overtime. These traffic areas may be opened shortly after complete installation of the X.J.S. System. The X J.S. System is also a cost effective, easily repairable method for construction of failed expansion joint, at a fraction of the cost of conventional joint repair alternatives. "[11]
A typical cross-section of the joint system is shown in Figure 16.

3.3.1 Installation Notes/ Comments

In the early stages of the bridge expansion joint test program, some schedule delays occurred because of budget limitations (i.e., travel funds limits) at the Structures Research Center. Also, time was required for the Department to hire a contractor to remove the existing armored joints, where necessary. Dow Coming Corporation, Silicon Specialties, Incorporated and the Fred R. Hiller Company of Georgia wanted to install the X.J.S. Expansion Joint System in April 1993, near a date previously proposed by the FDOT. Since this period was before the FDOT hiring a contractor and, thus, before the official start of the joint removal process, the suppliers were responsible for the full cost associated with installing the test joints.

One major feature of the X.J.S. System is that the system an be used to repair or replace an existing expansion joint system but requires the removal of only a small amount of the existing material. Because of this feature and because the installation occurred before the FDOT's joint removal contractor was hired, the FDOT (District IV Structures and Facilities Office and the Structures Research Center) agreed to allow the supplier to replace only the damaged sections of the armor angle and all of the joint seal in the existing joint system. Therefore, the suppliers placed only

thirty-one and a half feet (31:5') of the X.J.S. system nosing (Silspec 900 PNS) on only one side of the joint header. The suppliers placed the Dow Corning 902 RCS Joint Sealant in the entire length of the joint (80').

Installing the X.J.S. Expansion Joint System consisted of the following steps: 1) removing the armor angle and spalled concrete, 2) sandblasting the concrete and steel in the joint, 3) cleaning the joint. with compressed air, 4) placing styrofoam to prevent the nosing, material from entering the joint, 5) painting the bottom and sides of the joint with Silspec 9,00 PNS "neat" primer, 6) mixing and placing the Silspec 900 PNS (the nosing), 7) allowing the nosing to cure for one (1) hour, 8)-praying Dow Corning 1205 Primer inside the joint (on the vertical surfaces), 9) Placing a backer rod in the joint, and 10) mixing and placing the Dow Corning 902 RCS Joint Sealant.

During day l, April 19, 1993, the suppliers replaced :approximately forty-eight feet (48) of joint. This included the right shoulder and the two, traffic-lanes. In this distance, the suppliers placed 31.5 feet of the X.J.S. system (nosing on only one side). The total joint, replacement, excluding removal of the armor angle, took four (4) hours. The fact that this was a partial replacement instead of a complete replacement must be considered when considering the time involved in the installation. On the second day, April 20, replacing, thirty-two feet (32) of the seal (only) took one (1) hour. On both days when the sealant was placed, and the roadway was cleared (of materials, equipment, people) and the MOT was removed, the bridge was opened to traffic.

In general, the joint repair process was quick and systematic without any problems. As demonstrated at the site, the nosing material was easy to clean from the mixer by running the mixer with water and flint aggregate. According to the suppliers, the nosing material is "environmentally friendly".

3.3.2 Field Performance

March/August 1994 Evaluation (see Tables 3 and 4)

The X.J.S. Expansion Joint System is performing well in the field. The nosing and seal look very good; they look nearly the same as when they were first installed. The nosing material is not wearing down but one crack has developed in the nosing. Figure 17 shows the completed test joint. The joint is leaking in one location near a crack in the roadway. surface. The crack in the roadway surface is transverse to the nosing and is significant enough that a crack has developed in the X.L.S. nosing as an extension of the roadway surface crack. It is near this crack that the leakage occurs. The joint

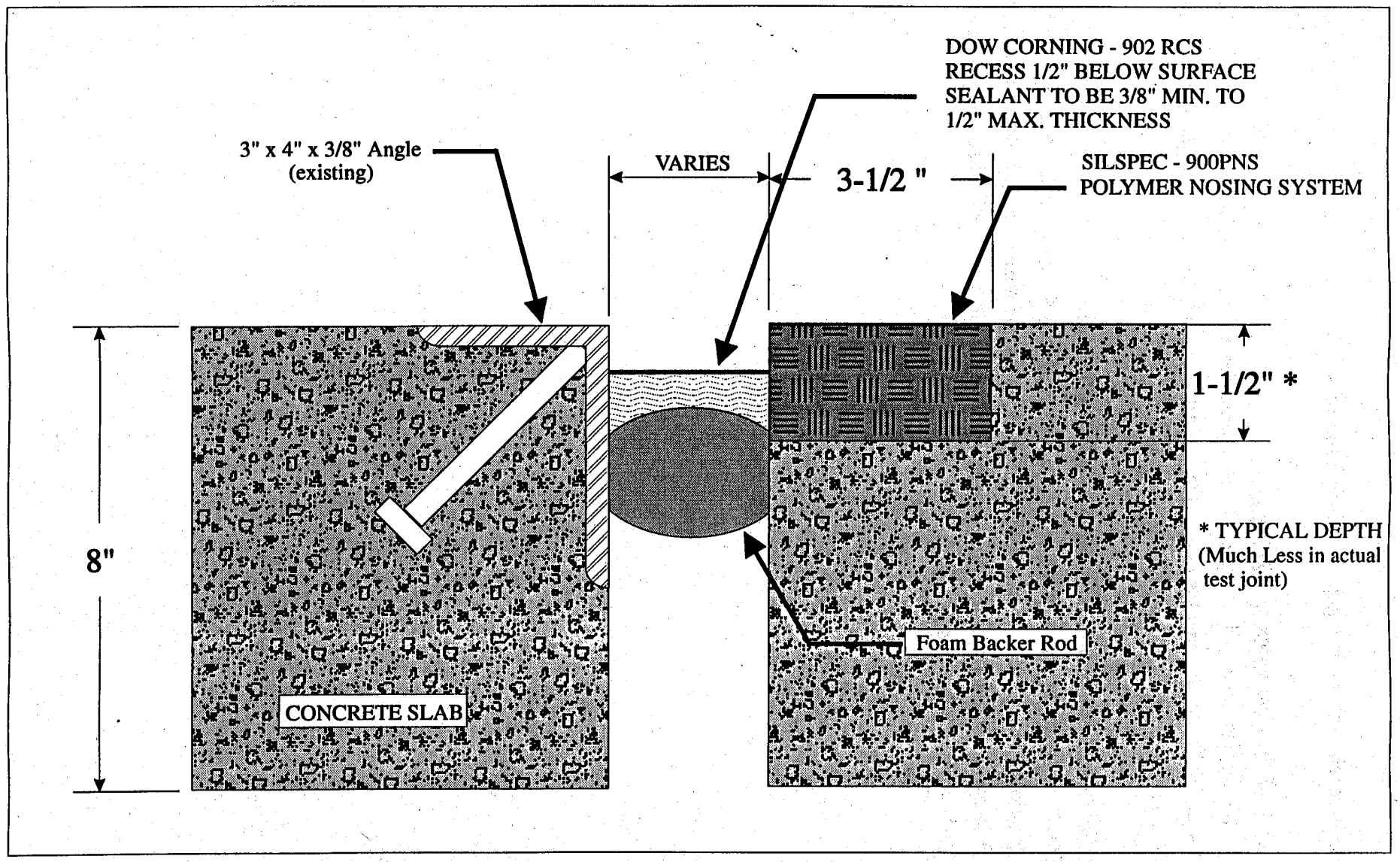
system is consistently rated highly by MOT inspectors.

November 1994 Evaluation (see Table 5)

The nosing was sound and looked good. However, there were a few grooves (1/4" to ½" wide and about 1/8" deep) in three locations: one in the right lane in the left wheel path and two in the middle lane in the right wheel path.

June/November 1995 Evaluation (see Tables 6 and 7)

There was minor breakage and wear at the top surface on the inside edge (See Figure 18). In other locations there were no major signs of wear. Overall, the nosing looked good and was doing well. There was slight debris on the deck in the shoulders. However, the joint sealant was near the deck surface in the shoulders.



Dow Corning / SSI: X.J.S. Expansion Joint System

(Typical Section)

Figure 16

Dow Corning/ Silicon Specialties Inc.:
X.J.S. - Expansion Joint System

Figure 17

Nov 1995

Dow Corning/ Silicon Specialties Inc.:
X.J.S. - Expansion Joint System

Figure 18

3.3 D. S. BROWN: DELCRETE ELASTOMERIC CONCRETE/STEELFLEX STRIP SEAL SYSTEM

“DELCRETE elastomeric concrete is a polyurethane-based material compounded to develop high strength and to promote easy bonding to a variety of substrates: DELCRETE is ideally suited for roadway applications since it has excellent flexibility characteristics and is not prone to spalling or cracking. The typical application for DELCRETE is in bridge expansion joint rehabilitation work. The primary components consist of DELCRETE steel retainer bars; and Neoprene strip seal or a compression seal. Other, applications include parking garage expansion joints, aluminum DELASTIFLEX expansion joints, and road patching material."[12]

"DELCRETE is a model of handling and installation simplicity. Mixing time is less than five minutes; the mixture is fluid and thus, pours easily and fills all the critical interstices; working time after mixing approximately four minutes; and it hardens rapidly and can accept traffic within one hour of the final pour. A very important feature is that the DELCRETE elastomeric concrete system does not require any outside application of heat either to the equipment or the ingredients and once in place does not need additional heat to complete the cure."[13]

According to the manufacturer, the advantages of DELCRETE include; the following: ease of installation, free-flowing material, reduces rehabilitation time, anti-spalling, bonding capability, elasticity; low temperature characteristics. DELCRETE "will bond to steel, concrete, asphalt and other materials, and it bonds to-itself. Sometimes a, primer should be applied first to maximize the bond. 04 Atypical cross-section of the joint system is shown in Figure 19.

3.4.1 -Installation Notes/ Comments

The Delcrete Elastomeric Concrete/Steelflex Strip Seal System was installed on Bridge # 940111 at the north end bent joint. The joint was installed on August 26 and 27, 1993. There were no problems associated with the joint installation other than the length of time required to complete the process. The workers moved slowly especially on the second day. On the first and second day, workers installed thirty feet (30’) and thirty-two feet (32'), respectively, of the joint system. On day two, workers began installing the .test joint (not including removal of the existing joint) at approximately 10:00 a.m.. The joint system was not ready for traffic until approximately 7:30 p.m.. The workers did take a lunch break. According to Mr. Kyle Robinson, D.S. Brown representative, the installation should have required less time.

For the expansion joint system, the steps of the installation included the following: 1) sandblasting and using compressed air to clean the joint opening; 2) bolting the *armor angles* in place in the opening and cutting *off* the bolt tops; 3) placing Styrofoam *in* the joint; 4) placing a primer on the surfaces of the opening; 5) allowing the primer to cure for thirty minutes; 6) mixing and placing the DELCRETE; and, 6) installing the seal. While the DELCRETE cured (≈ 1.5 hours), workers installed the seal. The DELCRETE was mixed in small batches and was easy to pour. DELCRETE was self-leveling and did not require heat. Placing and leveling the armor angles was the most time consuming part of the joint installation. This process made the installation complex. On day one, workers took one (1) hour to bolt the steel armor in place. On day two, workers spent two (2) hours on this process.

The joint system installed at this location uses a strip seal that is larger than required and allows up to 4 inches of movement. This is much more movement than: is needed at the location. The joint system can be formed to make a vertical seal along the barrier wall. This was not done on the- test installation. At the ends, the angle of the steel armor did not fit well with the barrier, wall, *and* therefore, the workers cut off the ends of the armor angles in the field.

3.4.2 Field Performance

March/August 1994 Evaluation (see-Tables 3 and 4)

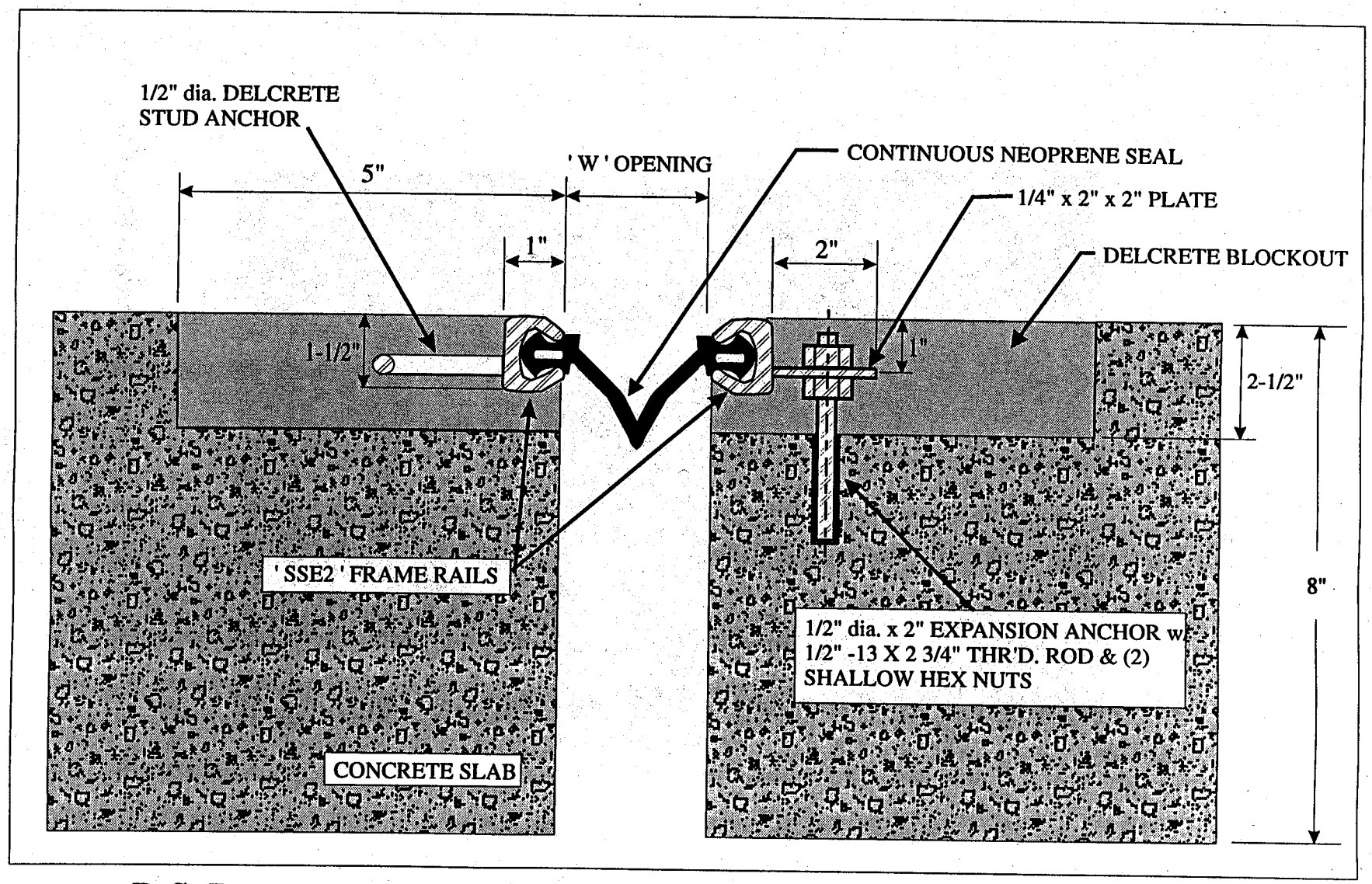
The DELCRETE elastomeric concrete was performing very well and had a nice finished appearance. Since the armor angles used: in this joint *were* made of weathering steel, oxidation had produced a protective coating (rust-brown appearance) to prevent further corrosion of the steel. In several locations, debris was accumulating in the joint. This was due to the size of the joint opening and the design of the strip seal. Accumulation of debris at several locations in the joint was the only element of concern. In all other aspects, the joint system rated highly. Figure 20 shows a section of the installed expansion joint system.

November 1994 Evaluation (see Table 5)

There were minor (superficial) surface abrasion in various spots but primarily in the center lane. The nosing. was still sound and looked *very* good. There were no visible cracks or other problems. The joint was NOT leaking. No water was under the bridge (on a rainy day). The joint had much debris primarily in both shoulders but also in several other locations. The joint opening was 1.9 inches. The differential elevation of headers contributed to noise and a bump at the joint.

June/November 1995 Evaluation (see Tables 6 and 7)

The joint nosing looked very good. However, debris was accumulating in the joint along most of its length. The joint opening was approximately two inches (2") . See Figure 21- 22.



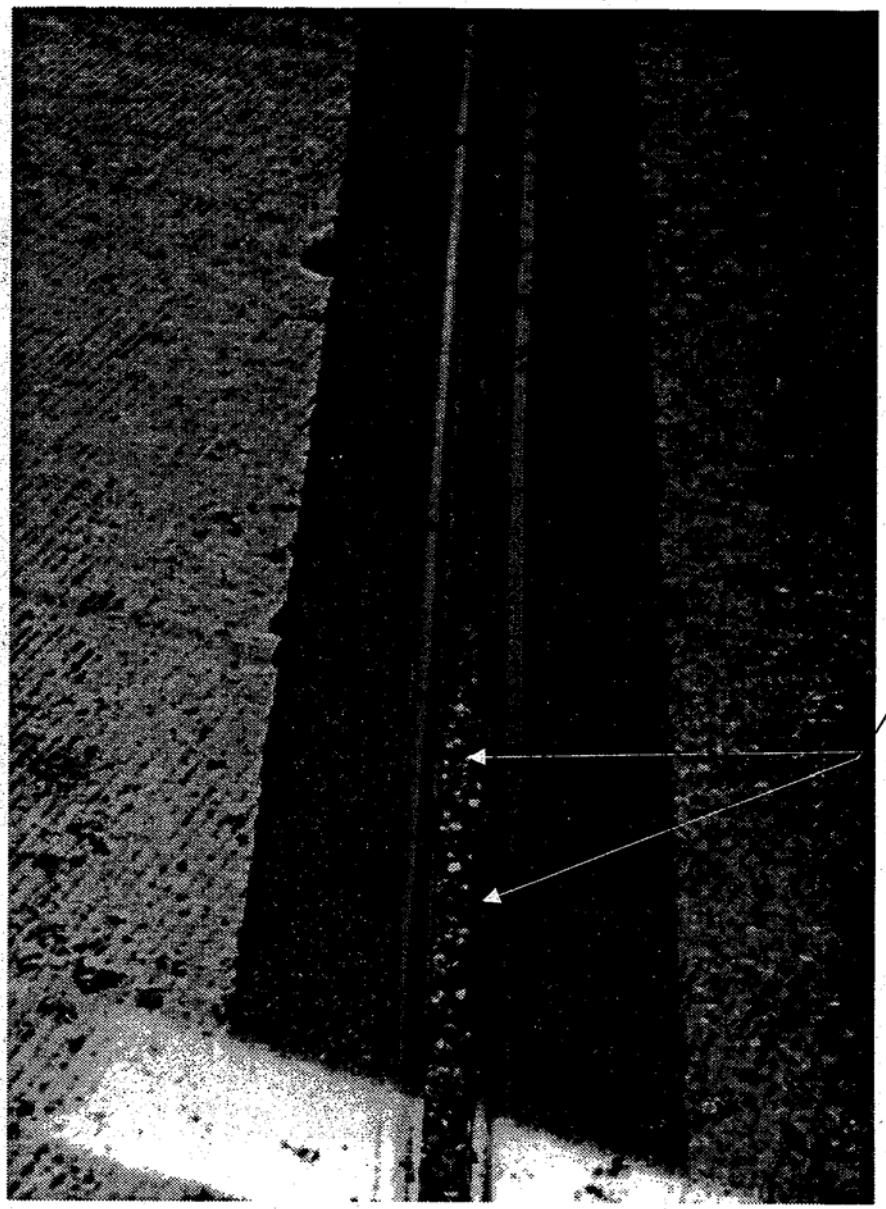
D.S. Brown: Delcrete Elastomeric Concrete / Steelflex Strip Seal System

(Typical Section)

Figure 19

D.S. Brown: Delcrete Elastomeric Concrete/Steelflex Strip Seal System

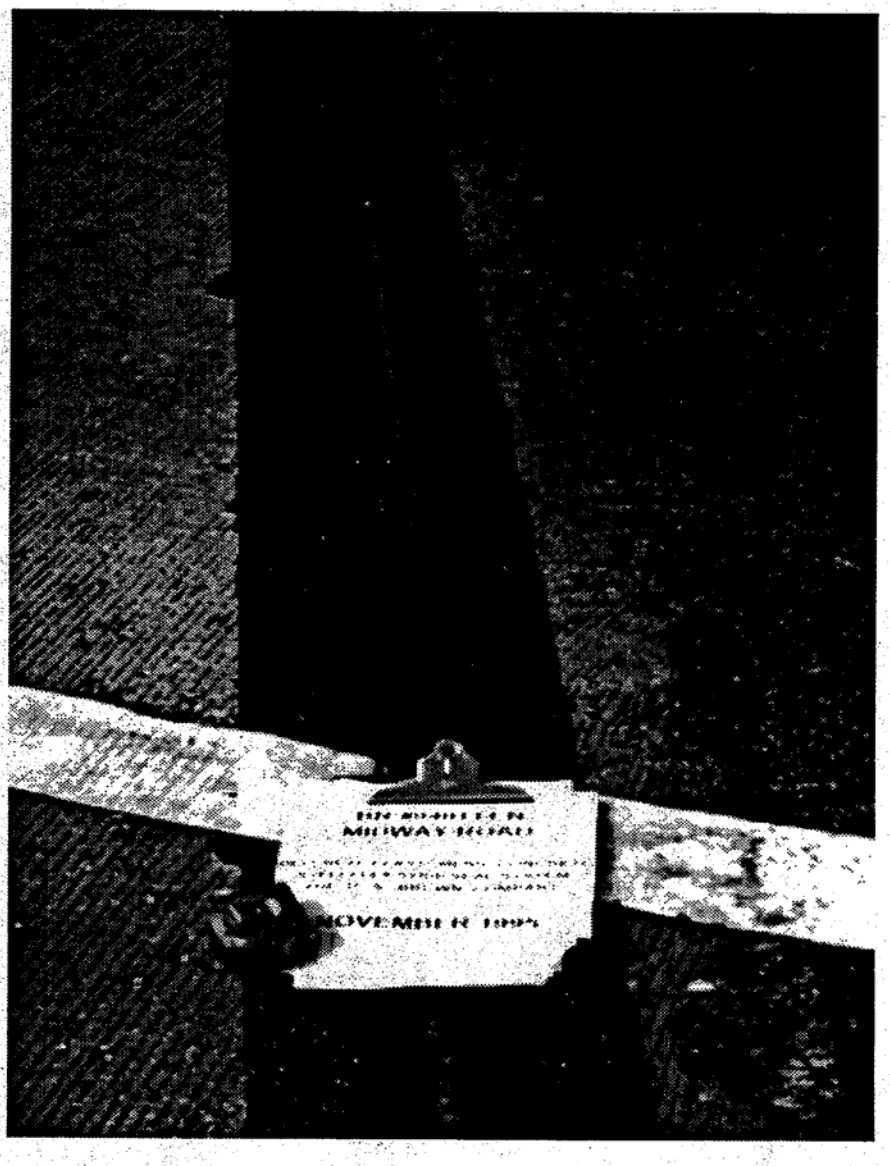
Figure 20



June 1995

D.S. Brown: Delcrete Elastomeric Concrete/Steelflex Strip Seal System

Figure 21



Nov 1995

D.S. Brown: Delcrete Elastomeric Concrete/Steelflex Strip Seal System

Figure 22

3.5 EPOXY INDUSTRIES: EVAZOTE 380 ESP SEAL

EVAZOTE 380 E.S.P. "is a resilient, non-extrudable material. It is designed for the construction and maintenance of concrete structures, pavements and bridges and maybe adapted. to: any water stop design. The product is an impermeable closed-cell, cross-linked, ethylene vinyl acetate, low density polyethylene copolymers, nitrogen blown material that is weather and wear resistant."[15]

"Being both closed cellular and elastic, it has the capabilities of operation within the range of 60% compression and 30% tension. The joint material is unaffected by road salts, and petroleum products such as gas, oil and grease; often spilled on highways. Its elasticity will reject stones and similar objects usually absorbed by conventional joining materials."[16]

"The grooved surface of Evazote 380E.S P: is designed to increase the bond strength to the substrate by 100%."[17] Atypical section of the seal as installed4n the existing armored joint is shown in Figure 23.

3.5.1 Installation Notes/ Comments

Overall, the proper width of the seal is 25% larger than the expansion joint opening. For the test installation, workers removed the existing seal and then sandblasted the joint opening until it was clean. After mixing the two components of the epoxy, workers applied epoxy to the vertical sides of the armor angles and the two sides of the seal. Next, workers installed the seal into the joint such that the seal was flush with the deck surface. The epoxy was allowed to cure for thirty (30) minutes before traffic was returned to the bridge. To form the seal along the barrier walls, a small section of the seal was cut and heat welded (using the Teflon heating iron) to the seal ends. One good feature of this seal is that directional changes can be made by using heat welding.

3.5.2 Field Performance

MarchlAugust 1994 Evaluation (see Tables 3 and 4)

The seal was performing well. However, there were signs of leakage in the right shoulder and right lane (between girders 2 and 3). At the surface, the seal was separating from the armor angle in this vicinity. In the shoulders debris accumulates in the joint. In the right shoulder the seal was deteriorating in a few small spots. Within three feet (3) of the barrier wall, there were three spots in which a small (approximately 0.5" wide) sections of the seal is missing; the sections are approximately 4", 5", and 6" long. Another small section of damage was located approximately five

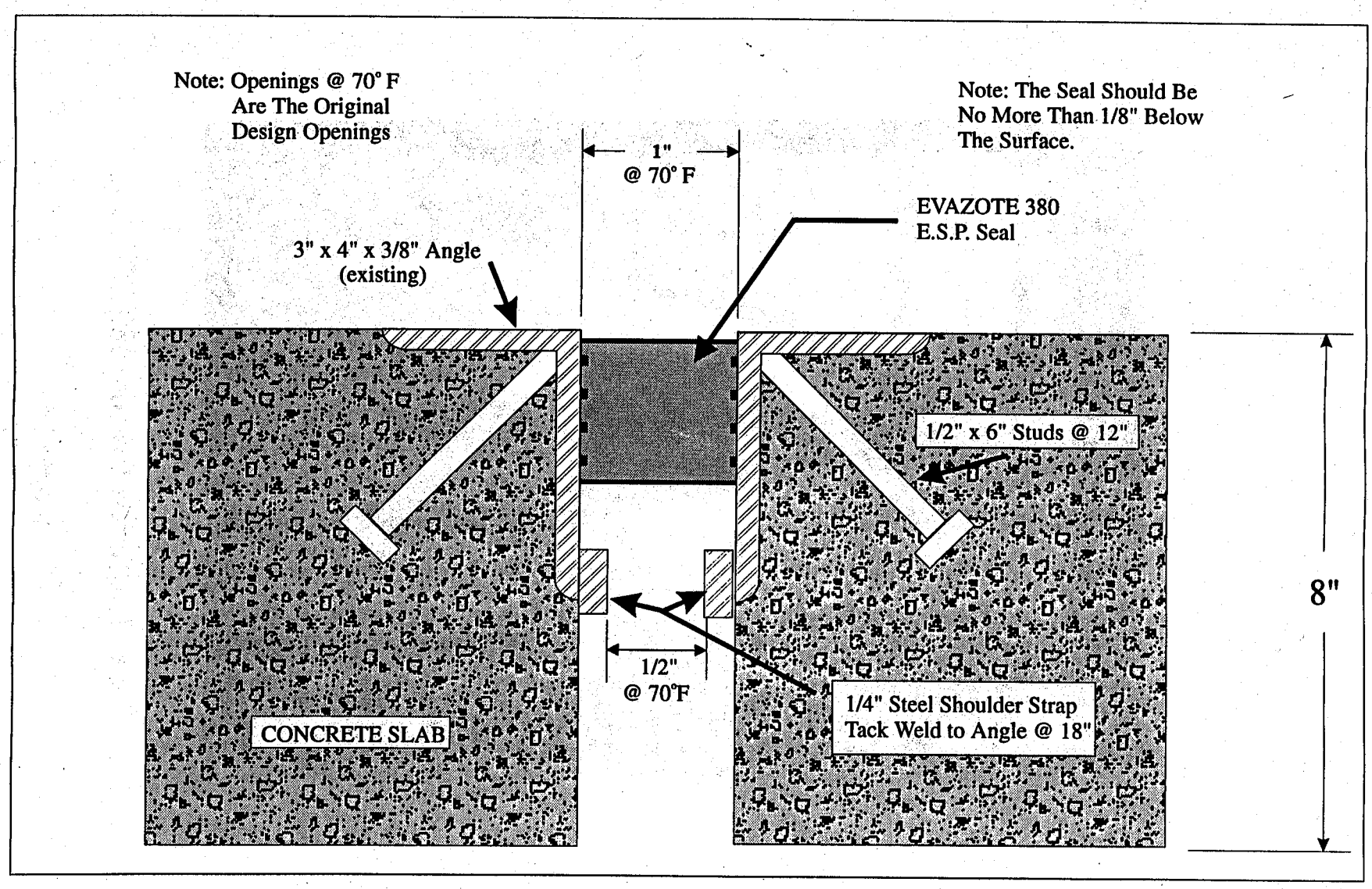
feet (5') away from the barrier wall. It appears that the deterioration may be caused by embedded debris.

November 1994 Evaluation (see Table 5)

In the right shoulder, debris had created pockets of separation, in the seal. These pockets were 2-3" deep. In the right lane and right shoulder, the seal was separating (2-3" deep) from the armor angle. The length of separation in the shoulder was approximately (9") nine inches. In the right traffic lane, two locations (near a right wheel path) had separations approximately 8" - 12", long. Across other sections of the joint, the seal was beginning to separate at the top (separation 1/16" deep). The joint was leaking in the right and left lanes. The leakage was moderate. See Figure 24

June/November 1995 Evaluation (see Tables 6 and 7)

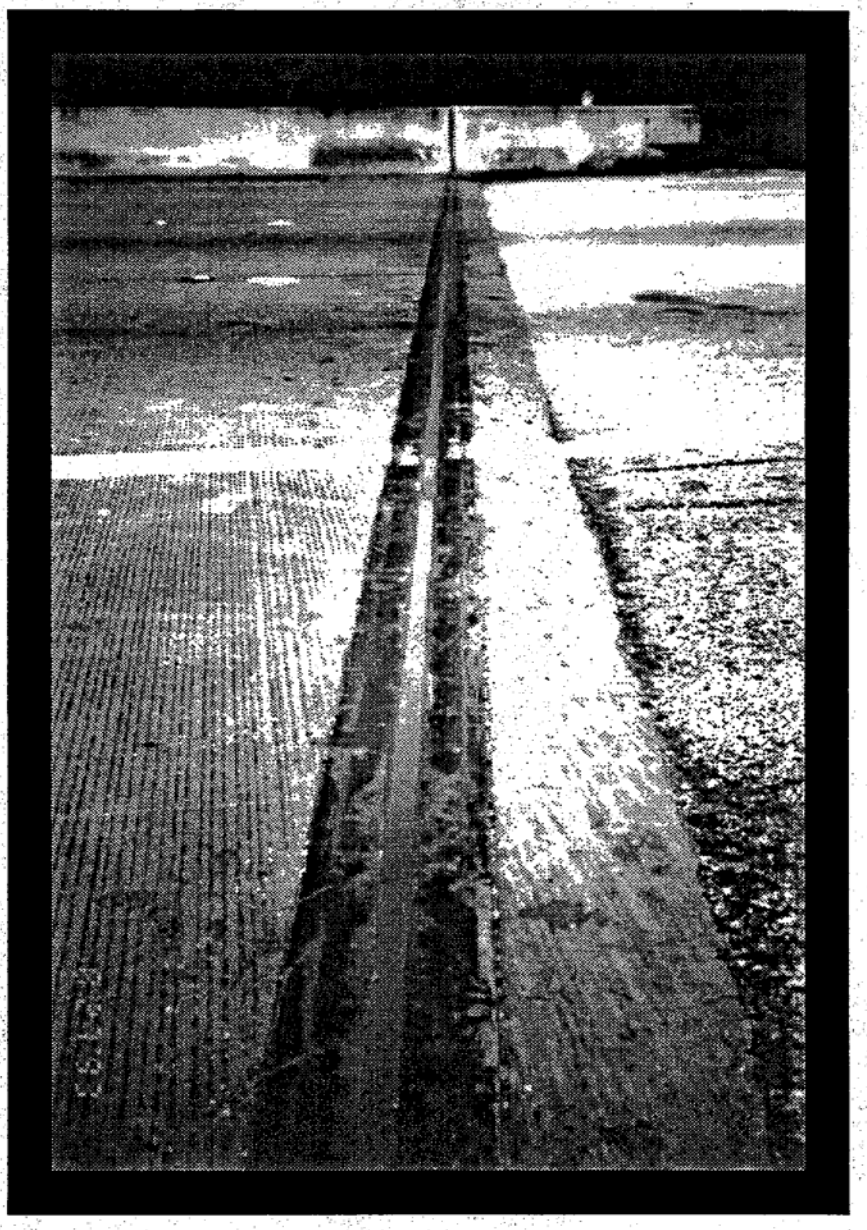
As noted in earlier reports, the seal was deteriorating in three small regions in the shoulder due to damage caused by debris embedment. In some locations in the traffic lanes, the seal was separating from the armor angle at the top surface. In several places the separation was only at the top surface. However, at several other locations (three locations in the right lane, one location about 2 feet long in the center lane, and two locations in the left lane) the separation was relatively deep (up to two inches). In the left lane, there was a region of separation from the shoulder to approximately 48" into the lane. See Figure 25-26.



Epoxy Industries: EVAZOTE 380 ESP Seal

(Typical Section in Existing Armored Joint)

Figure 23



Epoxy Industries: Evazote 380 ESP Seal

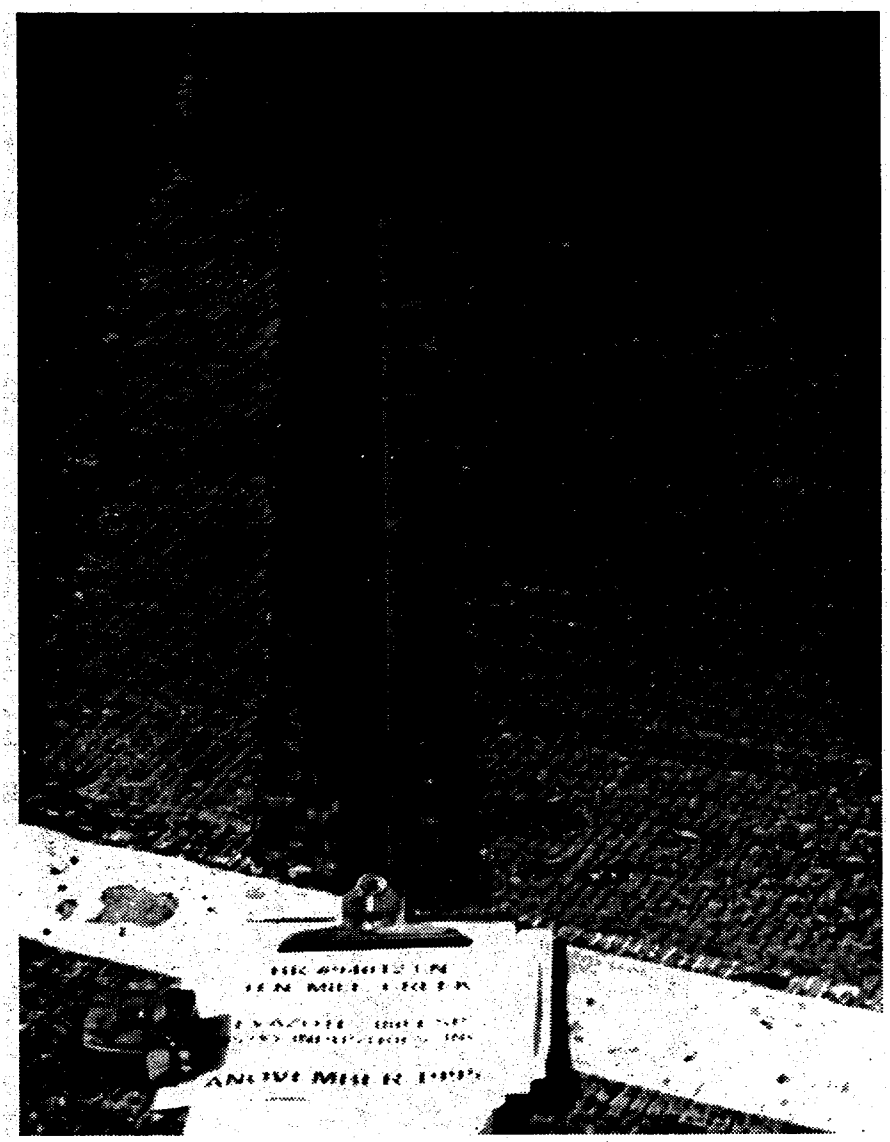
Figure 24

June 1995

Epoxy Industries Inc.:

EVAZOTE 380 ESP Seal

Figure 25



Nov 1995

Epoxy Industries Inc.:

EVAZOTE 380 ESP Seal

Figure 26

3.6 EPOXY INDUSTRIES, INC.: CEVA 250 JOINT SYSTEM & CEVA 300 JOINT SYSTEM

Both the CEVA 250 System and the CEVA300 System were installed in the same joint, the south end bent joint on bridge #940116. The CEVA 250 System consists of NOVUL CRETE (nosing material), EVAZOTE 380 E.S.P (seal) and EVA-POX BONDER (epoxy). In addition, to the three elements of the CEVA 250 System, the CEVA 300 System has steel armor. The steel armor is the only element that distinguishes the two systems. Typical sections of the CEVA 250 System and the CEVA 300 System are shown in Figures 27 and 28, respectively.

"NOVUL CRETE is a modified elastomeric compound for use with armor nosing in high-stress, transitional area where a flexible, non-shrink, energy-absorbing and watertight, non-vulcanized expansion joint end dam is required."[18] EVAZOTE 380 E.S.P. "is an impermeable closed-cell, cross-linked, ethylene vinyl acetate, low density polyethylene copolymers, nitrogen blown material that is weather and wear resistant."[19] "EVA-POX BONDER is a 100% solid, two component, modified epoxy, adhesive designed for bonding cured concrete to: wood, steel, cured concrete or other construction material."[20] The steel armor used in the CEVA 300 System consists of steel angles with sinusoidal anchors.

According to the manufacturer, the advantages of the CEVA Systems include: rapid and easy installation; custom cut to fit any requirement; field vulcanization; tragic may be resumed in four hours; capability of handling up to 100 feet of hydrostatic head (43.3 psi); double watertight system; chemical, weather and wear resistant; handles 60% compression, 30% tension, and 120% shear, energy absorbing; superior resiliency; can bond to most construction materials eliminating conventional anchoring systems; zero maintenance; cost efficient; quiet joint; performs well in temperature: ranges of -94°F to +160°F; joint is self cleaning.[21]

3.6.1 Installation Notes/ Comments

This was; the first test joint installed after the FDOT's contractor began removing the original expansion joints. Before this installation began, there was a significant delay caused by disagreements associated with the FDOT contract for removal. This delay did affect the installation of the CEVA 250 and CEVA 300 Joint Systems. Because of the resulting time constraints, the joint supplier's representative and crew, did not install the two systems as planned in two distinct halves. Instead beginning at the right barrier wall, workers installed approximately , 23 feet of the CEVA 250; System, 26 feet of the CEVA 300 System, 15 feet of the CEVA 250 System, and 16 feet of the

CEVA 300 System, in that order. Figure 29 shows the CEVA 250 System. One location where the two systems joins are shown in Figure 30.

The workers installed the first section of the CEVA 250 System with several curves in both the nosing and the seal. Overall, the appearance of the, joint was and is less than pleasant. Mainly, the NOVUL CRETE finish is rough, not smooth and uniform.

The installation procedure included the following steps: sandblasting and cleaning the joint opening; positioning and anchoring the steel angles in place (for the CEVA:300 System); placing a form (foam) to fill the joint opening and prevent the nosing material from entering the joint; mixing the NOVUL CRETE by combining the two components, (A&B) and blending in the aggregates; placing the NOVUL CRETE mixture to form the nosing for the joint; allowing the nosing to cure for one hour, removing the form from the joint opening; preparing the EVAZOTE 380 ESP seal for installation (this included heat welding a section to the seal along the barrier wall); mixing the two components of the EVAPOX BONDER (adhesive); applying the adhesive to both vertical surfaces of the joint and to both sides of the seal; installing the seal; and allowing the epoxy to cure for thirty minutes.

3.6.2 Field Performance - Ceva 250 Joint System

March/August 1994 Evaluation (see Tables 3 and 4)

There were problems developing in the CEVA 250 Joint System. While the problems may have been due to difficulties that occurred during installation because of time pressures, the problems still existed. Therefore, the CEVA 250 Joint System is not performing satisfactorily.

While installing the first section of the Ceva 250 Joint System, workers placed both the nosing and the seal with several curves. In a section (approximately two(2) feet) including one of these curves, the NOVUL CRETE was breaking down and separating from the seal. See Figure 3.1. Near a transition between the two systems, there was wear in the nosing material that looked like a small spall. In other spot locations, there were minor surface cracks in the nosing. The joint system was leaking in the right shoulder and right traffic lane (between beams 2, and 3).

According to a representative for Epoxy Industries, Inc., the forms slipped during the installation but sufficient time did not exist to correct the situation properly. As a result the nosing material was cantilevered into the joint at several locations. In these cantilevered sections the nosing material did not have adequate support and, therefore, were breaking down. The representative believed the

problem, areas (i.e., spalling) in the_ joint were at locations where the forms slipped.

According to the representative "the existing condition is repairable. This would consist of saw cutting the nosing back to straighten out the joint, reinstall new nosing material where needed (it will bond to itself to provide a monolithic pour) and remove the Evazote-380 joint seal only in the problem area. Heat welds a new section of Evazote-380 E.SY into position and installs with Evapox bonder."[22] This repair would require approximately four (4) hours.

November 1994 Evaluation (see Table 5)

In the Ceva 250 System, at beginning of the Ceva 300 System, there was a crack along the edge of steel. In the middle traffic lane, there was separation from the bridge and signs of some deterioration in the header. In the vicinity of the form slip (during installation) the separation and spall were about the same as in the past. However, new signs of deterioration were present in a few other locations. There was a longitudinal crack (separation) in the right wheel path of a right lane. In the middle traffic lane, the headers were separating from a roadway deck in the left wheel path and in the right wheel path. There were many small, yet visible, cracks in the nosing material along its length.

JunelNovember 1995 Evaluation (see Tables 6 and 7)

In both shoulders the joint system looked satisfactory. The traffic lanes showed clear signs of wear. In the right lane, the separation of the nosing was not much different from the early stages near a form slippage during installation. However, there were many lengthwise cracks in the nosing. These cracks (possibly superficial) were very noticeable. Within an 8 foot section of the right (east) lane, there were three small areas of breakage in the nosing.

In the center traffic lane, in two locations the nosing was separating from the deck surface. This occurred for nearly two feet in the south header. Also, there were lengthwise cracks in the nosing. In the left traffic lane for approximately 16", the south header was separated from the deck. Overall, the cracks and separation of the nosing occurred primarily in the Ceva 250 Joint system and not the Ceva 300 Joint System. See Figure 32 - 33.

3.6.3 Field Performance - Ceva 300 Joint System

March/August 1994 Evaluation (see Tables 3 and 4)

The steel armor in the Ceva 300 Joint System is made of weathering steel. As a result, a protective rust coating has developed and gives the steel a rust coloring. Usually, steel armor in

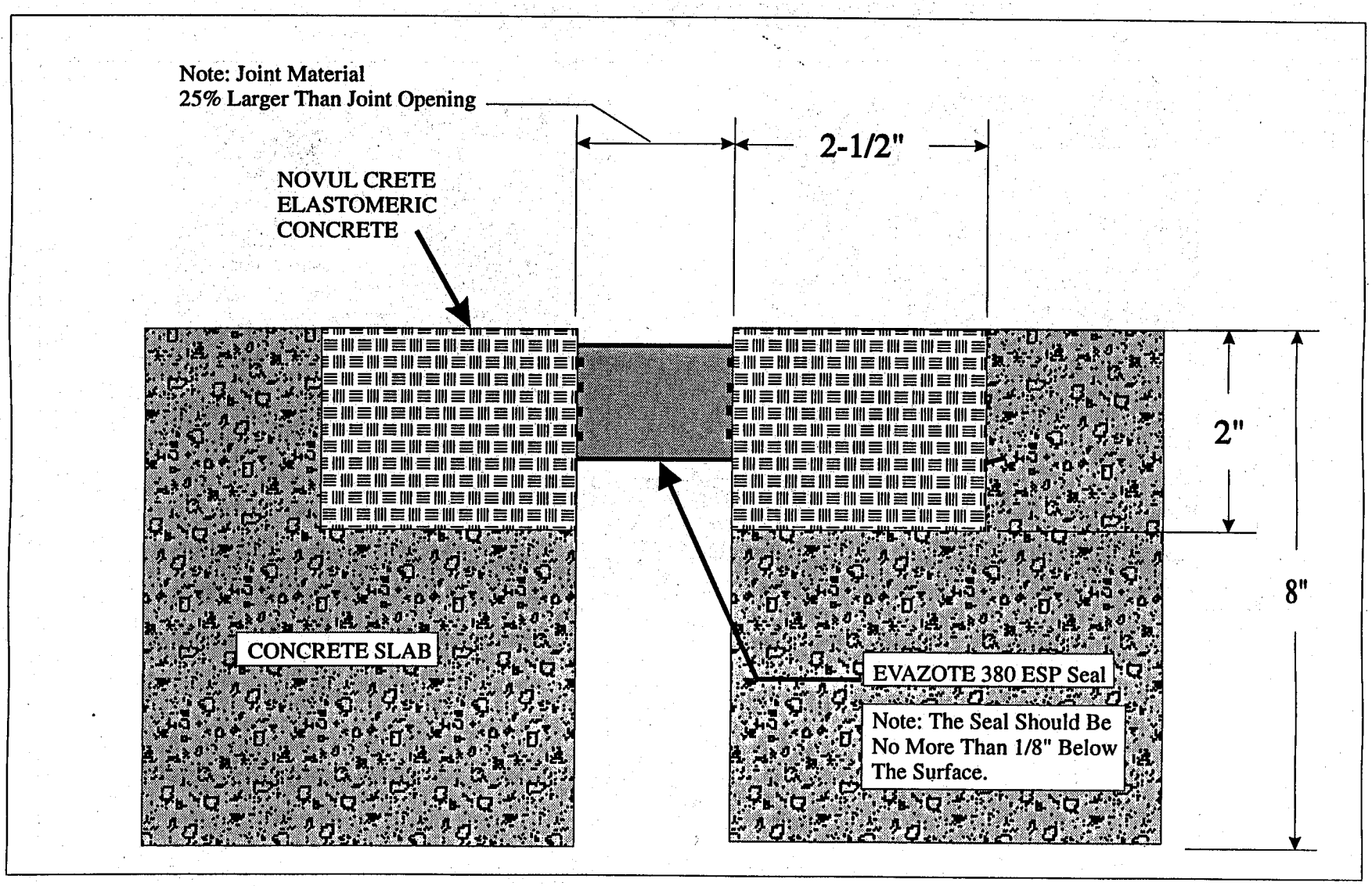
MOT bridge expansion joint systems is galvanized for a shiny finish. The SRC did not specifically request galvanized steel for the test joints. The Novulcrete in the Ceva 300 Joint System is performing well. Thus, although the joint system is less than neat and a spall exists near the transition between systems, the Ceva 300 Joint System is performing satisfactorily.

November 1994 Evaluation (see Table 5)

In a few locations, there were some small cracks in the nosing material along the length. However, these cracks were not as noticeable and abundant as in the Ceva 250 System (system without the armor angle).

June/November 1995 Evaluation ***(see Tables 6-and 7)***

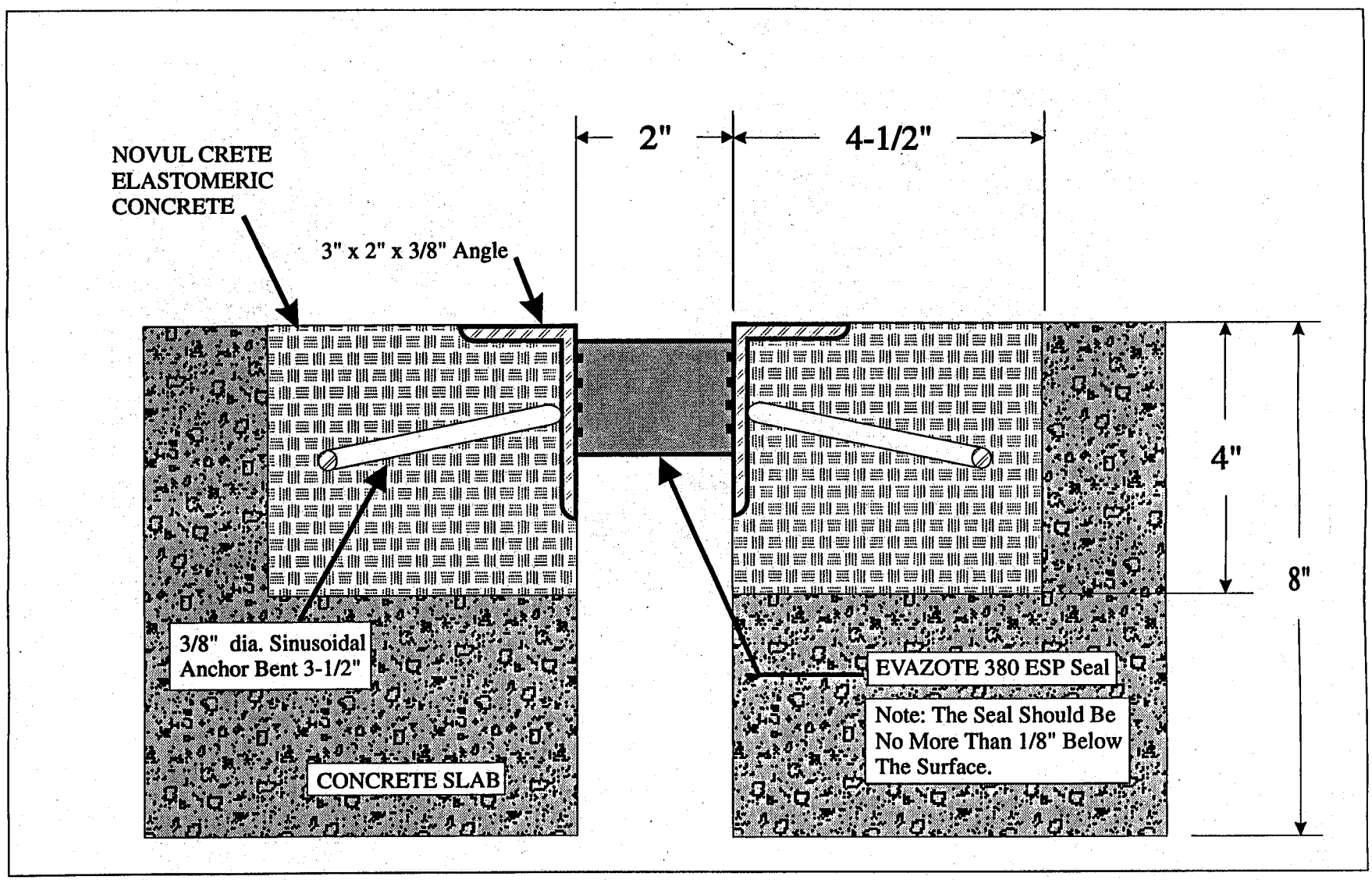
The appearance of the CEVA 300 Joint System was borderline. However, the joint system was performing satisfactorily. There may not be any major problems with the CEVA 300 System (which has armor angles in the nosing material). See Figure 32 - 33.



Epoxy Industries: CEVA 250 Joint System

(Typical Section)

Figure 27



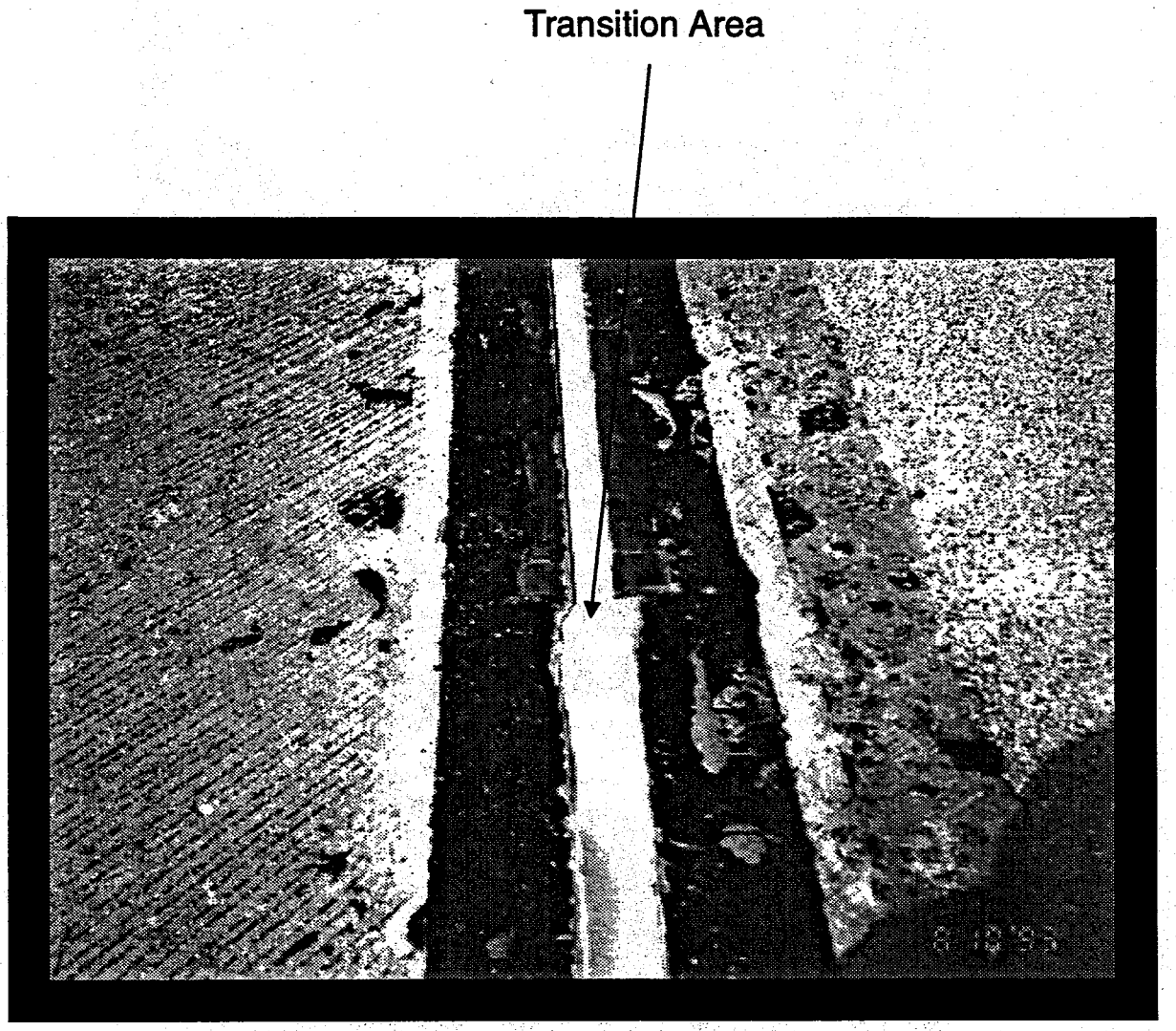
Epoxy Industries: Ceva 300 Joint System

(Typical Section)

Figure 28

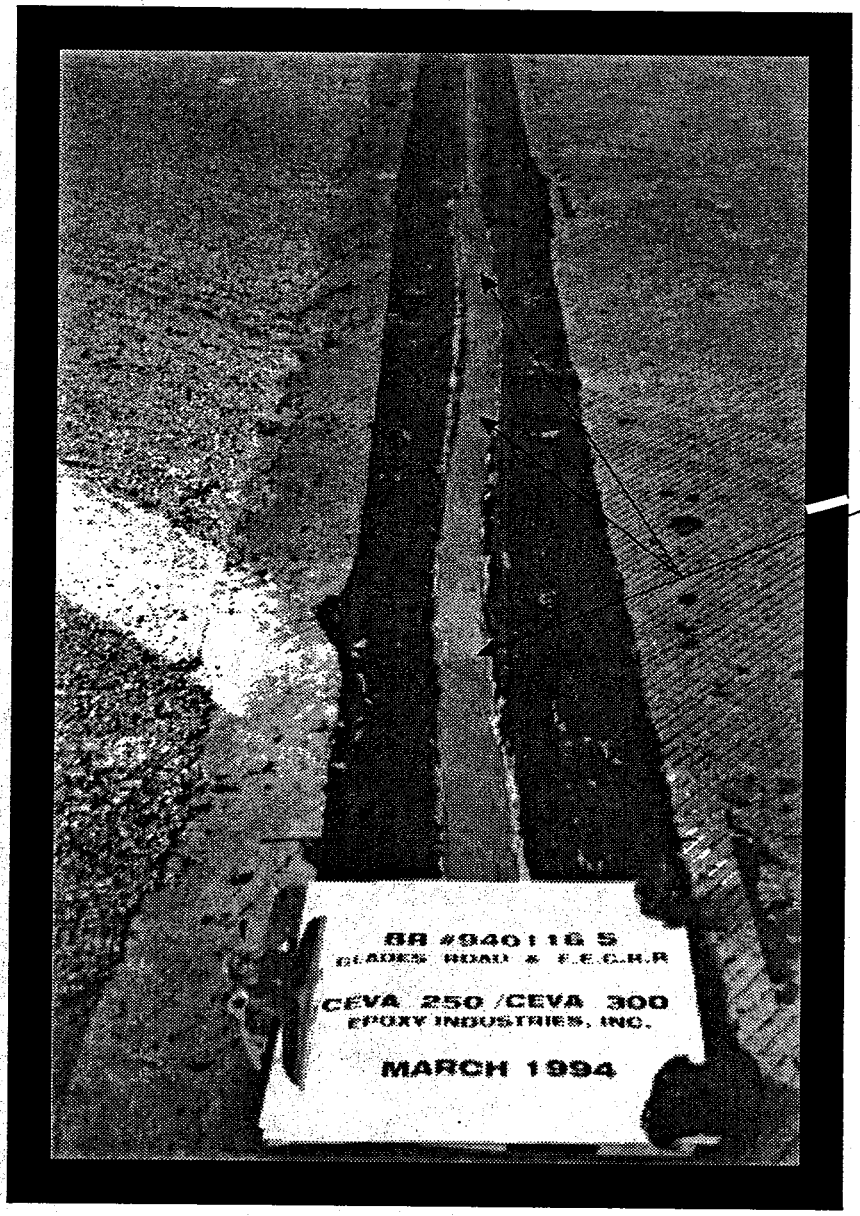
Epoxy Industries: CEVA 300 & CEVA 250 Joint System

Figure 29



Epoxy Industries: CEVA 250 & CEVA 300
Joint System (Transition Area)

Figure 30



Epoxy Industries: CEVA 250 Joint System
(Problem Areas)

Figure 31

June 1995

Epoxy Industries Inc.:

CEVA 250/ CEVA 300 Joint System

Figure 32

November 1995

Epoxy Industries Inc.:
CEVA 250/ CEVA 300 Joint System

Figure 33

3.6 HYDROZO/JEENE: JEENE STRUCTURAL SEALING JOINT SYSTEM (PC35)

Hydrozo/Jeene literature fists the following features and benefits of the Jeene Structural Sealing Joint System:

"- Allows free movement of concrete structure in any direction without joint system failure.
-Complete adhesion (maximum bonding) of epoxy adhesive to the profile and a joint wall is achieved due to the air-inflation: during installation.
- Lower expansion Joint exposure that reduces chance of wear and tear` to system from traffic.
- Easy to specify.
- Has excellent movement range +50% each direction (total 100%) for the most demanding joint -conditions?
- Design assures that profile will not bulge above surface level.
- Allows for re-bonding of spliced profiles, without loss of water tightness.
- Can take skew, rotational, dynamic load and retraction movements that also mean it will not pop up or fall out?
- Withstands temperature changes (thermal cycles of –30° F to 140°F).
- Resistant to ultraviolet and ozone degradation.
- Highly resistant to most chemical, oils, etc.
- Puncture resistant.
- Can be used in new construction and repair of any existing joints.
- Can be installed for linear; angular or circular expansion joint applications.
- Can be installed to concrete or steel :armored angles."[3]

The Jeene seal (profile) may be installed in new or existing construction without cutting concrete. The seal can be installed to concrete or steel armor angles. Hydrozo/Jeene has three (3) different nosing materials that maybe used in the joint system: Jeene Polymer Nosing (JPN), Polymer Concrete (PC35) and Polymer Concrete (PC92M). Both of the polymer concrete nosings (PC35 and PC92M) are included in the MOT test program: PC35 and PC92M were installed on bridge #940126 and Bridge #940111, respectively. The joint with the PC35-nosing is discussed in this section.

The Jeene Polymer Nosing (which is not included in the test program) requires a least block out of only 1.5" by 0.75". Thus, for new construction, if a Jeene Structural Joint Sealing System is to be used, using the JPN nosing may result in both time and cost savings (above those for the test joint installations) since less material will be required. For the FDOT test program, the size of the block out for the joint was determined by the removal of the armor, angle from the existing expansion joint system.
"The PC-35 is used for permanent rehabilitation of joint gap heads on roadways, bridges, parking

garages or any concrete structure. Maximum properties of abrasion, chemical and mechanical resistance are achieved after 45 minutes to 2.5 hours (curing time) at temperatures from 30 F to 105F. This product is solvent free and has a pot life of 10-15 minutes." 24 A typical section of the Jeene Structural Joint Sealing System using the PC35 nosing is shown in Figure 34.

3.7.1 Installation Notes/ Comments

The FDOT's contractor began removing the existing joint system using the concrete saw. Near the end of the process, the saw blade broke. Hyrozo/Jeene used a torch to cut the armor angles in sections and finish the removal process.The installation of the Jeene joint included: sandblasting and cleaning the joint opening; placing taped styrofoam in the joint opening to prevent the nosing from entering; applying a primer to the surfaces, mixing the nosing materials in the mortar mixer; placing the nosing, curing the nosing; removing the Styrofoam; cleaning the joint with compressed air, grinding the top and inside a surface of the joint opening; sandblasting the joint; cleaning the joint with compressed air, applying a primer; placing adhesive (ADE-52) on the seal and the vertical walls of the joint; installing and pressurizing the seal; and cleaning up the excess adhesive. The installation progressed well without complications.

3.7.2 Field Performance

March 1994 Evaluation (see Table 3)

Until recently, this joint system did very well. FDOT inspectors consistently rated the joint system highly on all field performance criteria. After the June 23, 1994 inspection, a localized failure of the nosing material occurred. In August 1994, the SRC noted a breakage in the nosing material (on the south header only) in the left wheel path of the center lane. In addition, a crack developed at the interface of the north header and the roadway in the right wheel path of the right traffic lane. There was evidence that the joint system leaks near girder #3. The joint system is shown in Figure 35.

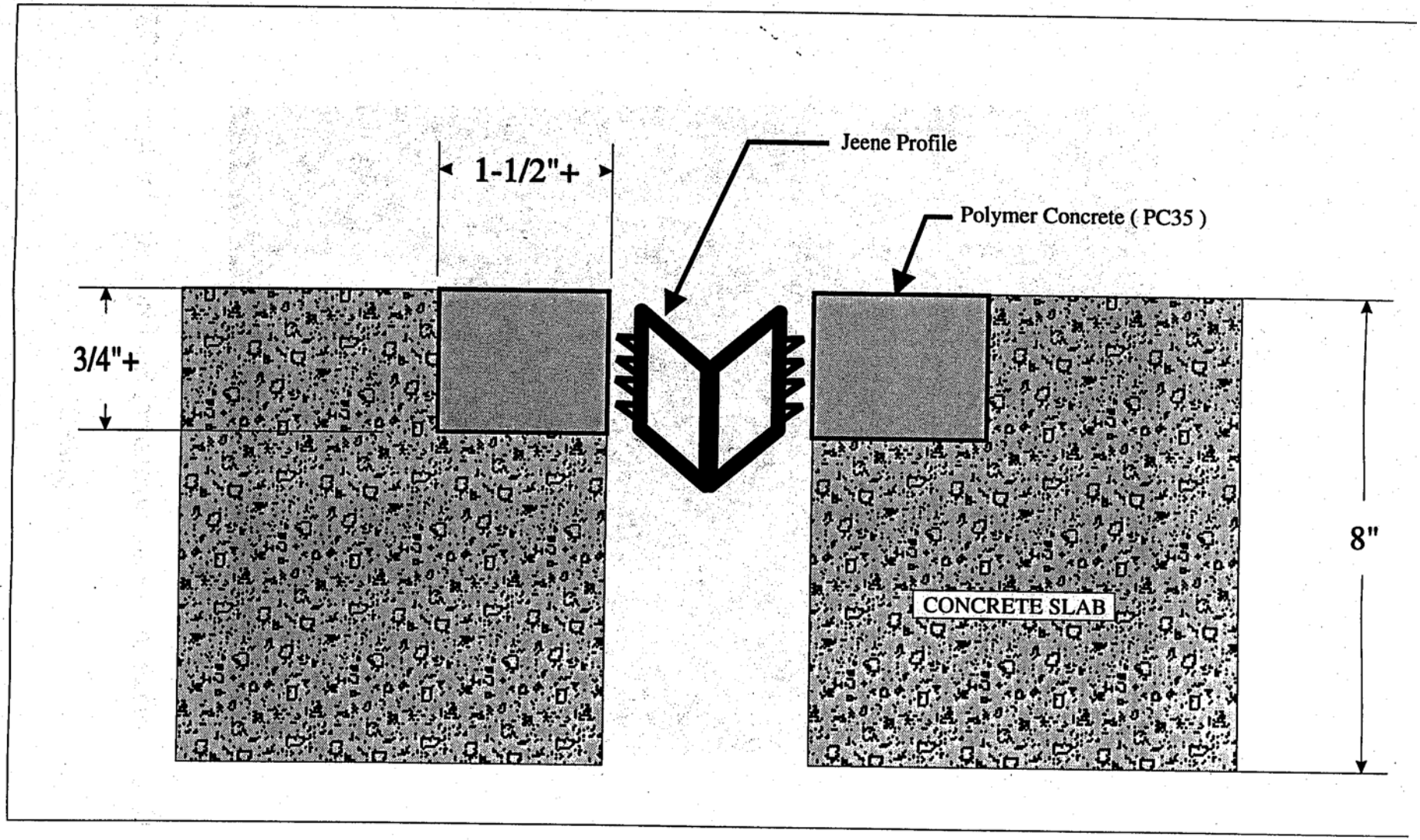
November 1994 Evaluation (see Table 5)

The joint had a 0.7 inch opening. In a 2 foot length of the south header in the center lane near the left wheel path, the nosing completely failed. At the edge of the right lane there was a transverse crack. A separation of a north header from the bridge deck (along the length of the header but transverse to the deck span) extended approximately 3.5 ft., beginning near the left wheel path of the right traffic lane. Otherwise, the joint looked good and sound in all other locations. A small amount

of debris was accumulating in the joint, primarily in the shoulders.

June/November 1995 Evaluation (see Tables 6 and 7

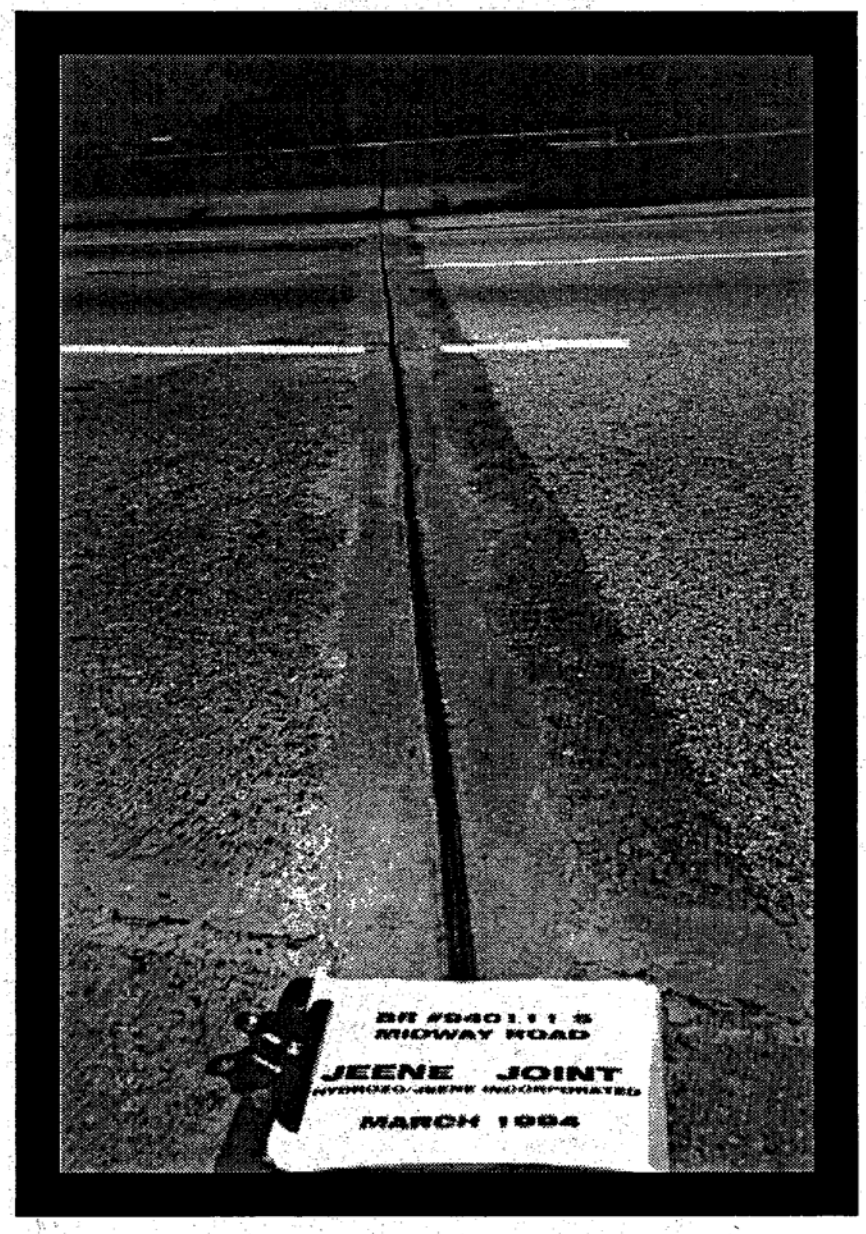
This joint had two major spalls The first one is 28 inches long in the, right traffic lane on the north header and the second one is 24 inches long in the center lane on the south header. There was also a crack indicating a slight separation of the north header from the. bridge deck in the right traffic lane. See Figures 36 and 37. Although, the nosing failed, the jeene structural seal performed very well.



Hydrozo/Jeene: Jeene Structural Sealing Joint System (PC35)

(Typical Section)

Figure 34



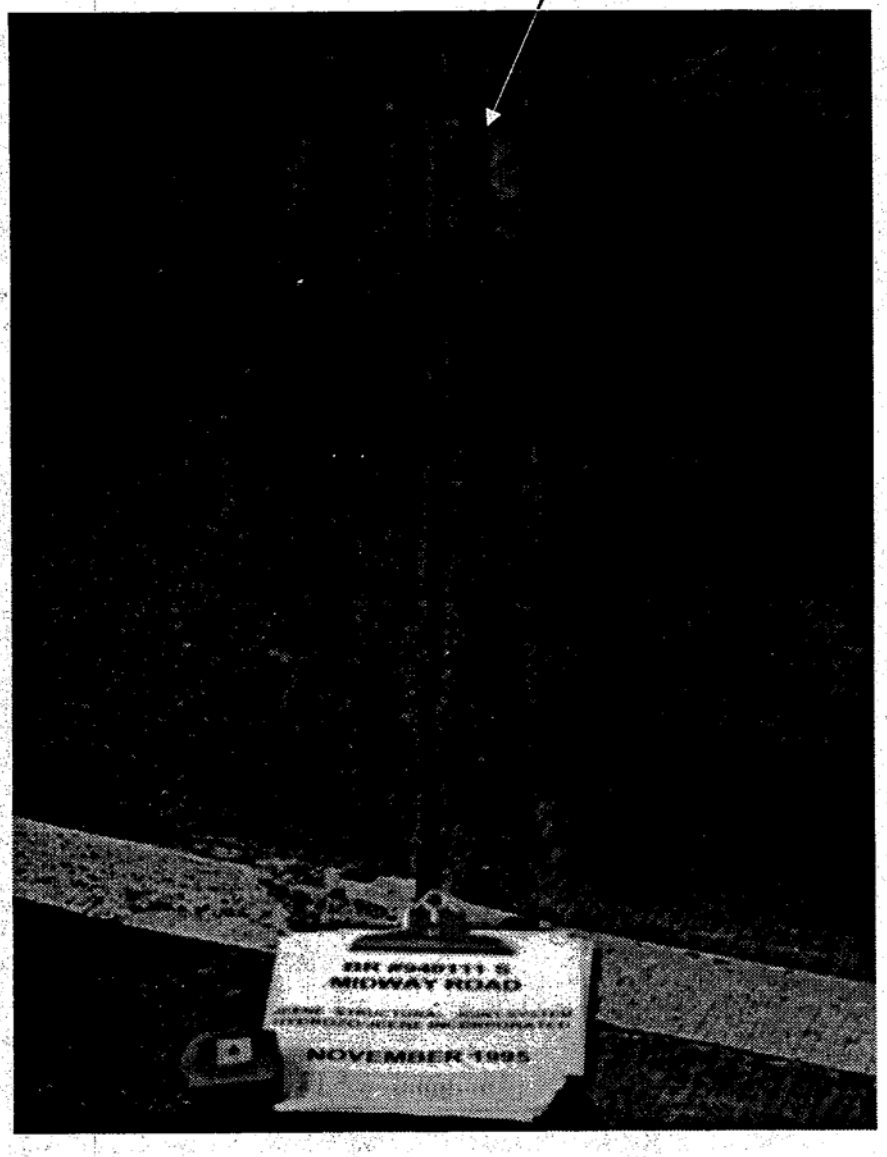
Hydrozo/Jeene: Jeene Structural Sealing Joint System (PC35)

Figure 35

June 1995

HYDROZO/JEENE INC:
HARRIS SPECIALTY CHEMICALS
JEENE STRUCTURAL SEALING JOINT SYSTEM (PC35)

FIGURE 36



Nov. 1995

HYDROZO/JEENE INC:

HARRIS SPECIALTY CHEMICALS

JEENE STRUCTURAL SEALING JOINT SYSTEM (PC35)

Figure 37

3.7 HYDROZOMEENE: JEENE STRUCTURAL SEALING JOINT SYSTEM (PC92M)

The features and benefits listed in the previous section for the Jeene Structural Sealing Joint System also pertain to the system using the PC92M nosing. The PC92M is pre-batched for easy mixing and placing. Figure 38, shows atypical section of the joint system.

3.8.1 Installation Notes/ Comments

Hydrozo/Jeene came well prepared and had all equipment necessary to both remove the existing joint and installed the new joint. Because, the FDOT's contractor was behind schedule and still working at Bridge #940122, on the first day, August 23, 1993, Hydrozo/Jeene began to remove the existing joint. Workers used torches to remove the armored steel and a jackhammer to remove the concrete and create a block out. Near the end of the removal process, All American Concrete Cutting Company made a saw cut on each side of the remaining steel angle(in the middle traffic lane) to help Hydrozo/Jeene finish removing the angle from the joint.

The installation of the Jeene joint included: sandblasting, and cleaning the joint opening, placing a form to prevent the nosing from entering the joint, applying a primer to the surfaces, mixing and placing the nosing: in 1/2 cf. batches, curing the nosing for two (2) hours, and installing and pressurizing the seal. Workers began to install the seal, after the nosing had cured for one (1) hour, the workers removed the form, used a grinder to roughen the vertical walls of the nosing, applied adhesive and installed the nosing. The installation progressed smoothly without complications. On the first day, Hydrozo/Jeene installed 36 feet of joint. On the second day, the FDOT's contractor removed the remainder of the existing joint system and Hydrozo/Jeene workers installed the final 26 feet of joint. The average installation time on both days was approximately five (5) hours.

3.8.2 Field Performance

MarchlAugust 1994 Evaluation (see Tables 3 and 4)

The joint system was performing unsatisfactorily. There was a crack at the interface between the header material, PC92M, and the concrete deck. See Figure 39. This crack was highly visible on the header material at the beginning of the bridge (on the. approach slab side of the concrete deck). This crack extends from the right shoulder into at least one third of the right traffic lane. At the widest location the crack is approximately 1/10" wide. In some locations the depth of the crack

(space between header and deck) was approximately 0.25" deep. In other locations, the depth was approximately 1.75" deep. Leakage was occurring as result of the crack. Except the existence of this crack, which was a major concern, this joint, the header material and the seal, looked good. The header material did not show any signs of breaking down. However, such a crack should not exist in a well functioning expansion joint system.

According to Mr. Martyn Adshead, Vice President, Transportation Products for Hydrozo/Jeene Inc., the debonding (crack) occurred because "the primer material was applied too heavily and as a result was slow to cure. When the Jeene joint was installed and inflated, the resulting pressure caused the section of polymer concrete, which was in contact with the uncured primer, to move and separate from the substrate."[25] Mr. Adshead further states: "because of our investigation into the situation, we have improved the primer application technique and can positively state that this situation will not reoccur. "[26]

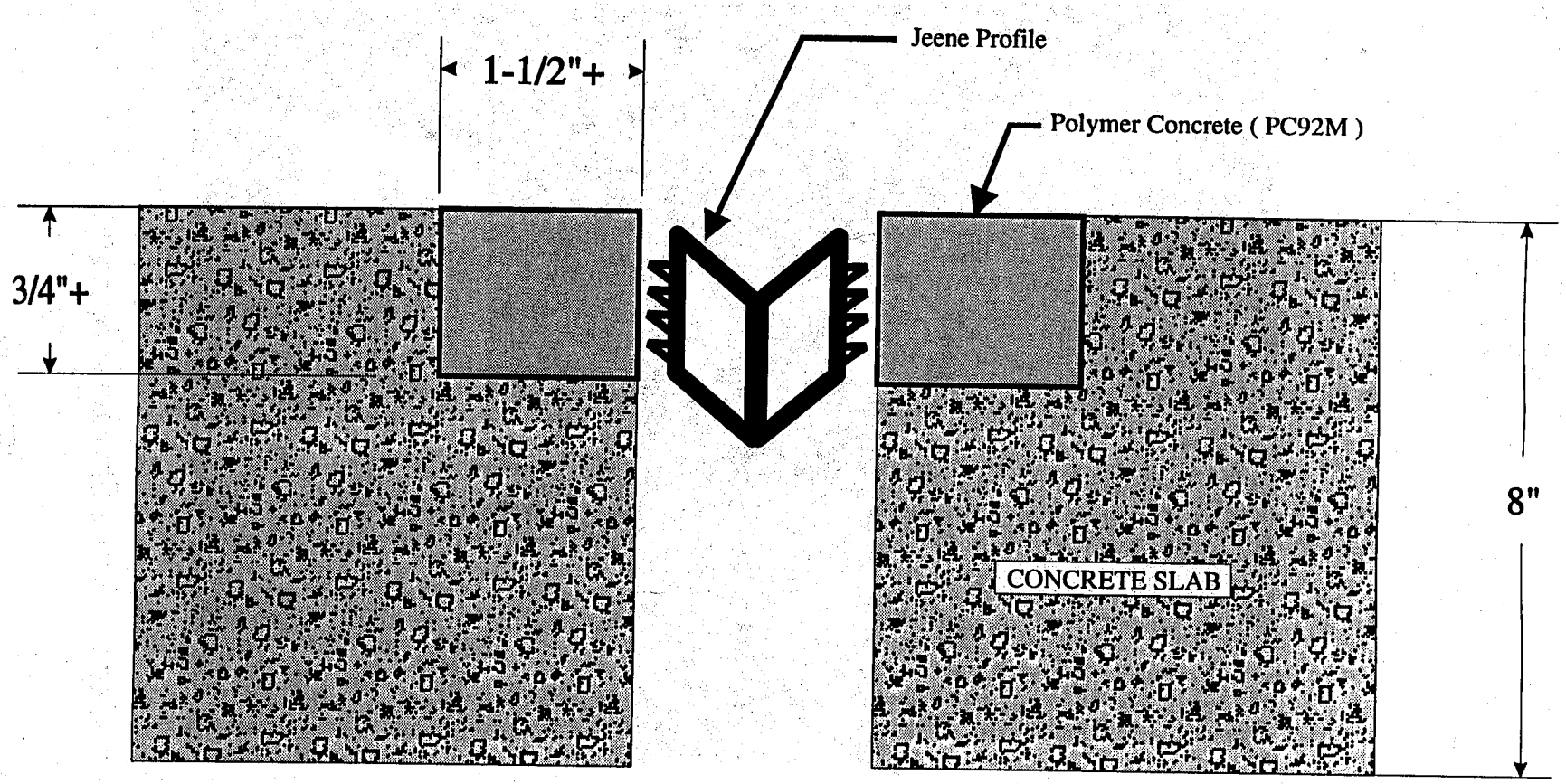
In May 1994, Hydrozo/Jeene did a partial repair on the joint system and replaced a section of the north header (from the right shoulder to, the middle traffic lane). In August 1994, this repair was evident but the repaired material was beginning to separate from the roadway. In addition, in the right shoulder the nosing on the north header (from the original installation) was separating from the roadway. At the interface of the south header and the roadway, a crack has developed (due to the separation). At this location and other locations along the joint, the joint system is leaking. Excluding the separation, the joint system (both the nosing and the seal) look very good. Separation and leakage (at the interface) were the problems with this joint system.

November 1994 Evaluation (see Table 5)

Because of separation of joint system from the roadway deck at the interface, the joint system was leaking in many places. This included leakage between or near' all beams except the four (4) beams on the east side.

June/November 1995 Evaluation (see Tables 6 and 7)

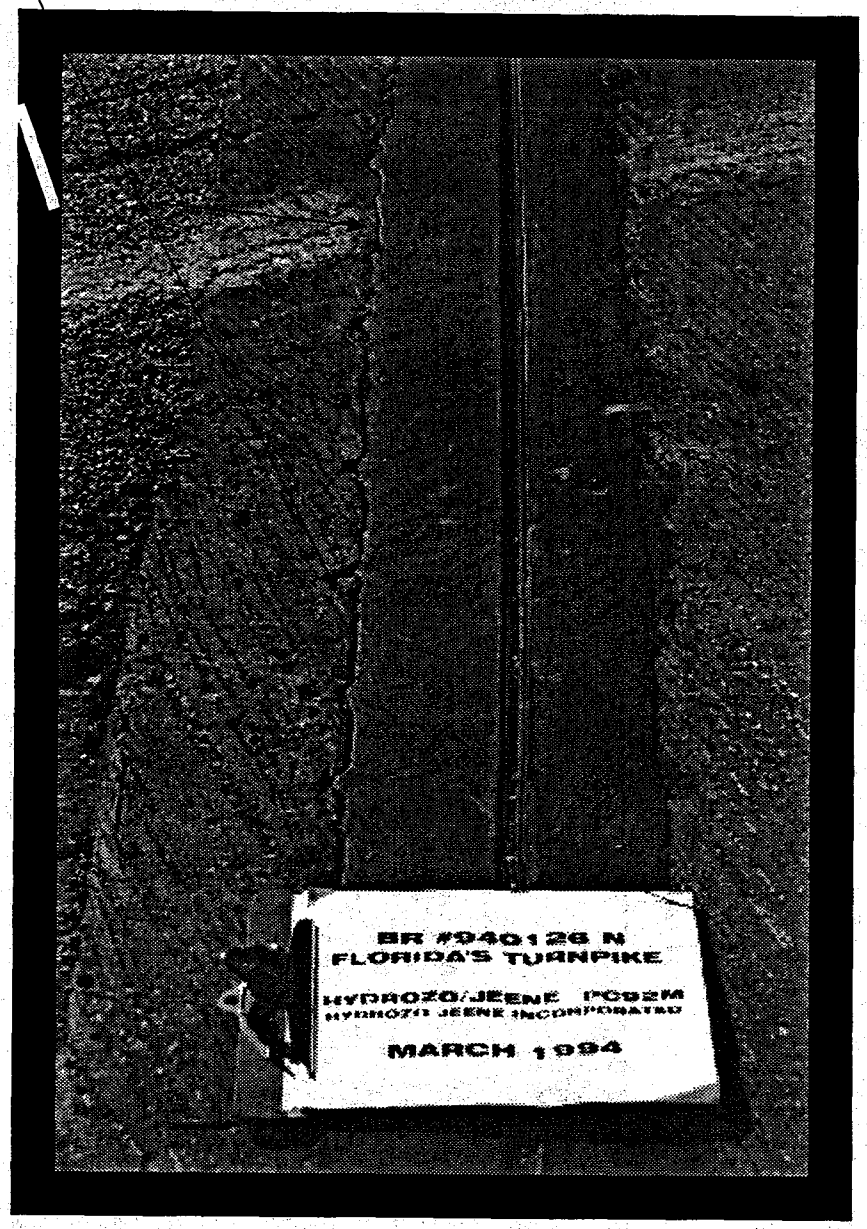
Due to the excessive separation of the nosing from the bridge deck, the joint failed Since the November 1994 evaluation, bridge deck repair resulted in the removal of a portion the nosing. This was not critical since the joint was scheduled to be replaced. Although the nosing failed, the Jeene structural seal did very well. See Figure 40.



Hydrozo/Jeene: Jeene Structural Sealing Joint System (PC92M)

(Typical Section)

Figure 38



Hydrozo/Jeene: Jeene Structural Sealing Joint System (PC92M)

Figure 39

Nov 1995

HYDROZO/JEENE INC.

HARRIS SPECIALTY CHEMICALS

JEENE STRUCTURAL SEALING JOINTSYSTEM (PC92M)

Figure 40

3.9 PAVEMENT TECH.& MAIN.: KOCH BJS JOINT SYSTEM

"The BJS system by KOCH uses an asphaltic plug-type design to create a long-lasting, flexible, waterproof expansion joint that will accommodate expansion movement of up to 2 inches."[27] "This system has been used on a variety of bridges throughout the country. The asphaltic plug system has been in use on the highways worldwide for more than 18 years."[28]

The BJS system consists of four, (4) material components: Backer Rod, Bridge Plate, Bridge Joint Binder, and. Aggregate. The Bridge Joint Binder (BJB) is a "thermoplastic, polymeric, modified asphaltic binder used to seal the expansion joint gap above the backer rod to a minimum of 1" depth; used as a coating material for all internal faces of the joint trench; used as a binder for aggregate."[29] "Blending of the BJS system components: [BJB and aggregate] is performed in a heated, rotating blending unit. "[30]

"The precision demanded in the blending and installation of the system required that all BJS system installations are performed by selected and factory-trained BJS Applicators/ Licensees. Koch Materials Company continuously monitors the activity of the trained technicians to insure compliance with installation procedures."[31] For new construction, the system requires 20 inches wide and 2 inch deep block out. A typical section of the KOCH BJS Joint System is shown in Figure 41.

3.9.1 Installation Notes/ Comments

A total of three (3) joints were installed on bridge #940112. Workers for Pavement Technology and Maintenance, Inc. installed the KOCH 2000 SL Bridge, Joint Sealant at the south end joint, the KOCH BJS Joint System at the north end approach slab joint; and the R. J. Watson, Inc. FLEXCON 2000 Joint Sealing System at the north end joint. Pavement Technology and Maintenance, Inc. (PT&M) is the licensee/contractor for both the Koch and R. J. Watson joint systems.[32] The total number of people present, including Mr. Lee Norman and Mr. Stewart Watson, was nine people. However, not all persons worked throughout the joint installations. Since three (3) joints were installed on this bridge, the average number of workers per joint was three (3) people.

On July 28, 1993, Workers removed asphalt and installed approximately 35 feet of the KOCH BJS Joint System at the north approach slab. This included the: right shoulder and two traffic lanes. Originally, the FDOT had -scheduled this joint system to be `installed at the south end bent joint. However, the joint removal contractor was finishing work at Bridge # 940116 and, therefore, was late arriving at Bridge #940112. Mr. Lee Norman noticed that the asphalt was cracked across the bridge width at the approach slab location, as shown in Figure `42. He stated that the Koch BJS Joint

System was suitable for this situation. He requested that PT&M be allowed to place the BJS Joint at this location. In addition, PT&M and RJW requested to install. a seal only at the south end joint. The MOT agreed to these requests.

Therefore, the Koch BJS Joint System was installed at the beginning of the north approach slab joint (where the asphalt roadway meets the approach slab). See Figure 43. While this location does, not experience the same amount of movement that occurs at the end bent joint (0.375 inches), the existence of the original cracks in the roadway pavement suggests that some movement occur at this location. The greatest difference in joint opening recorded for the south end bent joint of this bridge (Bridge #940112) is approximately 0.188 inches. The Koch BJS System is designed for movement of up to two inches (2"). The typical section of the Koch BJS Joint System installed at a bridge joint is shown in Figure 41. Since the system was installed at the bridge approach slab joint, the foam backer rod and the sealant were not necessary at this location.

The installation KOCH BJS Joint System progressed as follows:

1. The crew removed a 20" wide strip of the asphalt at the approach slab location. They used a pavement saw and shovels. It took approximately 40 minutes to remove a strip 35 feet long.
2. They cleaned the opening using compressed air.
3. Using hot compressed air lances capable of producing 3000°F , workers heated the existing pavement at the edges of the joint to bring the cold asphalt back to life. Workers poured a layer of hot asphalt (BJB Binder) into joint. The asphalt was superplasticized polymeric thermoplastic asphalt at a temperature of approximately 400°F. The binder was heated in a specially equipped container having continuous agitation and temperature controls.
5. A metal plate (bridging plate) was placed in the joint.
6. More hot asphalt (BJB Binder) was added to cover the bridging plate and the sides and bottom of the joint.
7. The specified aggregate was heated to 275°F to 325°F in a rotating drum mixer.
8. The Koch BJS system is a three layered installation using the specified aggregate, pre-coated with binder. Two layers use 3/4" aggregates. The top layer uses 1/4" aggregate. For each layer, the aggregate was mixed with the BJB Binder and applies to the joint.
9. After, the top layer was applied, the joint was compacted using a two (2) ton roller. 10. A thin layer of hot pour asphalt was added to the top of the joint.
11. Silica sand was sprinkled on the top of the finished joint.
12 The joint was ready for traffic 30 minutes to 1 hour after completion. The total time required for the installation of this joint was two (2) hours and forty (40) minutes.

On July 29, 1993, workers completed installation of the KOCH BJS Joint System. The remainder of the joint was installed using the same installation procedure described in the above paragraph. To prepare the joint material placed on the previous: day for binding with the new material, workers used the hot compressed air lance to heat the material in the joint. They completed approximately 25 feet of the joint system in 2 hours. The completed joint system required approximately thirty (30) minutes to cure.

According to Mr. Lee Norman, four (4) well-trained crew members can install the KOCH BJS Joint System at a rate of 120-130 linear feet per day. Figure 44 shows the completed joint system. After the joint system was completed, PT&M showed the ease with which the joint may be maintained or repaired: As demonstrated, if the joint system; is cut or scraped, the asphaltic material can, be repaired by heating the material with a heat lance. After such a repair, sand should be tossed on the joint to maintain a neat appearance.

3.9.2 Field Performance

March/August 1994 Evaluation (see 'Tables 3 and 4)

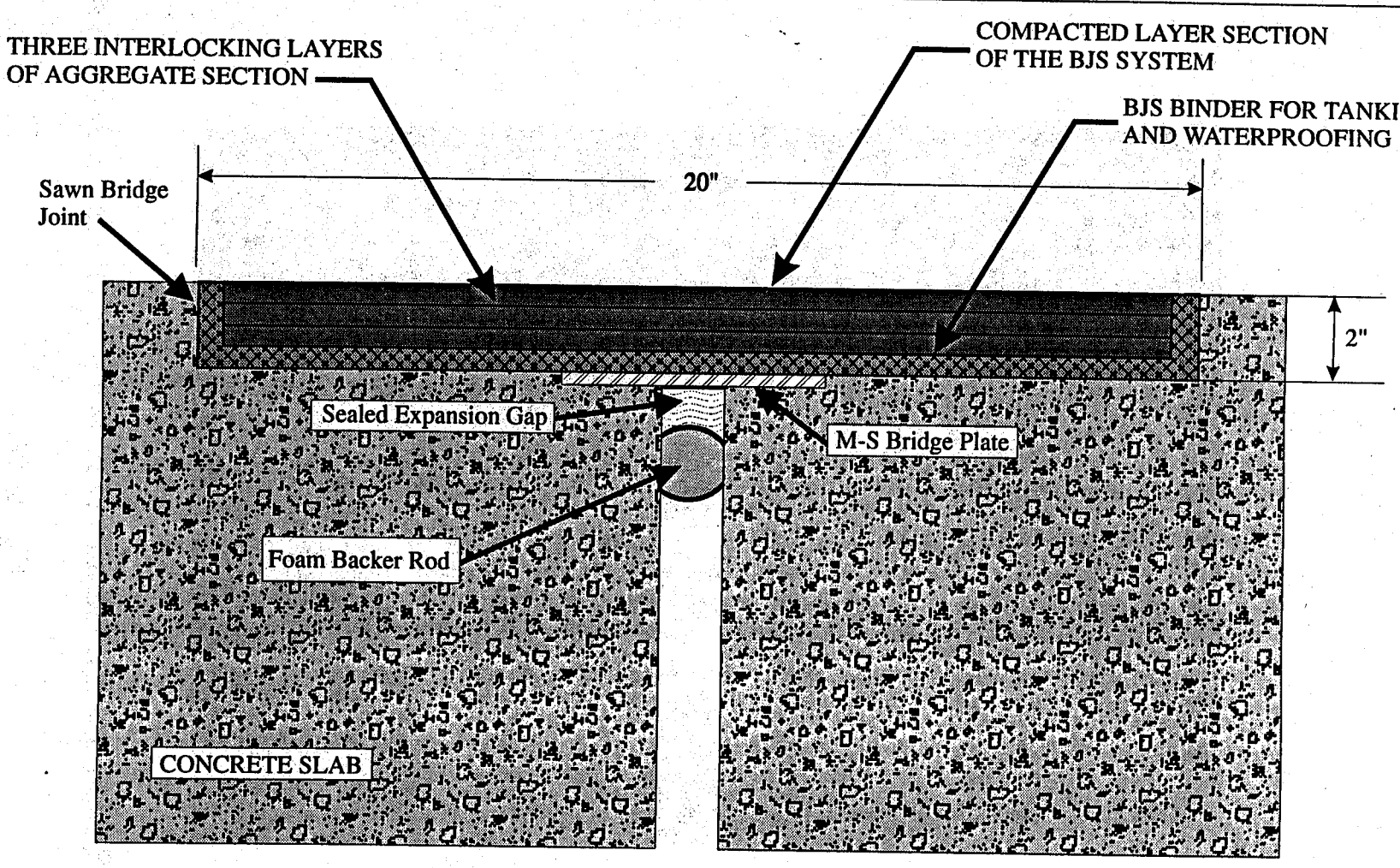
The location of the KOCH BJS Joint System was not at a bridge expansion joint. It was at the beginning of the north approach slab where the asphalt roadway meets the approach slab. While the movement at this location was different from at a bridge expansion joint, the traffic loads were the same. Under the traffic loading, the joint system was performing well. In addition, the crack that previously extended across the entire roadway width did not return. The Koch BJS Bridge Joint System was performing well. In the traffic lanes it was still relatively smooth (as installed). In the shoulders, it was slightly rougher and resembled the surface of the roadway asphalt.

November 1994 Evaluation (see Table 5)

On the wet surface of the joint system, minor depressions were noticeable in material in the wheel path. These depressions were very slight. Since there were no other signs of wear, the joint system looked very good

June/November 1995 Evaluation (see Tables 6 and 7)

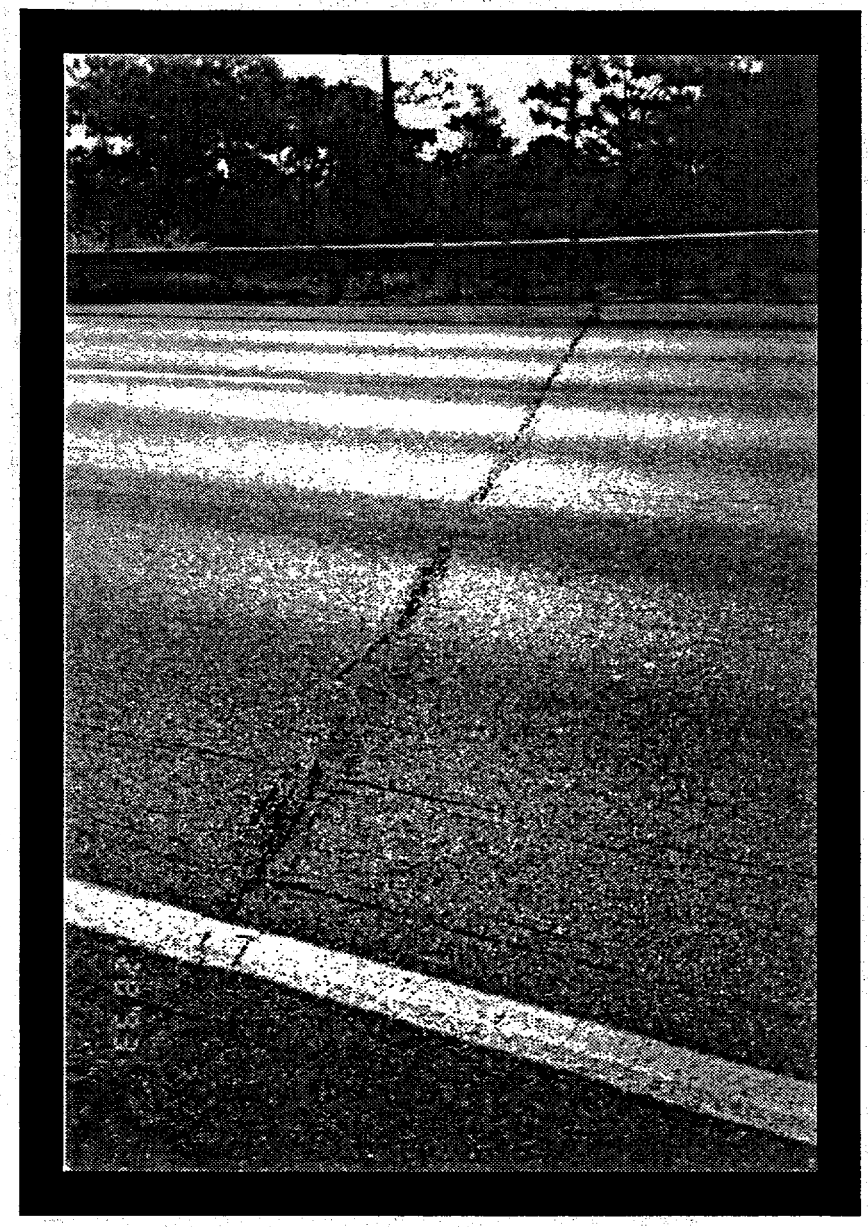
This joint system was performing well until it was removed/covered by a roadway resurfacing contractor in March 1995. See Figure 44.



*Typical section at Bridge Expansion Joint - The actual Joint System was installed at the Approach Slab Joint.

Koch BJS Joint System
(Typical Section)

Figure 41

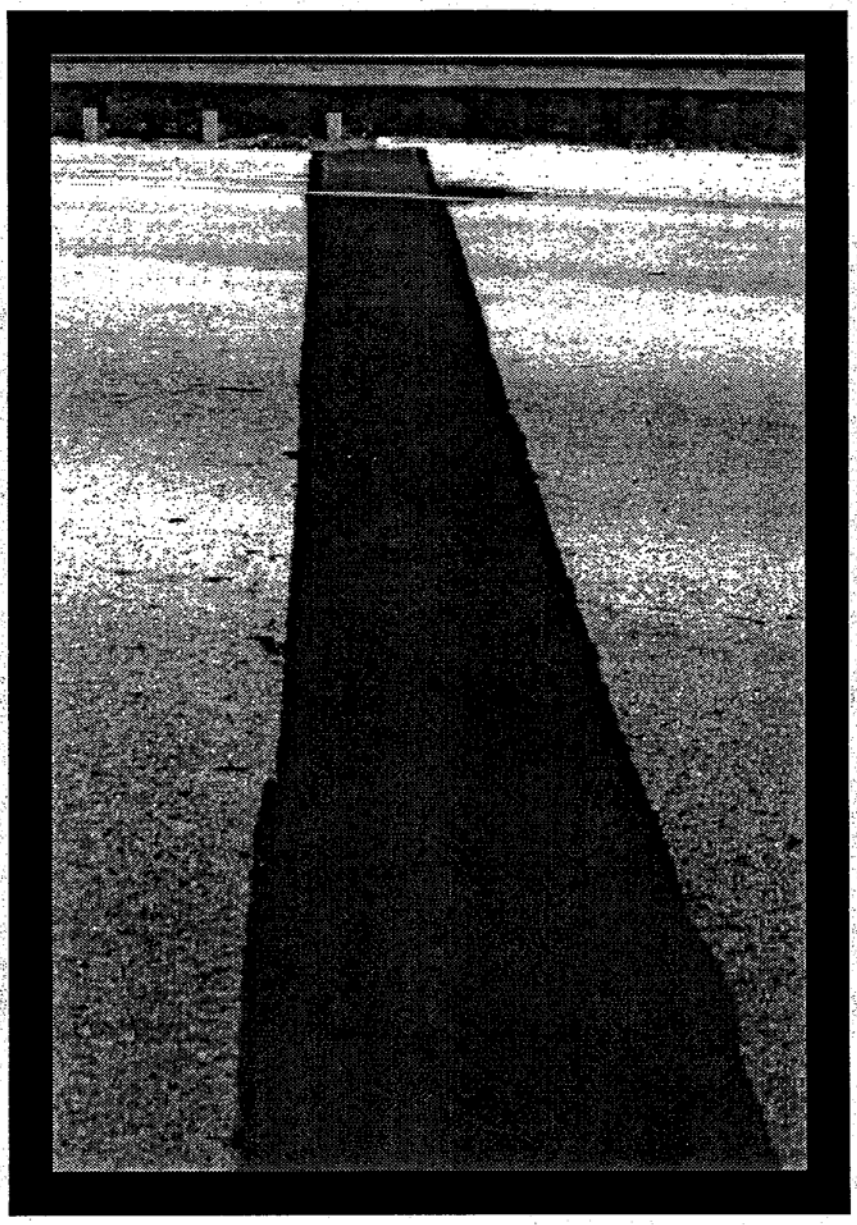


Koch BJS Joint System: Roadway Prior to Installation of Joint System

Figure 42

Koch BJS Joint System: Joint Location at Approach Slab Joint

Figure 43



Koch/Pavement Technology: Koch BJS Joint System

Figure 44

3.10 KOCH 2000 SL BRIDGE JOINT SEALANT

"Koch 2000 SL is a rugged joint sealant meeting the physical requirements necessary to ensure long term joint performance. 1133 This sealant is a component of the Flexcon 2000 Joint Sealing System. "Koch 2000 SL is self leveling which allows it to seal irregular joint configurations. A modified Koch, 2000 NS non-sag sealant is used for joints on a grade or vertical curb application. "34 Koch 2000 SL Sealant is a "cold applied ambient cure material."[35] The sealant can withstand impact forces, is jet blast resistant, and is quick setting.

3.10.1 Installation Notes/ Comments

At this joint, the original armor angles remained in place. The compression seal was replaced with the KOCH 2000 SL Bridge Joint Sealant. A typical section showing the armored joint and the sealant is shown in Figure 45. This involved a very simple five (5) step process:

1. Sandblasting and cleaning the joint opening.
2. Placing duct tape in the bottom and sides of the joint.
3. Installing a polyethylene foam backer rod in the joint.
4. Mixing the pre-measured two (2) part sealants (1 bucket and 1 packet proportion). This took about 5 minutes.
5. Pouring the sealant into the joint and leaving a 1/2" recess.
6. Since no cure time was required,. opening the bridge to traffic was possible as soon as the sealant was poured.

On July 28, 1993, the sealant was placed in approximately 35 feet of the joint. This length included the right shoulder and the right two traffic lanes. This installation took approximately 1.25 hours. On July 29, 1993, the sealant was placed in approximately 27 feet of the joint. This length included the left shoulder and the left traffic lane. This installation took approximately 0.75 hours. The joint opening (at the top of the joint) was approximately 1 inch and 1.1 inches on 7/28 and 7/29, respectively. One really good feature of this sealant is that no special applicators are required. The sealant is mixed in the bucket used for packaging and is then poured from the bucket into the joint.

3.10.2 Field Performance

March/August 1994 Evaluation (see Tables 3 and 4)

The sealant is performing satisfactorily. There is evidence that the seal is leaking in one spot location (at girder 3). In the shoulders, debris has accumulated between the sides of the angle and the seal. The seal bulges toward the center. Visible on the surface of the seal are some small

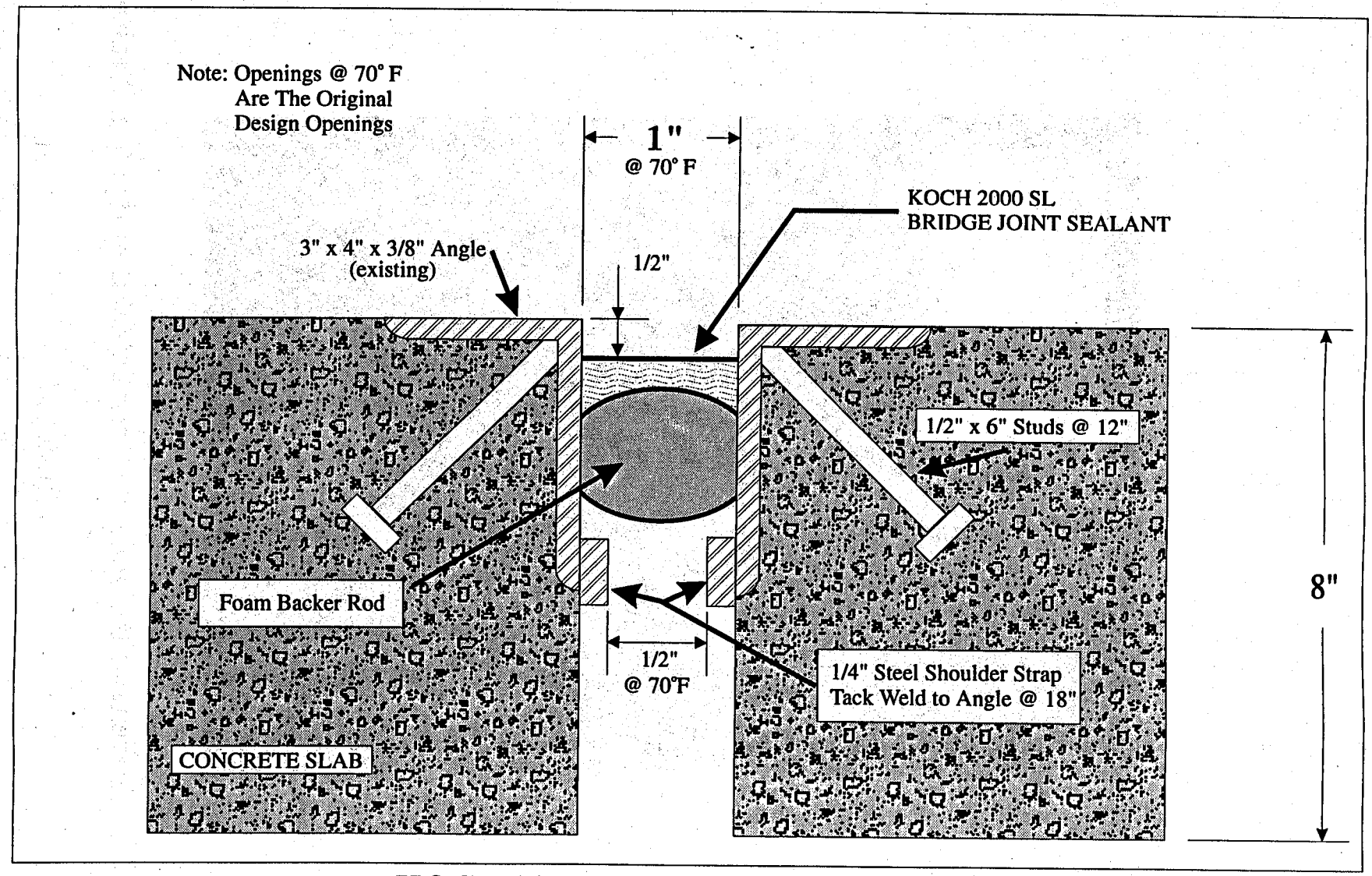
punctures (possibly caused by debris embedment) and longitudinal cracks (or stretch marks). Apparently, the material deforms as it responds to the bridge movement. In spite of the appearance, the seal is functioning reasonably well. See, Figure 46.

November 1994 Evaluation (see Table 5)

The seal looked similar to the way it looked in August 1994. Holes (punctures) in a few locations were visible on the surface. A small amount of debris was in the shoulders (especially right shoulder). The seal was leaking at beams l, 2, 3 and 4 and between beams 3 and 4 (counted from the right coping).

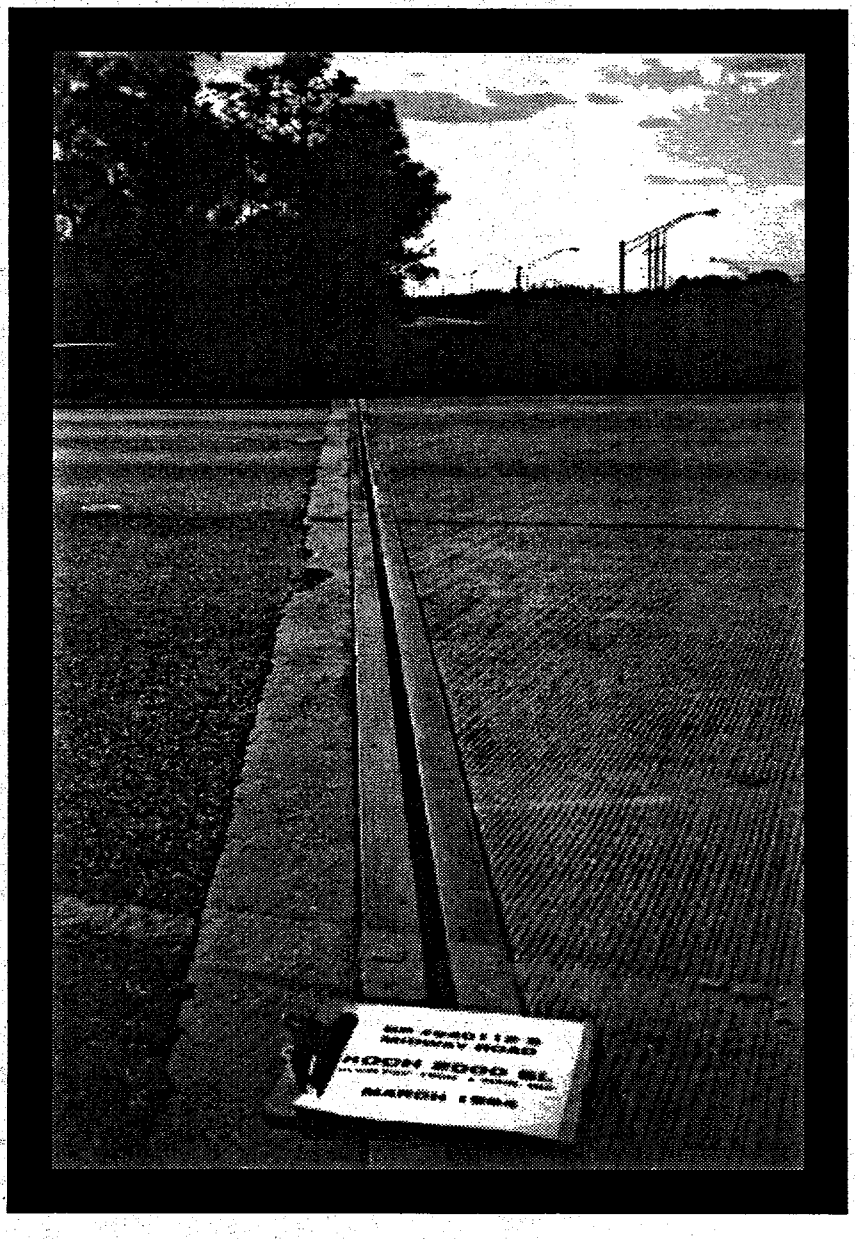
June/November 1995 Evaluation (see Tables 6 and 7)

There were several puncture holes through the seal. At least six such holes were photographed. Due to poor performance, the sealant has failed. The joint leaks as documented in November 1994. See Figure 47.



KOCH 2000 SL Bridge Joint Sealant
(Typical Section in Existing Armored Joint)

Figure 45



Koch/Pavement Technology: Koch 2000 SL Bridge Joint Sealant

Figure 46

Nov 1995

Koch/Pavement Technology: Koch 2000 SL Bridge Joint Sealant

Figure 47

3.11 POLYMER CONCRETE INCORPORATED: RESURF IV

"RESURF IV is a revolutionary breakthrough in general purpose polymers concretes for repairs to Portland Cement Concrete (PCC). High levels of flexible, partially soluble copolymers, thermoplastic beads give RESURF IV unique properties that result in vastly improved handling and performance. RESURF IV features:

- Very low cure shrinkage and cure stresses.
- .More effective work time.
- Vastly improved mixing, -workability & clean up.
- Excellent flexibility
- Low modulus.
- 22% reduction of density - aids handling and mixing. "[36]

3.11.1 Installation Notes/ Comments

At the south end joint of Bridge #940126, Polymer Concrete Incorporated (PCI), installed RESURF IV as ,a joint header (nosing) material. Hydrozo/Jeene agreed to place a seal at this location. Therefore, this new joint (installed in August 1993) was a combination of PCI RESURF IV and a Hydrozo/Jeene seal. Figure 48 shows a typical section of the expansion joint system. The joint as originally completed is shown in Figure 49.

Monday, August 23, 1993 at Bridge #940126, FDOT's contractor removed right shoulder and, two traffic lanes (approximately 36 feet) of the existing joint and left a 3" wide x 4" deep opening on each side of the joint. The cuts for the joint opening were fairly clean and smooth.

Mr. Glenn Robinson and an assistant worked to install the new header material, RESURF IV. These men worked with simple tools (i e., bucket, wheel barrel, hoe, wooden board, hammer, screw driver, wire brush, paint brush, stick). They cleaned the joint by hand. Mr. Robinson wanted to sandblast the joint but did not have a sandblaster at the site.

After cleaning the joint, PCI began installing the header. This process included the following steps:

1. Using the catalyzed RESURF IV and a paintbrush to prime the existing concrete deck.

2. Blocking the joint opening with wooden boards to-prevent the header material from flowing into the joint. These boards were painted with a mixture of GE Silicone Sealant

dissolved in gasoline (at least one hour before use). According to Mr. Robinson, this procedure was used successfully to peel the boards off the header material in the past. There are other materials that maybe used for the same purpose. However, styrofoam is soluble in RESURF Resin.

3. Measuring and catalyzing the resin. The resin is mixed for a few seconds and changes color.

4. Mixing the aggregate blend in the wheel barrel to disperse the plastic beads. Each bag has 0.5 cubic feet of aggregate blend.

5. Pouring the resin into the dry aggregate blend and mixing until the aggregate blend is evenly wetted. The materials were thoroughly mixed with the hoe. Only 0.5' cubic foot of material was mixed per batch:

6. Placing the header mixture into the opening. The material' was placed over to fill the hole and then compacted with a wooden board. The header material was tamped, troweled, and screeded as needed. The edges of the header material were feathered.

7. Using header material to repair spalled concrete next to the cut for the joint.

8. Curing the header material for at least one hour.

9. Peeling the boards away from the header material. A few of the boards did not peel easily.

Once the boards were removed, the header material was ready for the Hydrozo/Jeene seal to be installed to complete the joint. After Hydrozo/Jeeneifinished their joint at the north end, they placed the seal at the south joint. Soon after Hydrozo/Jeene completed the seal at the south end the bridge was opened to traffic.

During the installation, the placement of the mixing and placing of the RESURF IV was quick and simple. There were no difficulties. However, removing some wood forms was very difficult. The men used hammers, crow bars and other tools to pry the boards out. This caused a slight delay to the installation. However, the installation was still relatively quick and required only simple tools. Tuesday, August 24, 1993, RESURF IV and the Jeene seal were placed in the left shoulder and traffic lane. PCI used compressed air to clean and dry the joint opening. Using the same procedure as outlined above, Mr. Robinson and Dr. Hairston installed the RESURF IV in the remainder of the joint. After allowing the material to cure for two (2) hours,` they removed the wood forms. Hydrozo/Jeene placed the Jeene seal and bonded it to the section installed on the first day to complete the joint. Workers completed both the RESURF IV and the Jeene seal installation without complications or delays.

Because the material failed to perform in sections, portions of the material were removed and replaced in March 1994. Even in the failed sections, the Hydrozo/Jeene seal remained in tact. However, during repairs, Mr. Robinson damaged and removed the seal in the section where the

RESURF IV was replaced. Therefore, in these locations, the RESURF IV was repaired but the joint was open because the seal was missing. Later, R. J. Watson, Inc. provided the KOCH 2000 SL Bridge Joint Sealant for FDOT workers to seal the joint.

3.11.2 Field Performance

March/August 1994 Evaluation (see Tables 3 and 4)

In early March 1994, Mr. Ralph Leever, FDOT District IV, pointed out that the RESURF IV material had problems. In particular, the nosing material was sinking and cracking in the middle traffic lane but not necessarily in the wheel path. The material appeared to be vertically displaced by approximately 3/4" at the worst and most visible section. See Figure 50. Because of concerns and discussions-about the problem situation, Mr. Robinson, Mr. Leever, and the Structures Research Center (SRC) agreed that all would meet at the job site on March 8, 1994, to determine the cause and to repair the problem.

Therefore, on March 8, 1994, Mr. Robinson and an assistant arrived at the bridge site, surveyed the damage, and replaced sections of the RESURF IV header (nosing) material. On the north side header, beginning at the left edge of the center lane, Mr. Robinson replaced approximately 15.25 feet of the material. On the south side header, beginning at the left edge of the center lane, he replaced approximately 19.7 feet of material. Mr. Robinson tapped (sounded) the header material in the left traffic lane and found some hollow sounding spots. However, since traffic was in that lane, no attempt was or could be made to replace material in the far left traffic lane. The repairs to the header material were complete and ready for traffic within four (4) hours (9:00 a.m. - 1:00 p.m.).

As the material was removed, on some surfaces the RESURF IV material was evidently not well bonded to the concrete deck. Figure 51 shows pieces of the removed RESURF IV. On some surfaces (particularly the bottom surface), there was a "chalky film" which indicated a lack of bond. Mr. Robinson speculates that during the initial installation, too much force was needed and applied to remove the wooden forms used to prevent the material from leaking into the joint.

Mr. Robinson identified three (3) possible reasons why the bond was broken or severely weakened during the initial installation: 1) Mr. Robinson and his assistant, Dr. Hairston, "did not sandblast to clean and dry the concrete surface."[37] 2) They used only two (2) pieces of plywood, as opposed to three (3) or more, and as a result "was extremely rough on the RESURF IV nosing."[38] 3) "The bottom of the block out was probably still holding enough moisture significantly to impede

the resin polymerization reaction so that the bonding surface was much more fragile or 'cheesy' during the upward forces of the deforming process."[39] Mr. Robinson further states: "My excuses for such an incompetent installation are that we did not have all our equipment and most similar installations we pull the forms much later or not at all. This was the first time we had used RESURF IV for this application."[40]

In March 1994, Mr. Robinson took all the necessary precautions to install the material properly without damaging it. He sandblasted the joint opening, used cardboard (instead of wood) to form, the joint, and left the card board (cut flush with the deck) in place. The repaired joint, is shown in Figure 52. According to Mr. Robinson, if the material fails to, perform well this time, the material (and not installation) will be at fault.

On March 14, 1994, R J. Watson, Inc. planned to install KOCH 2000 SL Bridge Joint Sealant in the joint to seal the open areas of the joint. However, time was inadequate for R. J. Watson, Inc. to prepare the joint properly (i.e., remove the cardboard and clean the opening) and place the sealant. Therefore, the company gave instructions to FDOT Fort Pierce Maintenance workers for the proper installation of the sealant and left the sealant with them so that they could install it at a future date.

In August 1994, the SRC inspected the RESURF IV nosing and installed the KOCH 2000 SL Bridge Joint Sealant to seal the open areas of the joint. The nosing material was functioning satisfactorily. However, transverse cracks were visible in the material at approximately two feet (2') and three feet (3') intervals. There were no signs of vertical displacement.

November 1994 Evaluation, (see Table 5)

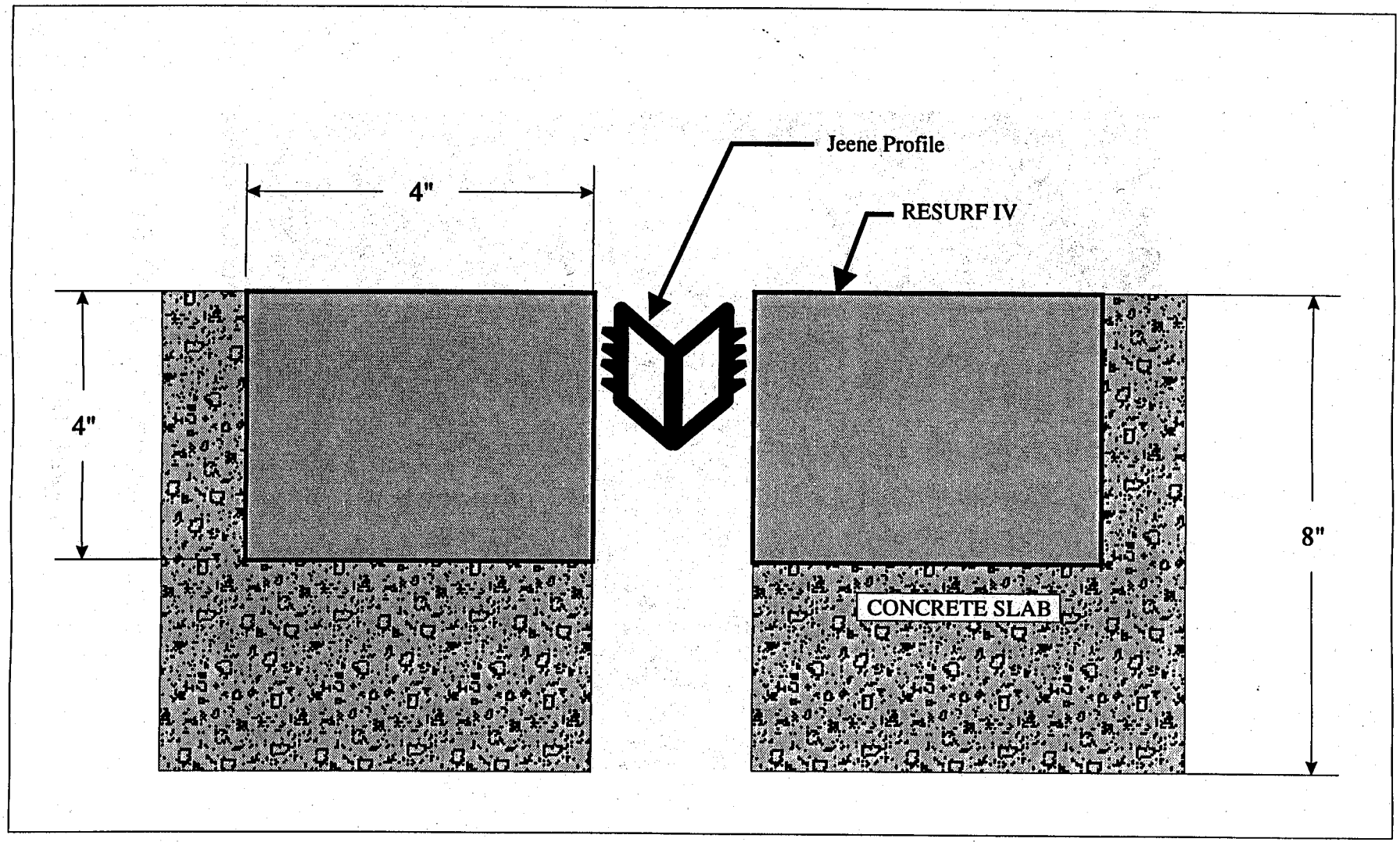
The appearance of RESURF IV was not significantly different from its appearance in August 1994. Surface transverse cracks were still visible in some locations. Nevertheless, there may not be a change in these cracks. The nosing seemed sound.

Although the joint was leaking in many places, this was not totally a reflection of the performance of the nosing from the second installation. When the nosing from the first installation failed, the Jeene seal was damaged during the replacement process. After the nosing was replaced, the FDOT (SRC) later installed a liquid sealant. Due to several factors (including discontinuities in joint opening, presence of Jeene Seal, poor installation of a liquid sealant, etc.), the final seal at the joint was inadequate. Therefore, most of the leakage was due to the deficiency associated with sealing the joint

opening. In some questionable locations, it was difficult to determine how much, if any, of the leakage was due to the transverse cracks in the nosing. Also, it was apparent that instead of the joint moving at the opening, the nosing pulled away (separated) from the deck.

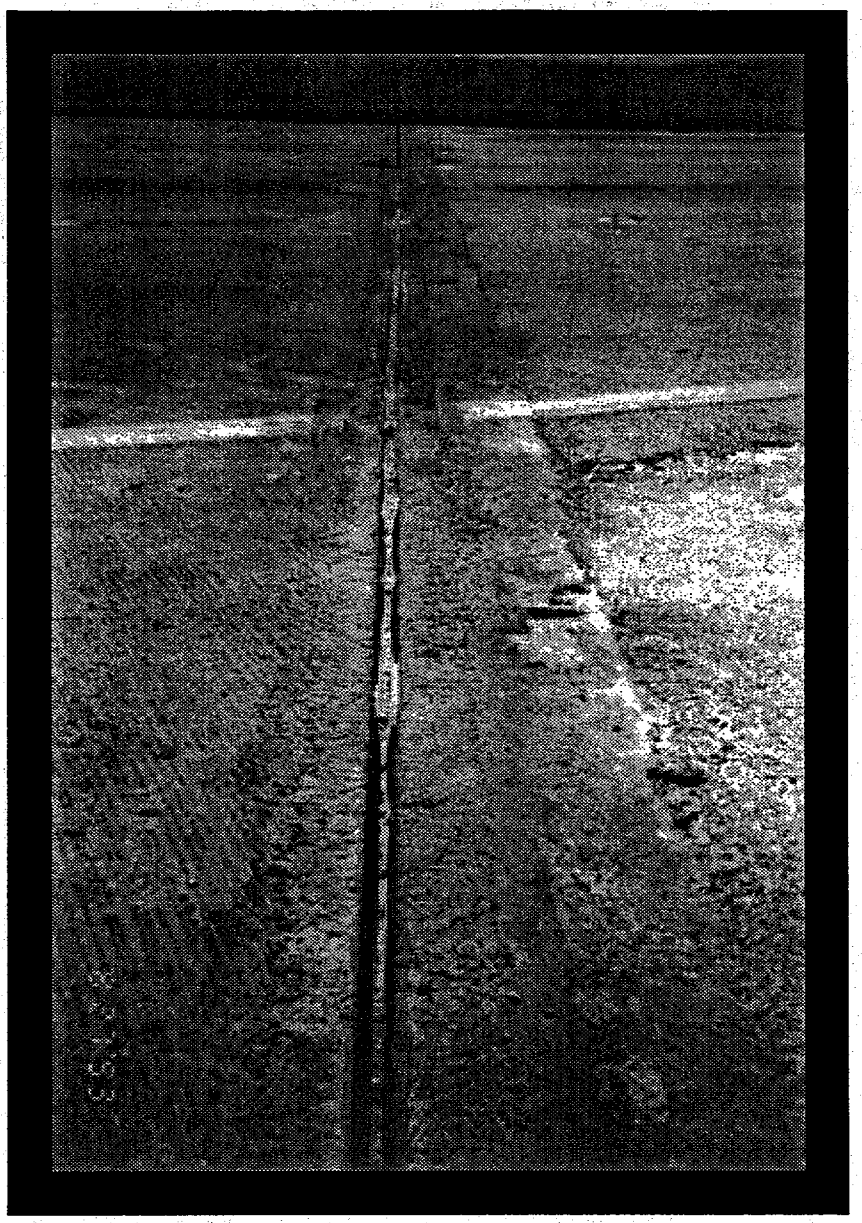
June/November 1995 Evaluation (see Tables 6 and7)

In the sections replaced in March 1994, the condition appears to be the same as in August 1994. At 2-3 feet intervals, there were transverse cracks. In the left lane that consists of nosing material placed in the original installation (August 1993) of RES TRF IV, there was a broken and displaced section of nosing. Also, there were .some transverse cracks in the left lane. See Figure 53 - 54.



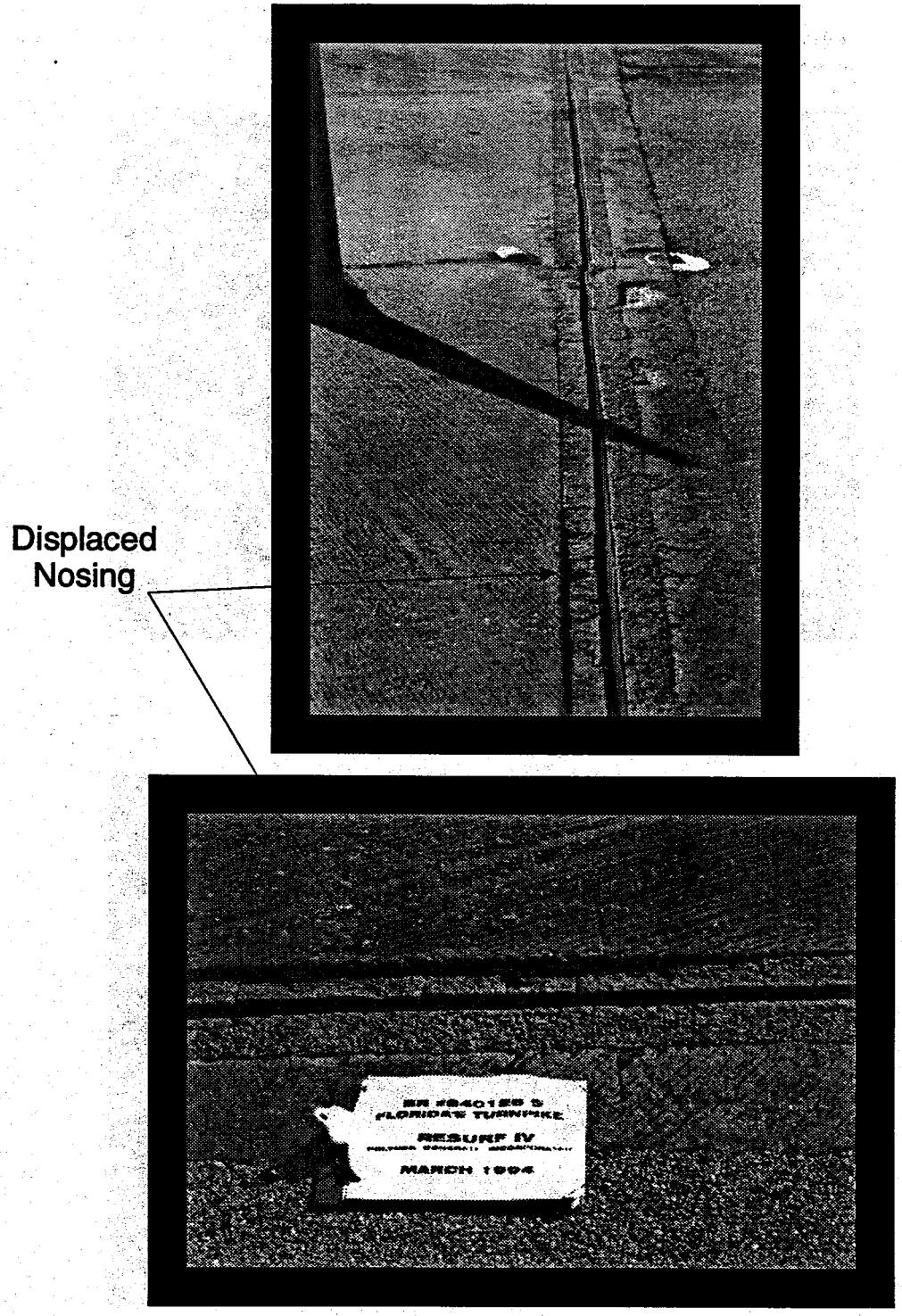
Polymer Concrete Inc.: RESURF IV with Jeene Profile
(Typical Section)

Figure 48



Polymer Concrete Inc.: RESURF IV

Figure 49

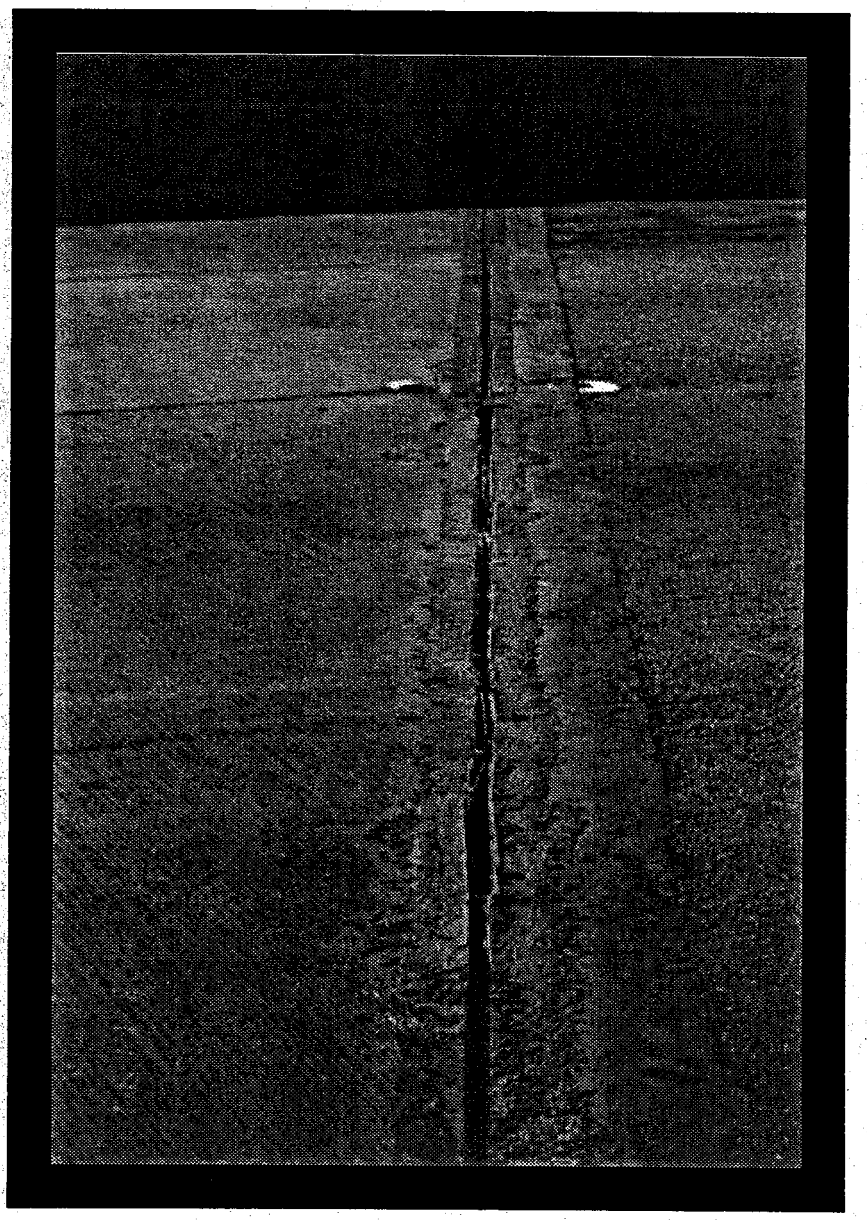


Polymer Concrete Inc.: RESURF IV (Failed Section)

Figure 50

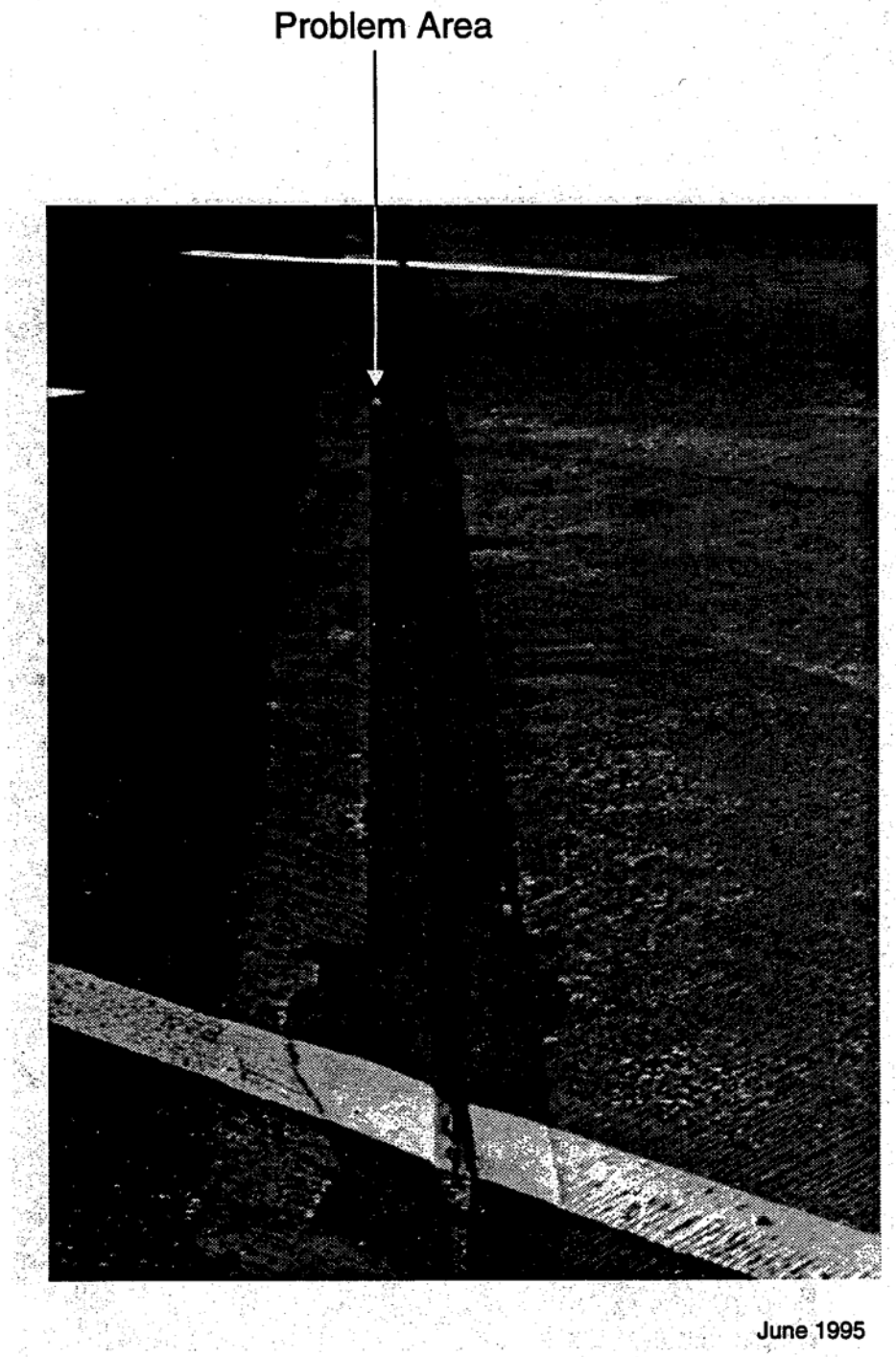
Polymer Concrete Inc.: RESURF IV (Removed Nosing)

Figure 51



Polymer Concrete Inc.: RESURF IV (Replaced Nosing)

Figure 52



Polymer Concrete Inc.: RESURF IV

Figure 53

Nov. 1995

Polymer Concrete Inc.: RESURF IV

Figure 54

3.12 R J. WATSON: FLEXCON 2000 JOINT SEALING SYSTEM

"The Flexcon 2000 Joint Sealing System incorporates Flexcon A/C Elastomeric Concrete Edge Members and a specially formulated Koch 2000 SL Polysulphide Bridge Joint Sealant."[37] A typical section of the Flexcon 2000 Joint Sealing System is shown in Figure 55. The features of the Flexcon system listed by the manufacturer include the following adjectives: durable, watertight, energy, absorbing, resilient, excellent bond strength, ;trouble free design, versatile, easy/ quick installation, and smooth riding. According- to R.J. Watson literature, the following is true: "Flexcon A/C has excellent wear and weathering characteristics giving it long life in traffic areas. Koch 2000 SL is a rugged joint sealant meeting the :physical requirements necessary to ensure long term joint performance. "[41]

"Vehicle impact forces are absorbed by the Flexcon A/C material. Since it is comprised of a high quality elastomer mixed with sand and graded aggregate, it forms a durable yet flexible compound. "[42]

"Flexcon A/C bonds tenaciously to concrete asphalt and steel resulting in a permanent connection to the bridge deck. Koch 2000's relentless bond to the Flexcon A/C results in a zero maintenance joint system."[43]

"Since the entire Flexcon 2000 Joint System is field molded, it conforms to the existing block out and joint conditions. Flexcon A/C has excellent wetting properties and has the ability to flow into small spaces, voids or spalled areas in any concrete surface. Koch 2000 SL is self leveling which allows it to seal irregular joint-configurations. A modified Koch 2000 NS-non-sag sealant is used for joints on a grade or vertical curb application."[44]

"The Flexcon 2000 Joint System does not require external heat for application. Both the Flexcon A/C and Koch 2000 SL Sealant are cold applied ambient cure materials. Quick setting times allow traffic to resume shortly after the system has been :installed. Since it is field molded, shop drawings and pre-set devices are no longer required. This results in a much shorter lead time from order placement to installation." [45]

3.12.1 Installation Notes/ Comments

R J. Watson and Pavement Technology & Maintenance, Inc. (PT&M) agreed that PT&M would be the licensee/contractor for the Flexcon 2000 Joint Sealing System. Therefore, the two companies

requested to have joints on the same bridge. The SRC assigned them to bridge #940112,1-95 Over Midway Road (South Bound). PT&M installed a total of three joints on the bridge including the R.J. Watson joint system. The two companies shared responsibility for the installation of the Koch 2000 SL Bridge Joint Sealant at the south end bent joint. The Koch BJS Joint System was installed at the north end approach slab joint. The R. J. Watson Flexcon 2000 Joint Sealing System was installed at the north end bent joint. Including Mr. Stewart Watson and Mr. Lee Norman, nine (9) people were present. The main work crew consisted of seven people. Since this crew worked on three joints, the average number of workers per joint was approximately three (3) people.

On July 27, 1993, All American Concrete Cutting Company (AACCC) began removing the existing expansion joint at the north end bent at 12:55 p.m.. Because of the late start and the need to put traffic back on the bridge by 4:00 p.m., only a small length of joint could be replaced on the first day. In addition, the MOT agreed that the existing joint in the shoulder could remain in place so that a longer length of the Flexcon 2000 Joint Sealing System could be completed in the traffic lane. As the joint removal work progressed, R. J. Watson and Pavement Technology became displeased with how much material being removed by the contractor. They felt that the saw cut was too deep and too much material was being removed. The contractor removed approximately twenty (20) feet of joint; this included the right traffic lane and approximately five (5) feet of the middle traffic lane. Since the removal was completed late in the afternoon, 2:15 p.m., workers placed cold asphalt in the opening so that the bridge could be opened to traffic by 4:00 p.m.. The bridge was opened to traffic shortly after 3:00 p.m..

On July 29, 1993, at Bridge # 940112 workers began removing the cold pour at approximately 9:00 a.m.. To install the joint the work crew did -the following:

1. Sandblasted and cleaned the joint block out (opening).
2. Placed a wood form (two boards taped with duct tape and spaced with small wood planks) in the joint opening.
3. Taped the sides of the joint with duct tape.
4. Mixed the two (2) part polymer concrete nosing material. The sand and aggregate. mixture were mixed and the liquid components were mixed separately before being combined.
5. Placed the nosing material using a bucket and trowels. PT&M and RJW finished placing the nosing material at 11:10 a.m..
6. Allowed the nosing material to cure for about 30 minutes.
7. Removed the wood forms beginning at 11:45 a.m..
8. Used a grinder to roughen the inside surface of the nosing material.

9. Cut foam backer strips and placed them in the joint opening.
10. Mixed and placed the two (2) part epoxy sealant (Koch 2000 SL Polysulphide Bridge Joint Sealant). The sealant was mixed for five (5) minutes in the plastic bucket in which it was packaged. The crew began placing the joint' sealant at 12:35 p.m. and finished at 12:55 p.m..
11. Once the sealant was poured, no additional cure time was required.

After the joint installation was complete on the right lanes, the traffic was switched (before 1:00 p.m.) so that work could begin on the joints in the left lanes. Due to the saw cut being, much deeper than estimated, RJW and PT&M did not have enough materials to install the Flexcon 2000 Joint Sealing System across the entire deck. Therefore, only the seal was replaced on the remainder of the joint. Workers installed the Koch 2000 Bridge Joint Sealant in the existing armored joint. They began mixing and placing the sealant at 3:10 p.m. and finished at 3:25 p.m.. The joint opening (at top) was 1.3 inches.

The cure time for the nosing material, which depends upon the ambient temperature, may range from l to 3 hours. After curing, the Flexcon System remains flexible to absorb energy. According to Richard Baker (KOCH) the sealant can be applied in wet conditions. In addition, each batch of a sealant is specially mixed for particular specifications required for the job. Also a Koch representative stated that this is the only material that meets all Air Force specifications for sealants on runways.

3.12.2 Field Performance

March/August 1994 Evaluation (see *Tables 3 and 4)*

Because the elastomeric concrete started breaking down in the traffic lane, most of the test installation was removed and replaced in March 1994. The breakdown-of the elastomeric concrete in the Flexcon 2000 Joint Sealing System was first noted in January 1994. See Figures 56 and 57. According to Mr. Stewart Watson of R J. Watson, Inc., "the elastomenc concrete apparently did not achieve full vulcanization. "[47] The resultant structure was "lacking in the necessary cohesive strength"[48] and therefore started to erode under traffic loading. Mr. Watson also provided the following explanations: "The aggregate sand and limestone components were not fully dry having been exposed to rain en route and this is in all likelihood the reason for the failure to achieve full vulcanization. We [R.J. Watson, Inc.] have experienced this once before so that today, all aggregate-sand-limestone batch components for the Flexcon 2000 System are packaged in sealed plastic pail containers."[49]

Recognizing the failure of the elastomeric concrete to handle traffic loading, the SRC and R.J. Watson, Inc. agreed that the material should be replaced. Therefore, eighteen feet (18) of the original twenty feet (20) of the joint (and elastomeric concrete) was removed and replaced on March 14, 1994. The new material was placed beginning at the start of the joint system in the right shoulder and extending approximately eighteen feet (18') into the traffic lanes. The plan was to replace the entire original test installation. However, not enough material was brought to the site to accomplish this task. Again the depth of the block out was a factor and required more material than was available. Therefore, approximately two feet of the joint system in the center *traffic* lane were installed in July 1993. The second installation of the Flexcon Joint Sealing System (in March 1994) was witnessed by FDOT employees oftheFort - Pierce Maintenance Office.

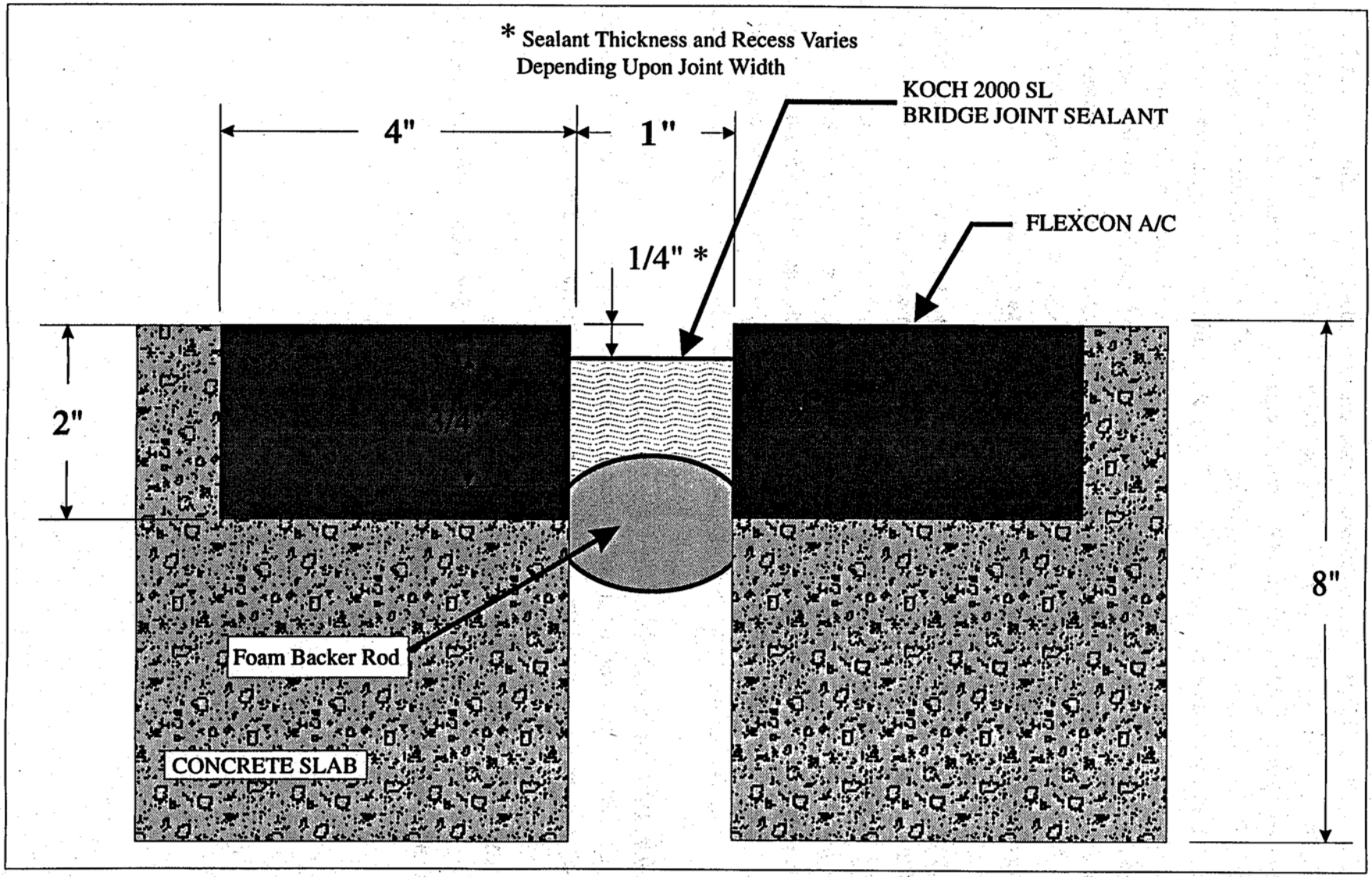
In August, the SRC inspected the joint system and notedseveral problems. In the right wheel path of the center lane, the nosing on the south side of the joint was broken into several pieces in a section approximately one foot (1) wide. This location was in the new material installed in March 1994 and was :near the two feet (2) section of the original material installed in August 1993. In addition, the nosing was separating from the roadway at the interface. The joint system was loose; therefore, the anchorage to the deck is failing. The sealant has some longitudinal cracks and some pitting (holes). This is most prevalent in the traffic lanes and may be superficial. See Figure 57.

November 1994 Evaluation (see Table 5)

In three sections, major breakage of the nosing occurred in the wheel paths in the right and middle traffic lanes. Due to this breakage, asphalt was placed and remained in the joint.

June/November 1995 Evaluation *(see Table 6* and 7)

This joint system failed as was noted in August 1994. The joint system was replaced on December 7, 1994 with another company's joint system.

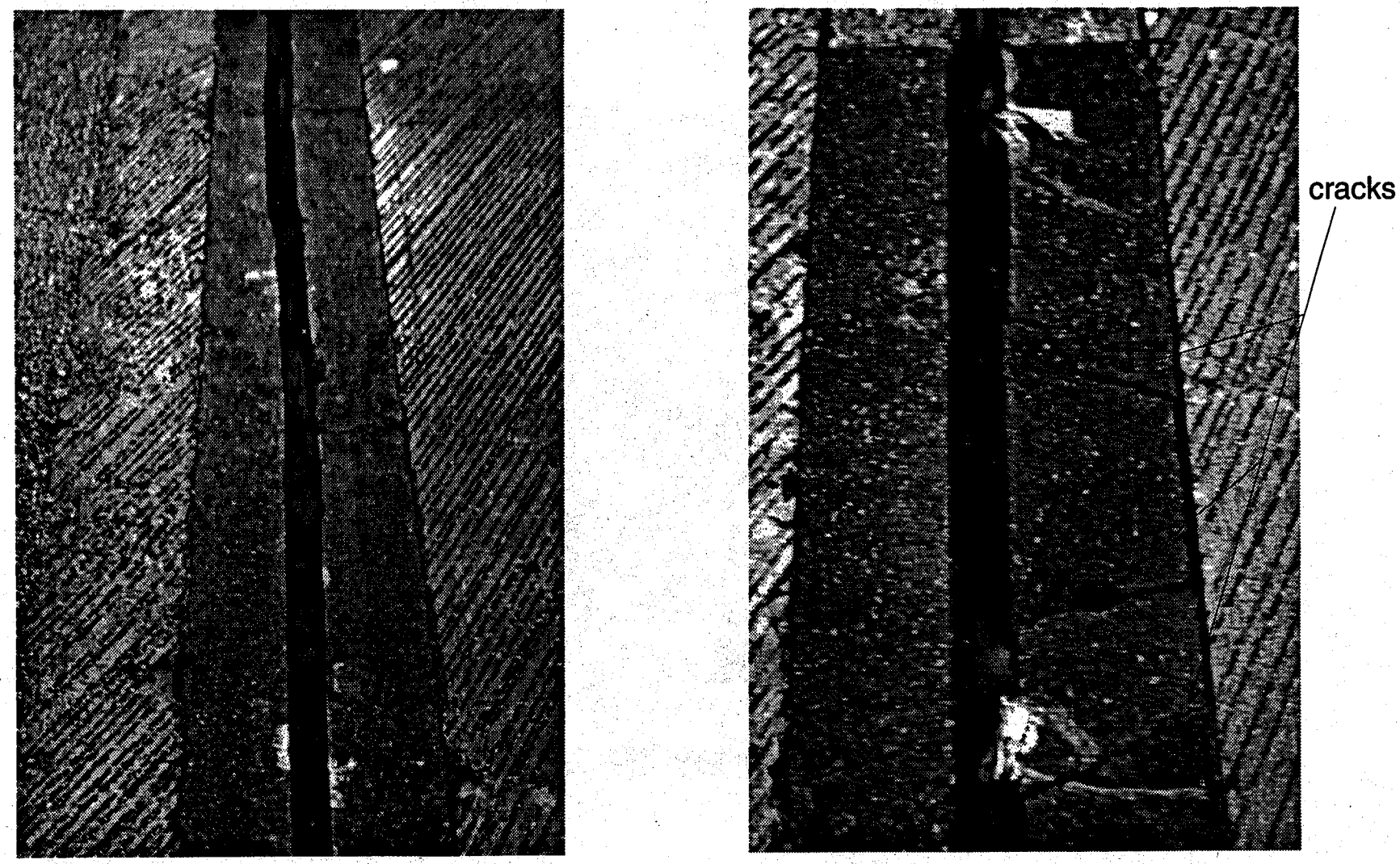


R.J. Watson: Flexcon 2000 Joint Sealing System
(Typical Section)

Figure 55

R. J. Watson: Flexcon 2000 Joint Sealing System (Problem Area)

Figure 56



R.J. Watson: Flexcon 2000 Joint Sealing System (failed Joint) - Second Installation

Figure 57

3.13 SYLVAX CORPORATION: SYLCRETE 10 MINUTE JOINT SEALANT

"SYLCRETE 10 Minute Joint Sealant is a rapid curing, self-leveling polyurethane elastomer for sealing cracks and joints. Thin liquid polymers comprised of equal volume "A" and "B "sides are metered, combined, and pumped through SYLCAT 500 dual component bulk application equipment [or with SYLCAT 200 hand held dispensers]. The liquid reacts quickly to form a permanent load bearing rubber joint with full recovery from compression and extension."[50]

"SYLCRETE 10 Minute Joint Sealant is for sealing 2" and larger cracks and joints in concrete and asphalt. Typical applications included roads bridges, highways, airport runways and taxiways, and parking structures. It adheres to many substrates, including asphalt, concrete and wood."[51] A typical section showing the sealant in the original armored joint is shown in Figure 58.

Other major features of the product include the following:

> "Bonds without priming: Forms a strong bond to clean, dry asphalt, concrete, and wood.
> Positive Sealing: Expands and contracts with structural movement over a broad temperature range.
> Fast Curing: Cures fast even at low temperatures. Ready for traffic within 10 minutes of placement at 70°F.
> All Climate Use: Flexible in all climates over a wide temperature range. Resist the effects of long term weathering.
> Traffic Bearing: Provides good wear resistance with high traffic loads. Excellent performance from -40°F to +200°F.
> Creep Resistant: Good Memory. After extension or compression it returns to its original shape with permanent' distortion."[52]

3.13.1 Installation Notes/Comments

The SYLCRETE sealant was installed in a joint with the existing armored angles in place. Therefore, only the original compression seal was removed from the joint. On July 27, 1993, David Montgomery and Kelton Glewwe of Sylvax Corporation installed forty feet (40') of the Sylcrete 10 Minute Joint Sealant on Bridge #940123. The total process took approximately 2.5 hours.The installation process was very simple. It required very little equipment and manpower. Also, very little debris was left at the end of the process. The equipment used included the following: a cloth, foam backer rod tape, a small bucket, a caulk gun, a hand held electric grinder, a small generator (with cord), gloves, specially made seal applicators. The only chemical/products needed were the denatured alcohol, the silicon caulk, and the two part seal mixtures.

The two part sealants came in prepackaged easy to handle small containers. The applicator was small and compact and was easily handled by one person. Not only was the installation process easy and quick, the noise level was very low and there were no noticeable fumes. Clean up: was-also very easy since there were almost no waste products. Also a relatively small amount of seal material was needed for the forty feet (40') installation.

The installation steps were as follows:

1. Cleaning the armor angle on the inside of the joint with a hand held grinder.
2. Cleaning the surface and the inside leg of the armored angles with denatured alcohol.
3. Installing foam backer rods.
4. Using silicon caulk to seal any gaps let by the foam backer rod:
5. Applying the primer ("concrete Mender") to seal any corrosion that might be present. This assures good adhesion of the seal.
6. Using a special application gun, apply the seal material approximately ¼ " below the deck surface. However, in the shoulders, the seal was made approximately level to the roadway to help prevent debris buildups.
7. Waiting 10 minutes for the product to cure:

Although, Sylvax finished in ample time to have the traffic switched so that the second half of the joint could be completed in the afternoon, FDOT coordination was inadequate. Therefore, the traffic was not switched in the afternoon. As a result, Sylvax Corporation, through no fault of its own, was unable to complete the seal installation for the entire width of the bridge.

Sylvax Corporation was willing to return to complete the joint on the bridge. On August 18, 1993, Mr. David Montgomery and Mr. Scott Glewwe completed the seal installation. The seal was installed following the steps listed above but a different applicator was used. The total time required to install the seal (approximately 23 feet) from start to finish were one hour and forty-five minutes (1 hr. and 45 min.).

3.13.2 Field Performance

March/August 1994 Evaluation (see Tables 3 and 4)

There was evidence that the Sylcrete seal was leaking in several places (especially near beams 3,4,5, & 6) and, therefore, had failed. This sealant was installed on two separate dates, July 27, 1993 and August 18, 1993. On each date the actual installation was quick and without complications. The seal was leaking from sections installed on both dates. In one location, in the right shoulder,

the Sylcrete material had a horizontal split such that the top material could be peeled away from the lower material as shown in Figures 59 and 60.

It should be noted that the manufacturer's literature states that: "SYLCRETE 10 Minute Joint Sealant is for sealing 2" and larger cracks and joints in concrete and asphalt."[53] In addition, the literature states that, Sylcrete "adheres to many substrates, including asphalt, concrete and wood."[54] Steel is not included in that. list. In the test joint, the joint opening was approximately 1.25" and the sealant was placed in the steel armored joint. Cleaning the existing armor angles with a grinder and denatured alcohol may have been inadequate. Sylvax Corporation literature states, "Joint should be sandblasted for improved bonding."[35] The sealant, as installed, failed.

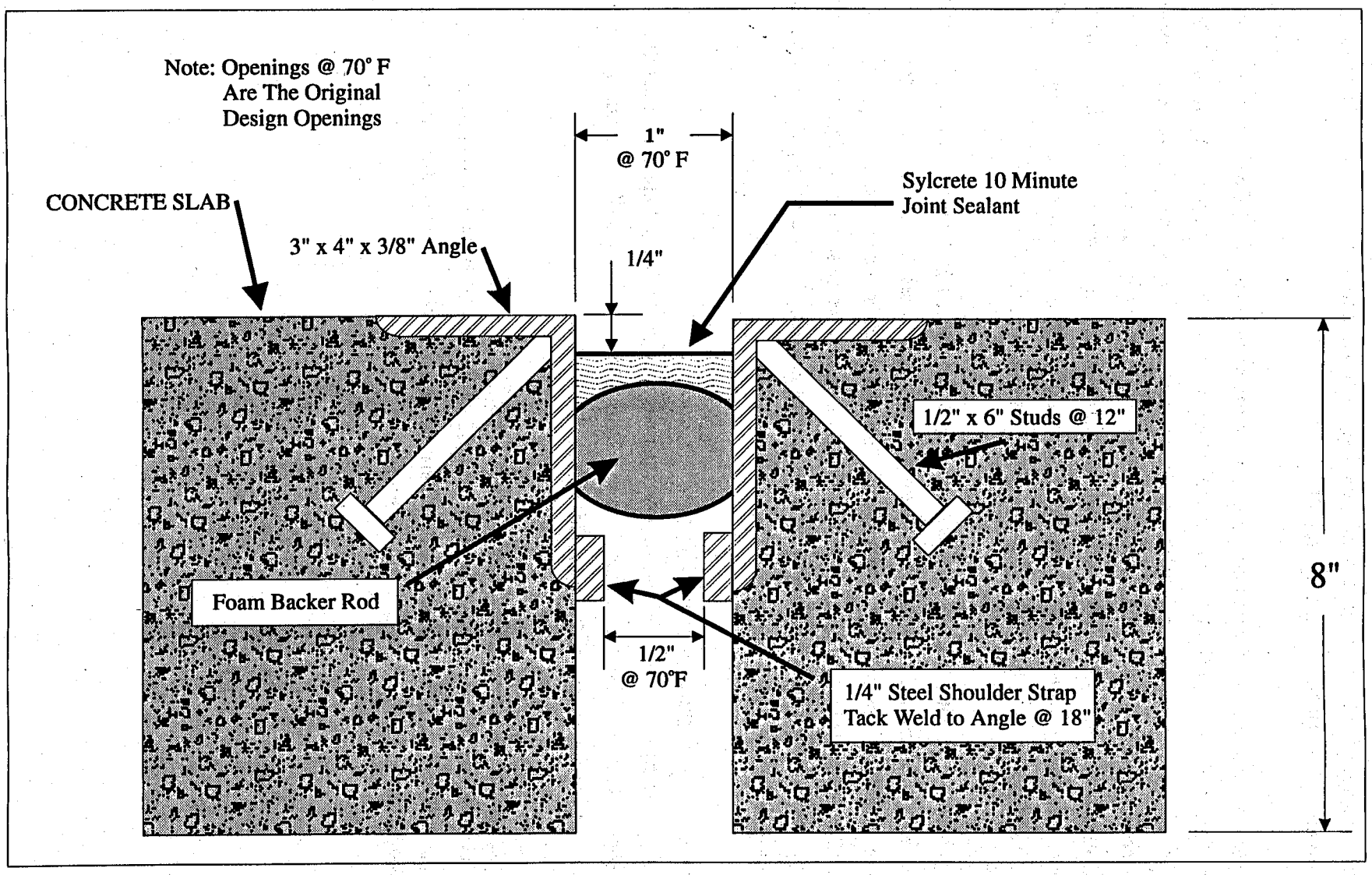
In.a letter from Mr. Rollin Glewwe addressing the failure, Mr. Glewwe states: Sylcrete 10 Minute Joint Sealant was offered with widely differing viscosities that did not lend themselves to complete, on ratio mixing of side A with side B. This caused varying degrees of incomplete reaction between the two parts and the resultant random failures you have experienced. The condition does not occur when air assisted Sylcat application equipment is used...[56]. In August, water was flowing from the joint.

November 1994 Evaluation (see Table 5)

The seal had holes at the edges and various locations. In the shoulders there was some separation of the seal. Based on both the November and August 1994 visits, the seal was leaking very much from several locations (left, right and middle lanes).

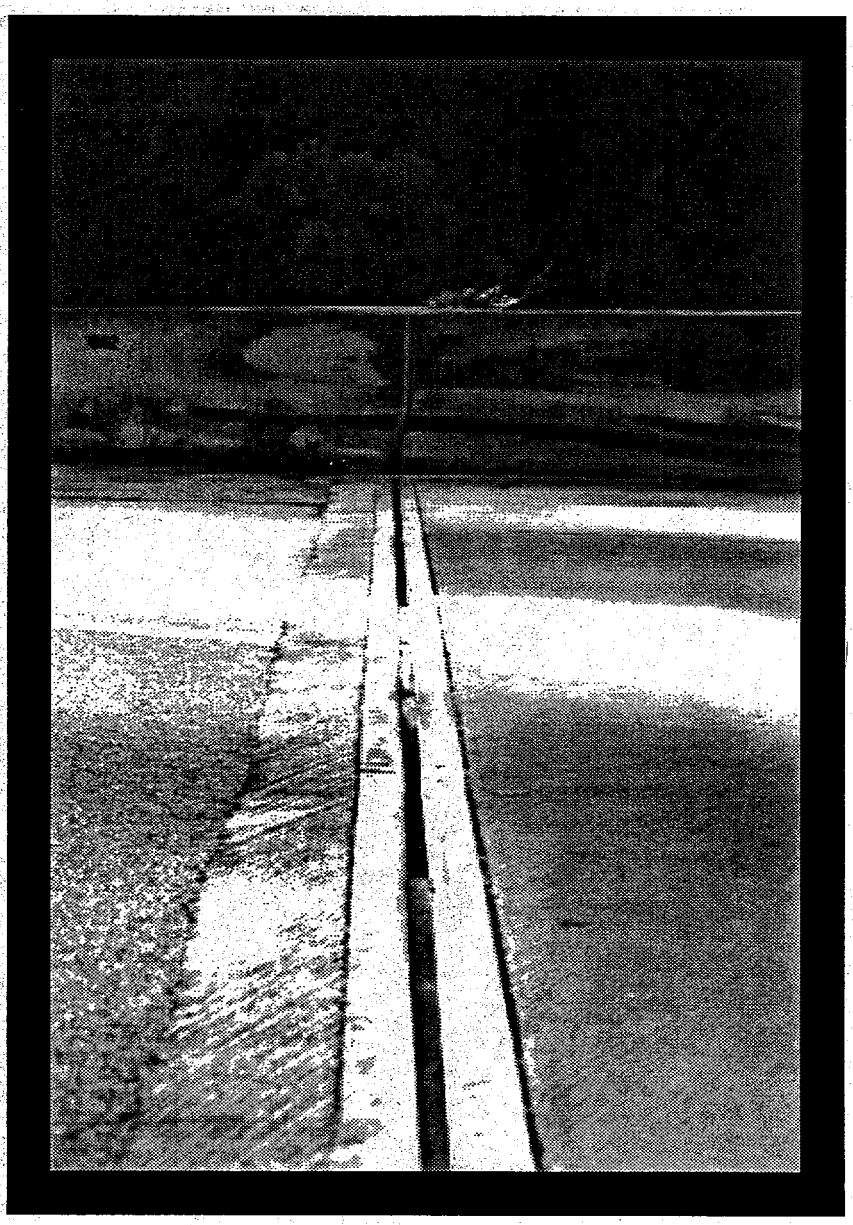
June/November 1995 Evaluation (see Tables 6 and 7)

This joint failed due to excessive leakage as noted in the August 1994 progress report. In some locations the sealant was separating from the armor angle. In a 2-3 foot section, there were many small holes in the sealant See Figures 59 and 60.



Sylvax Corp.: Sylcrete 10 Minute Joint Sealant
(Typical Section in Existing Armored Joint)

Figure 58



Sylvax Corporation: Sylcrete 10 Minute Joint Sealant

Figure 59

Sylvax Corporation: Sylcrete 10 Minute Joint Sealant
(Debonding Shoulder Area)

Figure 60

3.14 WATSON BOWMAN ACME CORPORATION: EXPANDEX BURIED JOINT SYSTEM

"The Expandex Joint is a unique expansion joint system for retrofitting failed expansion joints or for new expansion joints where small movements (2" or 50 mm maximum) are expected. The Expandex Joint System combines the use of a traffic bearing plate with a special aggregate reinforced modified elastomeric material."[57]

A typical section of the Expandex Buried Joint System is shown in Figure 61. The Major features of the system include the following: rapid installation, versatility, simplicity (design), and water tightness:

1. Rapid Installation
   Failed expansion joint systems can be removed and replaced with the Expandex Joint System in a matter of hours. The rapid installation of this system lends itself perfectly to lane-at-a-time or nighttime construction. The single pour Expandex application is economical and easy to install.

2. Versatility
   The specially blended elastomeric material has the ability to flow and fill any spall or inconsistencies in the block out providing a flexible, yet smooth riding and waterproof expansion joint.

3. Simplicity
   The one piece monolithic design eliminates the need for troublesome anchors and moving parts that are problematic.

4. Water tightness
   The field molded elastomeric binder eliminates the possibility of voids or cracking and prevented water from passing through the joint."[58]

3.14.1 Installation Notes/ Comment

Watson, Bowman ACME Corporation installed two test joints on Bridge # 940122, I-95 over Ten Mile Creek. Three workers from the company installed the Wabocrete ACM Expansion Joint at the north end bent joint and the Expandex Buried Joint System at the south end bent joint.
For the Expandex Joint, Watson Bowman ACME Corp needed a block out 20 inches wide by 2 inches deep. The FDOT's contractor was unable to remove the armored joint and leave a block out

to meet these requirements. Watson Bowman Acme Corp. was unwilling to provide the required buildup in the joint opening (left after the removal of the old joint) to create the required block out.

Since the south end bent joint: on Bridge #940122 was in the worst condition of all joints in the entire project, the FDOT very much wanted this joint replaced. Therefore, the parties agreed so that the existing problem joint could be replaced with-the Expandex Buried Joint System. The removal contractor removed the existing (old) joint and provided a cut width of 20 inches. In doing so, AACCC removed the smallest possible amount of concrete. FDOT Bridge Maintenance Crew made the. necessary buildup to create the 20" by 2" block out. Watson Bowman Acme Corp. installed the Expandex-Buried Joint System.

On August 23, 1993, AACCC cut and removed a 44-foot length of joint (in the right lanes) and made the 20" cut. After the FDOT completed forming the 20" by 2" block out using quick set concrete, Watson Bowman and ACME Corp. workers began the joint installation. The joint installation took approximately three hours, less time than it took to create the block out. The installation procedure included the following steps:

1. Sandblasting and sweeping the joint opening clean;
2. Placing foam in the joint to prevent the material from leaking;
3. Placing a metal plate in the bottom and center of the opening;
4. Installing nails to hold the plate in place;
5. Melting and heating the elastomeric binder to a minimum of 350"F; heating the block out is with a hot air lance;
6. Applying hot binder to cover the plate and sides and bottom of the opening;
7. Heating the aggregate and binder in a rotating drum mixer to a minimum of 250°F;
8. Filling the joint opening with the hot EXPANDEX material;
9. Compacting the joint level with the roadway with a roller;
10. Pouring a thin layer of binder to fill any rough areas;
11 Sprinkling the top with sand. However, this step was not done of the right lanes of the joint on August 23. As a result, the joint finished looked poor after traffic crossed the joint.

On August 24, 1993, the above processes were repeated for the installation of the remainder of the joint (approximately 29 feet). Work on the joint system began after 8 a.m. and was completed at approximately noon.

3.14.2 Field Performance

March/August 1994 Evaluation (see Tables 3 and 4)

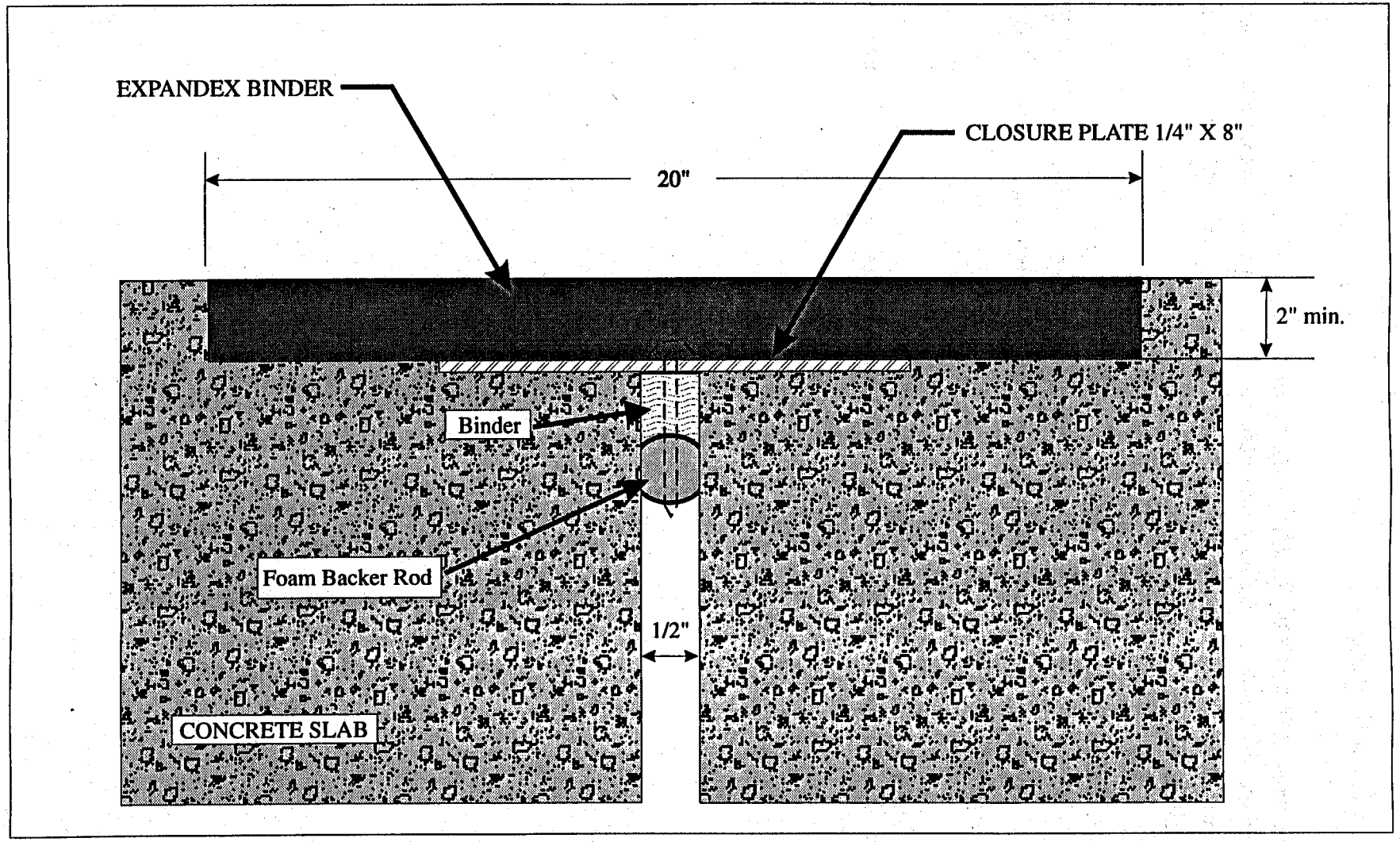
The Expandex Buried Joint System was performing well. The appearance of the material was practically the same as is original appearance. The material was still soft and flexible. The Expandex Buried *Joint* System is, shown in Figure 62.

November 1994 Evaluation (see *Table* 5)

The joint looked well. Its appearance was nearly the same as it was in August 1994. However, in a few sections the surface of the buried joint may not be at the exact height of a roadway on both sides. No signs of leakage existed.

June/November 1995 Evaluation (see Tables 6 and 7)

This joint was performing well. There were no signs of deterioration. See Figure 63.



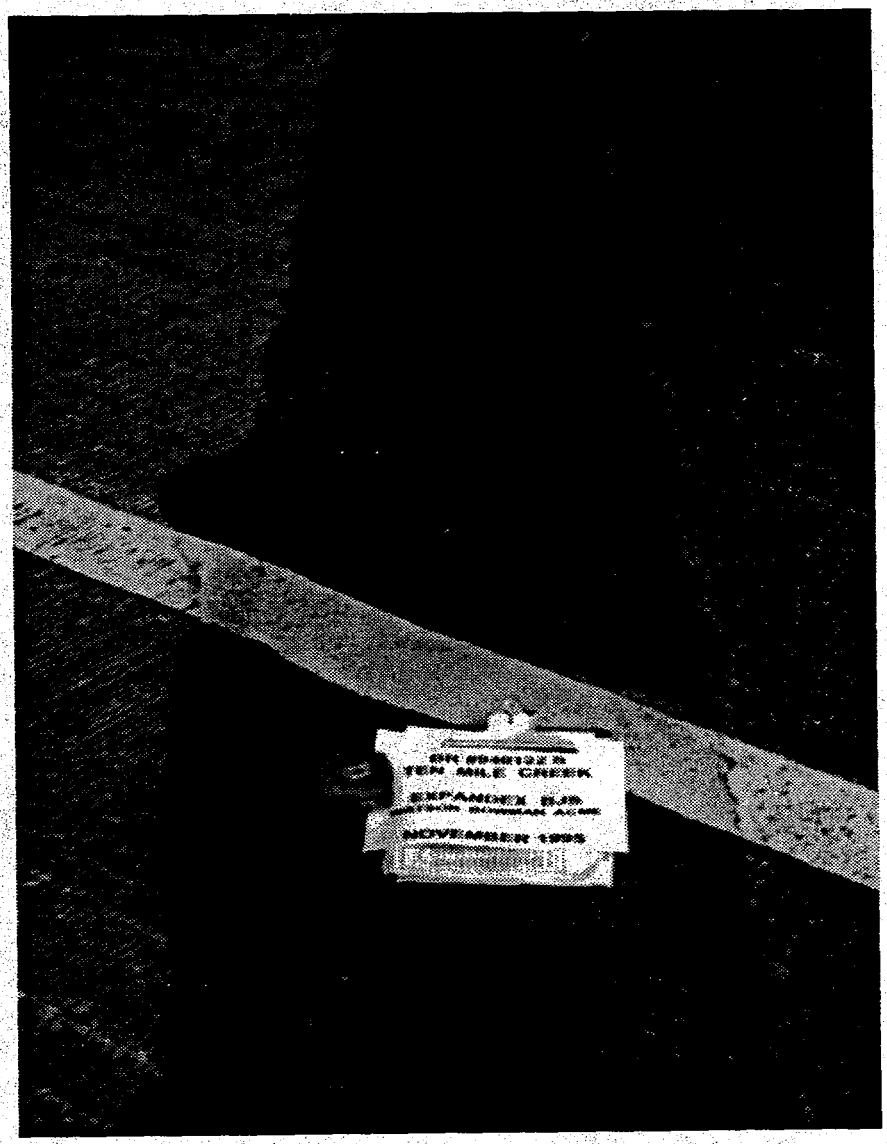
Watson, Bowman, and Acme Expandex Buried Joint System

(Typical Section)

Figure 61

Watson, Bowman, and Acme: Expandex Buried Joint System

Figure 62



Nov 1995

Watson, Bowman, and Acme: Expandex Buried Joint System

Figure 63

3.15 WATSON BOWMAN ACME CORPORATION: WABOCRETE ACM STRIP SEAL EXPANSION JOINT SYSTEM

Wabocrete ACM is "a three component, 100% solids material for use in exterior construction environments. It is resistant to wear under heavy traffic loadings, sunlight, ozone, de-icing chemicals and abrasives. It does not require the addition of heat to increase flow or cure the resins; and will self-level in the expansion joint. The Wabocrete ACM can be matched to almost any color required and the color will be consistent throughout the installation."[59]

"The Wabocrete ACM Strip Seal Expansion Joint System (excluding the header material) may be prefabricated, ready for placement or field assembled."' Figure 64 shows atypical section of the Wabocrete ACM Expansion Joint System.

3.15.1 Installation Notes/ Comment

Watson, Bowman ACME Corporation installed two test joints on Bridge # 940122, I-95 over Ten Nfile Creek. Three workers from the company installed the Wabocrete ACM Expansion Joint at the north end bent joint and,the Expandex Buried Joint System at the south end bent joint. On August 18, 1993, the three workers installed thirty-five feet (35) of the Wabocrete ACM Strip Seal Expansion Joint System. The installation process included the following steps:

1. Suspending the steel extrusions in the block out using adjustable leveling devices;
2. Sandblasting and using compressed air to clean the joint opening;
3. Placing taped foam in. the joint;
4. Mixing the Wabocrete ACM material in (mixing the liquid components for 5 minutes and then adding the aggregate and mixing for 5-10 more minutes) in small batches;
5. Placing the batches of the nosing until the block out is filled;
6. Allowing the nosing to cure for 1.75 hours;
7. Removing the foam form and installing the seal.

During the installation, Dino Gervasio was reluctant to cut the seal and install it in two sections that would be joined. He stressed that standard installation, procedure is to install a continuous seal. While this is possible for new construction, it was not possible for the test joint since the traffic on the interstate could not be completely stopped or rerouted Therefore, the seal was installed in two sections as required by the conditions.

Mixing and placing the 35' of the nosing was accomplished within 1.25 hours. Using the prepackaged containers to mix the Wabocrete ACM in small batches were very good features of the installation. The joint installation (from start to end) took approximately six hours. On March 19, the workers installed approximately 22 feet of the joint system excluding the seal. This was accomplished within five hours. On March 20, the group finished installing the seal and joining the two sections within approximately 1 5 hours.

3.15.2 Field Performance

March 1994 Evaluation (see Table3)

The joint system was performing well. The appearance of the nosing, material was similar to the original appearance shortly after installation. Overall, the surface of the nosing was not smooth in all locations. Since the armor angles used in this joint are made of weathering steel, oxidation had produced a protective coating (a rust-brown appearance) to prevent further corrosion of the steel. In the bridge shoulders, debris was accumulating in the joint. In May 1994, FDOT inspectors noted a slight vibration in the right traffic lane. In late June 1994, inspectors observed transverse and longitudinal cracks in the nosing and a one foot void section in the nosing.

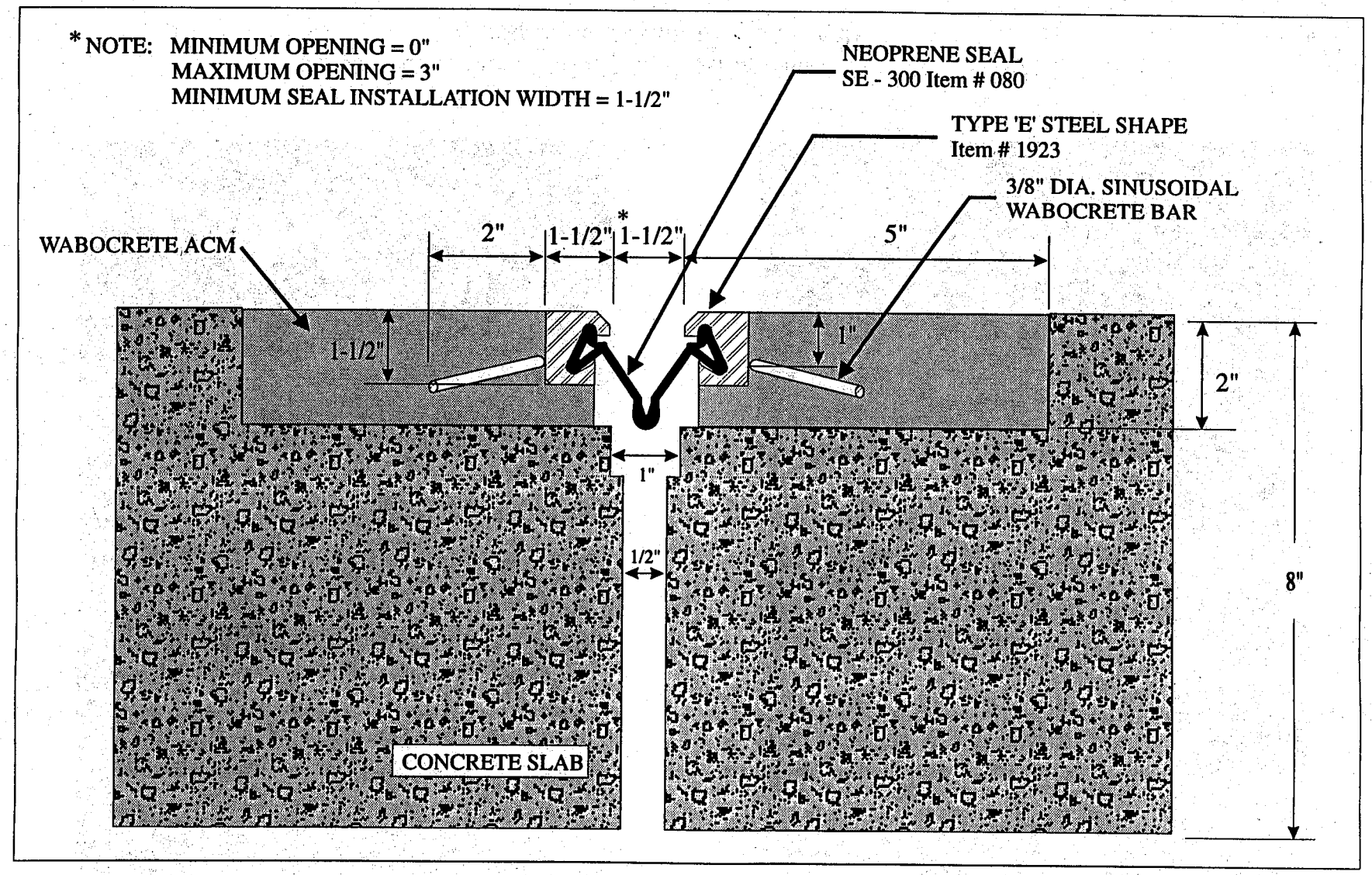
By early August 1994, the joint system failed completely. It broke loose from the roadway on both sides and could be lifted from the opening. The nosing material was breaking down in the center and right traffic lanes and was being strewn onto the roadway. The armor. angle was warped and bouncing up and down in the path of traffic posing a safety hazard to a motorist. A section of the armor angle eventually ended up on the roadway. In early August, the Fort Pierce Maintenance Office removed the joint system from the center and right traffic lanes (approximately 24 feet) and replaced it with asphalt. See Figure 65.

November 1994 Evaluation (see Table 5)

The joint failed in August. Two traffic lanes were removed and replaced with asphalt. Since August there was little change in the appearance of the patched joint. See Figure 65

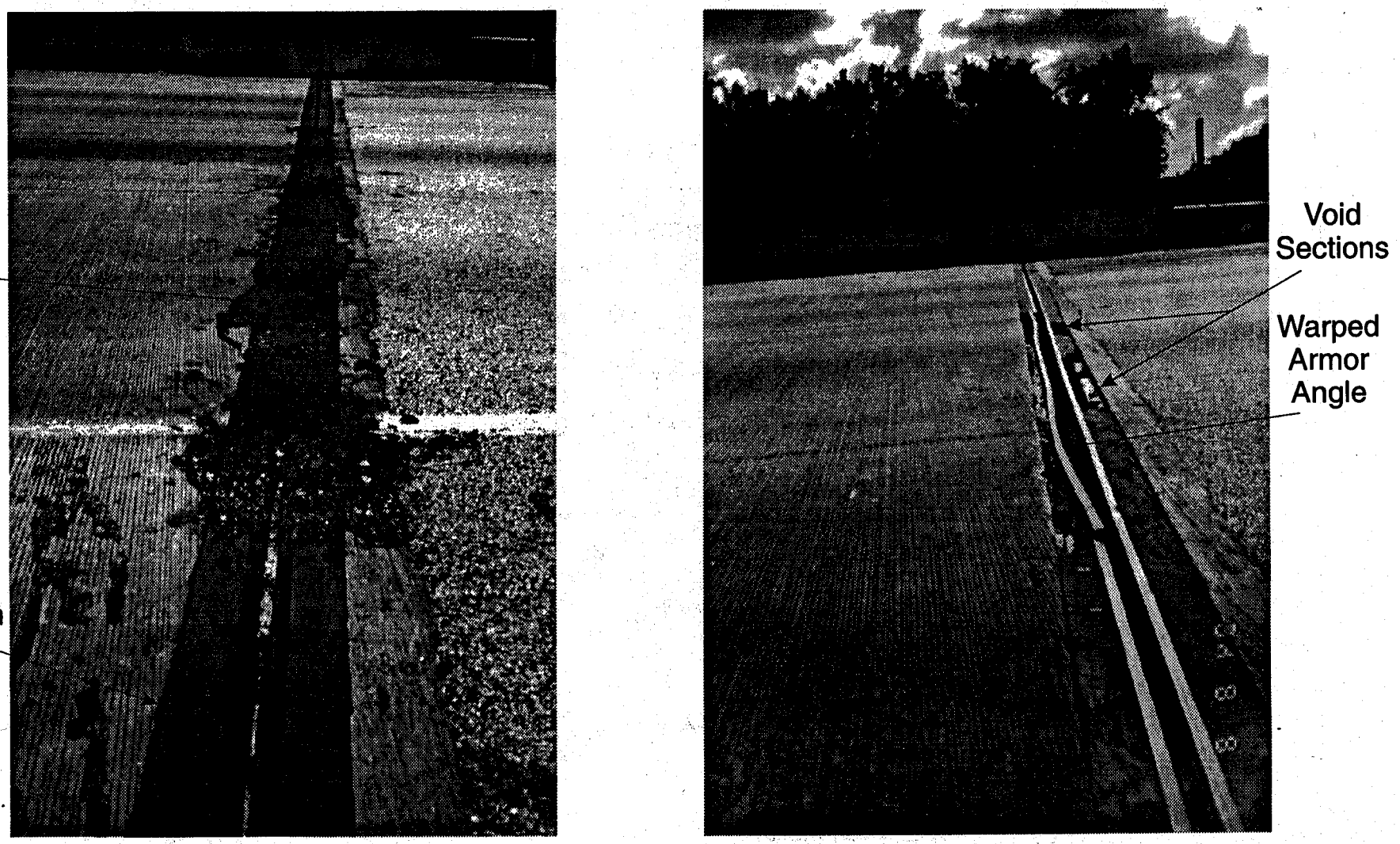
June/November 1995 Evaluadow(see Tables 6 and 7)

The failed joint's appearance was the same as it was in August 1994. The Fort Pierce maintance office is planning the replacement of this joint in the future.



Watson, Bowman, and Acme: Wabocrete ACM Strip Sealant Expansion Joint
(Typical Section)

Figure 64



Watson, Bowman, and Acme: Wabocrete ACM Strip Sealant
Expansion Joint (Failed Joint)

Figure 65

316 TECHSTAR, INC.,: TECHSTAR W300 SEAL

The W 300 seal is anew product of Techstar, incorporating many features of a strip seal and bridge compression seal together... The seal is currently made from a neoprene compound. Techstar is experimenting with other materials that might provide better mechanical properties than the current strip seal materials provide.

It is currently being tested in several states and is available in sizes ranging up to two (2) inches of movement. The seal fits tightly against the side walls of either a concrete sawed joint or steel armor. It closes upward so that debris is expelled from the joint. The W seal is appropriate in sealing applications involving bridges, dams, spillways, parking structures, and approach pavements.

Drawings of the seal are shown in Figure 66. In the test installation, the seal was installed in a joint with steel armor angles.

The Techstar W300 seal was installed on bridge #940093,1-95 over Belcher Canal (I-95 over Angle Road), in Fort. Pierce. The bridge location is shown in Figure 2b. The seal was installed at Bent #6, the second bent from the north end of the bridge. This bridge has a forty-foot (40') wide roadway, two (2) traffic lanes, two (2) shoulders and approximately a 45 degree skew angle. The bridge superstructure consists of six spans of prestressed concrete girders and a seven inch (7") concrete deck slab. The bridge was built in 1977. For 1991, the Average Daily Traffic (ADT) count was 12303 vehicles with five percent (5%) truck traffic. In August 1994, the expansion joint openings on the bridge ranged from 1.5 to 2.125 inches at an ambient air temperature of 88°F. In June 1995, the joint opening at Bent #6 was two inches (2").

3.16.1 Installation Notes/Comments

The installation of the Techstar seal was quick and simple.The procedure for installing the seal included the following: 1. removing the original seal; 2. sandblasting the armor angles; applying adhesive to both sides of the seal; 3. inserting the seal by hand such that the highest part of the seal is 1/8” below the deck; and using a grader to check the final elevation of the seal. Work began at 10:00 a.m. on November 18, 1994.

Workers took approximately 15 minutes to remove the original seal and sandblast the opening in preparation for installing the Techstar seal. After the preparation was finished, in an additional 15 minutes, the crew installed the seal in one shoulder and one traffic lane. The seal was installed as one continuous unit. Instead of cutting the seal, workers rolled it up and protected it with safety cones. After the traffic was switched to the opposite lane, the group installed the seal in the second lane and other shoulder of the bridge. This installation required approximately 15 minutes also. Therefore, four men completed the total installation of the Techstar W300 seal in approximately 45 minutes (excluding the time required to switch the traffic). Techstar, Inc. Used Delastibond Adhesive supplied by the D. S. Brown Company.

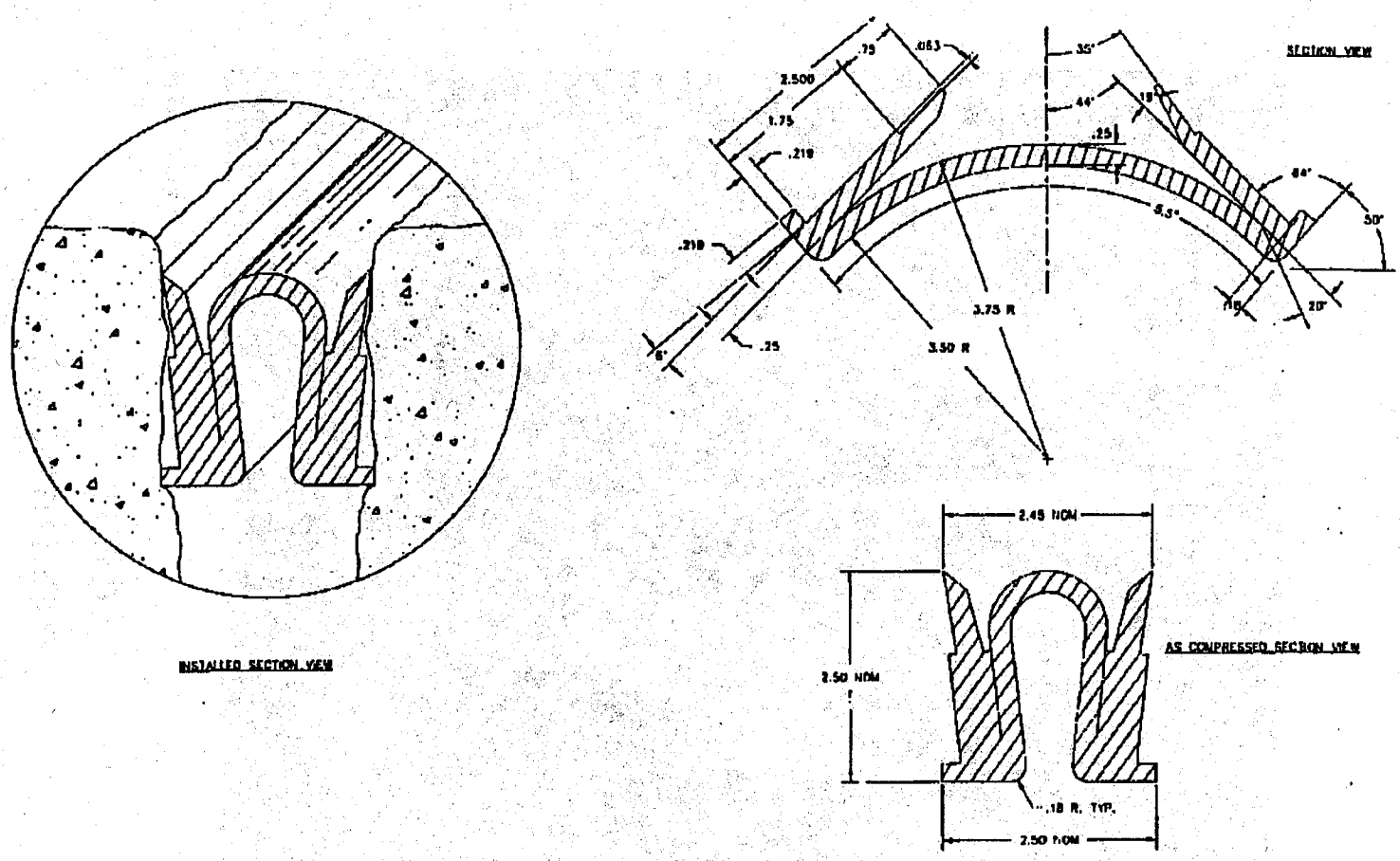
3.16.2 Field Performance

November 1994 Evaluation (see Table 5)

The Techstar. W300 Seal was installed on November 18, 1994.

June/November 1995 Evaluation (see Tables 6 and 7)

The seal looked very good. However, there was some debris accumulating in the joint. In addition, the seal did not, seal vertically along, the barrier wall. See Figure 67 - 69.



Techstar, Inc.: Techstar W300 Seal

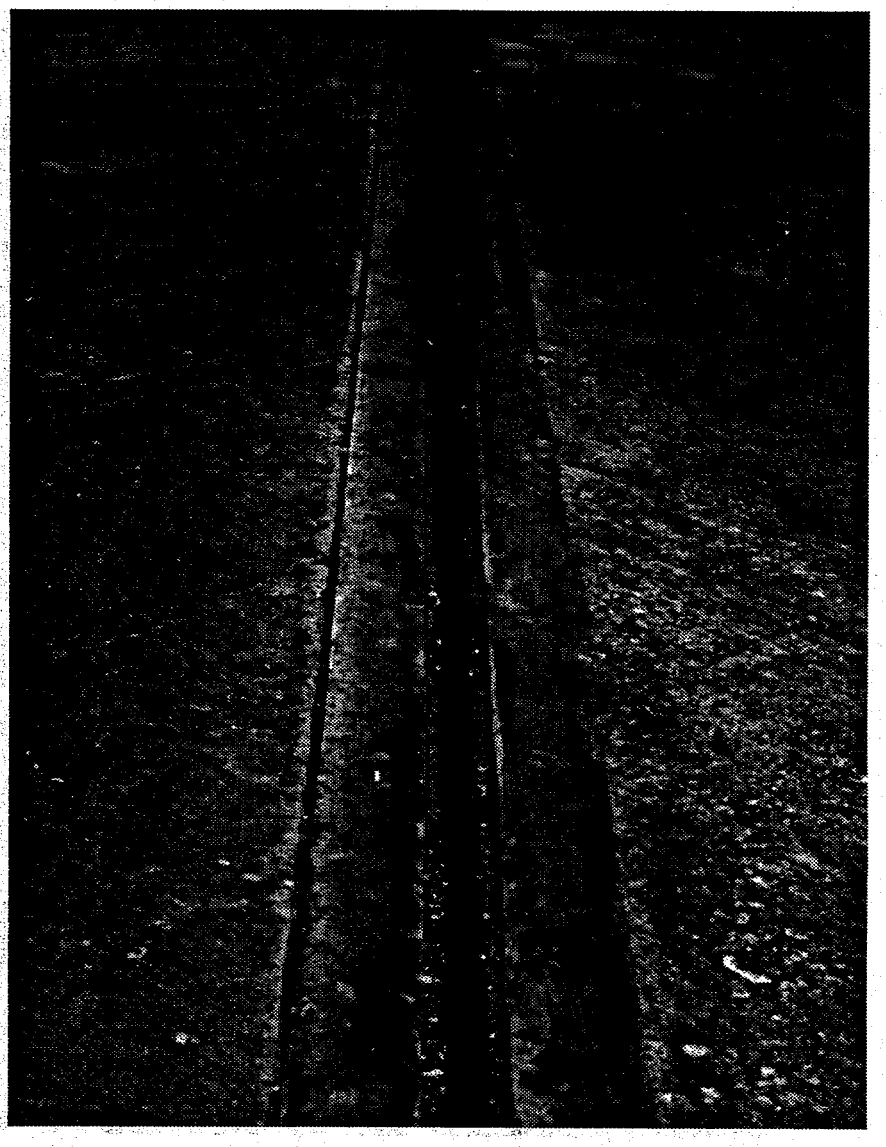
Figure 66

NOVEMBER 1994

TECHSTAR INC.:

TECHSTAR W300 SEAL

Figure 67



JUNE 1995

TECHSTAR INC.:

TECHSTAR W300 SEAL

Figure 68

NOVEMBER 1995

TECHSTAR INC.

TECHSTAR W300 SEAL

Figure 69

CHAPTER IV

DISCUSSION AND ANALYSIS

4.0 GENERAL

The Expandex Buried Joint System and the Koch BJS Joint System are the only two buried joint systems in the project. Other complete joint systems included on the project are the following: Chemcrete 1000 Expansion Joint System, Delcrete Elastomeric Concrete/ Steelflex Strip Seal System, X.J.S. Expansion Joint System, Ceva 250 System, Ceva 300 System, Jeene Structural Joint System (PC35), Jeene Structural Joint System (PC92M), Wabocrete ACM Expansion Joint, and Flexcon 20,00 Joint Sealing System. The following are seals. (only): Dow Corning 902 RCS Joint Sealant, Evazote 380 ESP, Koch 2000 SL Bridge Joint Sealant, and Sylcrete 10 Minute Joint Sealant. However, the first three seals listed are components of joint systems that are also included in the test program. RESURF IV is a polymeric header material. In the initial installation, a Hydrozo/Jeene seal was installed with the RESURF IV material.

Tables 3 through 7 show the Structures Research Center's evaluations for all the test elements from March 1994 to November 1995. The ratings for the performance criteria are explained on Table 8 For the purposes of recording data. The test joint systems and seals have been identified as shown in Table 9. For joints with only a test seal, all ratings for anchorage, noise, riding surface, and vibration relate to the existing armor angles. This information is provided only to show the current condition of the original (armor angles) anchorage systems, which were judged to be in good condition when the test seals were installed. For all other criteria, the ratings are applicable to the test seal; the ratings are for the seal. Table 10 presents a summary of information concerning the installation of the test joint systems and seals.

It is important to point: out that similar joints to the ones that exhibited failure in the test program have performed satisfactorily in other parts of the country according to joint manufacturers. This fact is a strong indication of the importance of the installation process which varies from one contractor to another. An important fact is that one of the conditions to participate in the research effort was that the supplier is fully responsible for the joint installation or the supervision of the contractor. All joint suppliers adhered to the stated condition.

4.1 COMPARISON OF SEALS

Five test joints have test seals only. These test elements include the Dow 902 RCS sealant, the Sylcrete 10 Minute Joint Sealant, the KOCH 2000 SL Sealant, the Evazote 380 ESP Seal and the TECHSTAR Seal. The installation for these seals was quick and simple. The Evazote 380 ESP Seal and the TECHSTAR Seal were the only seals installed in a solid state. All of the other three were installed as liquids. The Dow 902 RCS Sealant and the Sylcrete 10 Minute Joint Sealant required special applicators that mixed two components of the sealant and placed the mixture into the joint. The applicator for the Sylcrete was a small hand device whereas the applicator Dow 1902 RCS was much larger and mounted on a truck. For the KOCH sealant, the two component mixtures were mixed in the prepackaged bucket with a hand mechanical mixer and then poured directly from the bucket into the joint. Although, the Evazote 380 ESP Seal is a solid foam, mixing of a two-part epoxy was required. This epoxy was applied to the sides of the seal. One special feature of the Evazote seal is that two solid parts may be heat welded to form vertical seals along the barrier wall. Such vertical seals were not formed with the liquid sealants. However, according to a Dow. Corning representative, a procedure does.exist for forming vertical seals with the Dow 902 RCS sealant. Since the Evazote seal is nearly flush with the roadway surface, debris accumulation was not a problem with this seal.

As shown on Table 7, the November 1995 evaluation result, the Dow 902 RCS Sealant, was performing very well. Thus far, the Techstar W306 Seal was performing very well but has only been in service for fifteen (15) months. The Evazote 380 ESP seal was deteriorating and separating from the armor angles in several locations. Both the Sylcrete 10 Minute Joint Sealant and. the Koch 2000 SL sealant failed before the conclusion of the test program. The joint for the Sylcrete 10 Minute Joint Sealant was the only one of the four joints that was cleaned without using sandblasting and compressed air. While the Sylcrete installation was simple and required very simple equipment, more time was required to install this seal than was required for the others.

4.2 X.J.S. EXPANSION JOINT SYSTEM AND FLEXCON 2000 JOINT SEALING SYSTEM

The X.J.S. Expansion Joint System and the Flexcon 2000 Joint Sealing System consist of different materials but are somewhat similar in application and function. Both systems consist of nosing material (with aggregate and polymers) mixed and placed in small batches and of seals installed as liquids. The nosing for the X.J.S. system "cures to a dense, semi-flexible polymer."[57] The nosing material for the Flexcon 2000 System "forms a durable yet flexible compound."[58] The required

equipment, installation procedures, installation times and cure times for the two systems were approximately the same. The major exception was that a special pump- was required for the installation of the sealant in the X.J.S. System whereas no special equipment was required for the installation of the sealant in the Flexcon System. Cleanup for the X.J.S. nosing was very simple. The mixer used for the X.J.S. nosing material could be cleaned using water and flint aggregate and the resulting waste was not harmful to the environment. To date the performance of the two systems has been different. The X.J.S. System has performed well without problems. The original Flexcon System was partially removed and replaced in March 1994. The second installation of the Flexcon system failed in August 1994. The FDOT replaced the Flexcon 2000 Joint System in December, 1994. However, the second installation of the Flexcon 2000 joint sealing system failed also. The performance' evaluation ratings for the joint systems are shown in Tables 3 through 7.

4.3 CEVA 250 SYSTEM, JEENE STRUCTURAL JOINT SEALING SYSTEM (PC35) AND JEENE STRUCTURAL JOINT SEALING SYSTEM (PC92M)

The Ceva 250 system, the Jeene Structural Joint Sealing System (PC35), the Jeene Structural Joint Sealing System (PC92M) consists of nosing, seal and epoxy. The distinction between the two Jeene systems is the different nosing material. The PC92M polymer concrete nosing, a newer product than the PC35 is composed of a two-part liquid mixture, silica sand and fiber mesh. The components. are prepackaged for small batch mixing. Each batch of material is mixed in a five-gallon plastic bucket with a small hand mixer (i.e., Jiffy IVfixer). This resulted in waste that includes one five-gallon plastic bucket for each batch of material. For the test joint (62' total length) this amounted to approximately 10-15 plastic five (5) gallon buckets. According to Hydrozo/Jeene once the materials are combined, the waste products are not hazardous.

The PC35 polymer concrete nosing consists of two part liquid mixtures, fiber mesh, fine aggregate (sand) and coarse aggregate. These materials were mixed using a mortar mixer. The fumes from the mixture were very intense. The packaging for this nosing material was such that the batches were small but slightly larger than those of the PC92M and the waste was less than that from the PC92M. The basic installation procedures (excluding mixing the nosing) were the same for the two joint: systems. Once the nosing material was placed and was partially cured (approximately 30 minutes or more) the remaining steps of the installation process could begin. This included the application of epoxy to both the Jeene seal and the sides of the joint nosing. The final step of the installation for both, systems was the "pressurization" of the Jeene Structural Seal. This pressurization is a unique feature of the Jeene Structural Sealing Joint System. The installation time for the PC35 System was slightly less than that for the PC92M System.

The Ceva 250 System is very similar to the two Jeene systems. The Novulcrete, an elastomeric concrete, consists of two liquid components (resin and hardener) and aggregate. The joint system uses an epoxy, Eva-Pox Bonder #1, to secure the Evazote 380 ESP seal in the system. Just as for the other two joint systems, the Novulcrete was prepackaged for mixing small batches. The hardener and the resin were mixed and then poured into a five-gallon bucket so that aggregate could be, added and mixed with the liquid components to form the Novulcrete mixture. While prepackaging and the ability to mix small batches of the material may have been helpful in the installation process, the debris left behind was a problem. Twenty-eight (28) or more one (1) gallon cans, at least ten (10) five (5) gallon cans (possibly as many as twenty), and other debris remained after the installation of eighty feet (80') of the Ceva 250 System and Ceva 300 System. The installation procedure and time required for the CEVA 250 System was similar to that required for the Jeene systems.

The performance of these joint systems is summarized in Tables 3 through 7. As shown in Table 7, all three of the systems developed problems during the test program. The Jeene Structural Joint System (PC35) and Jeene Structural Joint System (PC92M) failed before the conclusion of the two year performance test. The Ceva 250 System received a poor rating for, three of the FDOT performance measures (general appearance, anchorage, and surface damage). The nosing in the CEVA 250 is separating from the Evazote seal. The Ceva 300 is performing satisfactorily.

4.4 CHEMPLEX 1000 EXPANSION JOINT SYSTEM

The Chemplex 1000 Expansion Joint System is similar to the expansion joint systems that consist of an elastomeric concrete, a seal and epoxy. These are the three components of the Chemplex 1000 Expansion Joint System. However, the system consists of one of various santoprene seals that each has wings for embedment in the header material. For the test joint, the seal is the Chemplex PGU H-67 Santoprene Seal. In the test joint, since the depth of the joint opening was four inches (4") or more and only a one inch (1") depth is required for the joint system, Mr. Maxcy used Chemcrete 1000 elastomeric concrete to fill the void and make the block out for the joint system. After placing one layer of the elastomeric concrete header material, Mr. Maxcy installed the santoprene seal; topped it with the epoxy mixture and placed a final layer of the elastomeric concrete. Thus, the wings of the santoprene seal were embedded in, the headers.

The installation time for the Chemcrete 1000 Expansion Joint System was longer than the installation time for the Jeene Structural Joint Systems. However, this was, in part due to the facts that the' Chemplex joint could not be installed in a wet concrete deck and the cut for the Chemplex joint was not as clean as the cut for the Jeene joint and, therefore, the Chemplex joint required more cleaning. The joint removal contractor removed the original joint system with a wet cutting concrete saw. This left the concrete deck wet. Before, Mr. Maxcy could install the Chemcrete joint system, he needed to dry the concrete deck with heat lances. While the components of the Chemcrete 1000 system were prepackaged for easy installation, the amount of debris left was small. Since the header material was mixed in only one five (5) gallon bucket, the other ones were reusable. The performance of the joint systems is summarized in Tables 3 through 7. Cracks in the nosing were noticed in August 1994. Due to excessive breakage of the nosing, the joint failed by June 1995.

4.5 RESURF IV

The original installation of the RESURF IV header material with the Jeene seal resulted in an expansion joint system similar to the other joint systems consisting of a header, seal and epoxy. The equipment and manpower needs for the RESURF IV material installation were minimal. During both the original installation and the repair installation only two men completed the work. While they did not sandblast during the original installation, they did sandblast during the repair operation. The lack of sandblasting may have contributed to the failure of the RESURF IV in the first installation. As shown in Tables 7, the Flexcon 2000 joint system failed and the Polymer nosing in Jeene: joints systems (PC35 and PC92M) failed. In spite of the failure of the RESURF IV material, the Jeene seal continued to function and maintained its bond to the RESURF material. The Jeene seal was damaged during the removal of the RESURF IV.

One very good feature of the RESURF IV system was that the amount of debris remaining after the installation was very minimal. The aggregates for he RESURF IV were packaged in bags. These and most other containers were reusable. This minimal Amount of debris was in great contrast to the amount of debris left after the installation of other joint systems (i.e., the Ceva 250 System, the Ceva 300 System and the Jeene Structural Joint System).

4.6 ARMORED EXPANSION JOINT SYSTEMS

The Delcrete Elastomeric Concrete) Steelflex Strip Seal System, the Wabocrete ACM Expansion Joint System and the Ceva 300 System are all expansion joint systems that contain armored angles,

elastomeric concrete and a seal. The first two systems have strip seals.The Ceva 300 system has the solid Evazote 380 ESP seal. In all three of the joint systems, the steel angles are made of weathering steel. Thus, in each of the joint systems, the steel developed a protective coating with a rust appearance. Usually, the steel angles are galvanized in armored expansion joints in the State of Florida. However, the SRC did not state explicitly that armored angles needed to be galvanized for the test program. The SRC did clearly state that corrosion resistance was one criterion that would be used to evaluate the test joint systems.

The Delcrete system and the Wabocrete system are two very similar strip seal systems. For all three systems, the installation procedures were similar. In both the Ceva 300 System and the Wabocrete system, the armor angles were suspended from the top during installation. While the armor angle in the Delcrete system may be suspended from the top during installation, for the test joint, the armor angles were supported from below by bolts in the bottom of the joint. Positioning and leveling the steel angles were very time consuming processes in the installation of the Delcrete system.

The nosing in each system was mixed in small batches. Since the Delcrete was mixed in a small mixer and each batch of the Wabocrete were mixed in one metal five (5) gallon cans, the amount of waste from these two(2) systems were reduced. For the Ceva 300 System, each batch of the Novulcrete nosing was mixed in a different five (5) gallon cans. Therefore, the waste from the installation of the Ceva 300 Joint System was considerable.

Each of the three systems had some beneficial features. The Delcrete nosing mixture was self leveling and was easy to install and finish. While a vertical seal along the barrier wall was not made in the test joint, doing this with the Delcrete/Steelflex Strip Seal System was possible. The Wabocrete system did not require priming of the metal or concrete. This may reduce installation time. With the Ceva 300 System, the Evazote 380 ESP seal was placed almost flush, with the roadway surface. This helps prevent debris accumulation in the joint. In addition, the Evazote 380 ESP seal may be heated/welded to form a continuous seal with direction changes:(i.e., along; the barrier wall).

As shown in Tables 3 through 7, two of the three joint systems were performing well. The Wabocrete ACM Expansion Joint System failed. In the Delcrete Elastomeric Concrete/ Steelflex Strip Seal System. debris accumulates in the joint opening. Otherwise, the Delcrete system was performing very well. The Ceva 300 system was performing satisfactorily.

4.7 BURIED JOINT SYSTEMS

The KOCH BJS Joint System and the Expandex Buried joint System were the only two joints of this kind on the project. Both systems were very similar in composition, installation and appearance. However, the aggregate blend of the Koch system was installed in three layers (2 layers with ¾" aggregate and 1 layer with ¼" aggregate). For the Expandex system only one layer of material was used. For both systems, if the joint was to be open to traffic soon after it was complete, sprinkling sand on top of the completed joint will result in a clean finished appearance. This was such a minor step but it made a great difference in the final appearance of the joint. Since both systems were buried, some maintenance concerns associated with other joint systems are eliminated. Mr. Norman of Pavement Technology and Maintenance, Inc. demonstrated that the KOCH joint system is easily repairable. If grooves or cuts develop in the surface of the KOCH system, these may be removed by heating the material with a heat lance and then, to maintain a clean finished appearance, sprinkling the top with sand. As shown in Tables 3 through 3, both of the buried joint systems were performing very well in November 1994.

A resurfacing contractor, covered/removed the KOCH BJS system in March 1995. At the time, the KOCH BJS was performing well. As shown in Tables 6 and 7 the Expandex Burried Joint System was performing very well in November 1995. For these two buried joint systems more specialized equipment was required than for the other joint systems in the project.

TABLE 3: BRIDGE EXPANSION JOINTS PERFORMANCE EVALUATION MARCH 1994 *

INFORMATION			CRITERIA										REMARKS
JOINT ID	°F	OPEN (IN)	A	B	C	D	E	F	G	H	I	J	
DOW900XJS	83	1½	4	4	4	4	4	4	4	4	4	4	JOINT LOOKS GOOD.
DOW902RCS	83	1	4	4	4	4	4	4	4	4	4	4	SEAL LOOKS GOOD.
EPO250	79	2¼	2	1	4	3	1	2	4	4	4	2	SEAL SEPARATING FROM HEADERIN A 2 FT. SECTION. SMALL CRACKS IN HEADER. PROBABLY SOME LEAKAGE.
EPO300	79	2¼	3	3	W	3	3	3	4	4	4	4	WEATHERING STEEL.
CHE1000EJS	79	1¾	3	4	4	4	2	4	4	4	4	2	TWO CRACKS IN WHEEL PATH OF RIGHT LANE.
WBAEXPBJS	82	-	3	4	4	4	4	4	4	4	4	4	NOT MUCH CHANGE IN APPEARANCE. MATERIAL IS STILL SOFT/ FLEXIBLE.
WBAACMEJS	82	1½	3	4	W	3	3	3	4	4	4	4	WEATHERING STEEL. SOME ACCUMULATION OF DEBRIS.
SYL10MJS	82	1¼	2	4	4	4	2	4	4	4	4	0	SEALANT-SURFACE DAMAGE IN CENTER LANE. SEALANT SPLITTING IN RIGHT SHOULDER. LEAKING IN MANY PLACES.
EPO380ESP	82	1¼	4	4	4	4	4	4	4	4	4	4	MICROCRACKING IN SEAL AT TOP SURFACE. THIS IS NOT CREATING A PROBLEM.
KOCH2000SL	70	1.1	4	4	4	3	4	4	4	4	4	4	SOME DEBRIS ACCUMULATION IN JOINT.
KOCHBJS	70	-	4	4	4	4	4	4	4	4	4	4	JOINT LOOKS GOOD. SOME SUPERFICIAL PITTING IN THE SHOULDERS SIMILAR TO THE ROADWAY SURFACE.
RJWFLEX2000	70	1.3	1	1	4	4	0	-	-	-	-	-	JOINT FAILED. HEADER BREAKING DOWN. JOINT REPLACED 3/14/94.
DSBDELSTS	70	2¼	3	4	W	2	4	3	4	4	4	4	WEATHERING STEEL. DEBRIS ACCUMULATING AT MANY LOCATIONS.
HJPC35	70	¾	4	4	4	4	4	4	4	4	4	4	JOINT LOOKS GOOD.
HJPC92M	83	¾	1	3	4	4	1	2	4	4	4	1	CRACK AT HEADER AND DECK INTERFACE (FROM SHOULDER TO MIDDLE TRAFFIC LANE) ON APPROACH SLAB SIDE.
PCIRESFIV	83	1¼	1	0	-	-	0	-	-	-	-	-	HEADER FAILED. HEADER MATERIAL WAS SETTLING IN MIDDLE LANE. APPROXIMATELY 20 FEET OF HEADERS REPLACED 3/8/94.

CRITERIA RATING: (0 = FAILURE, 1 = POOR, 2 = FAIR/ AVERAGE, 3 = GOOD, 4 = EXCELLENT)

A= GENERAL APPEARANCE
B= ANCHORAGE
C= CORROSION
D= DEBRIS ACCUMULATION
E= SURFACE DAMAGE
F= MAINTENANCE (NEED/EASE)
G= NOISE
H= RIDING SURFACE
I= VIBRATION
J= WATER TIGHTNESS

(ONLY WHOLE NUMBER RATINGS PERMITTED)
(COLUMN 6 = AMBIENT AIR TEMPERTURE)

°F= DAILY HIGH TEMPERATURE FROM THE NATIONAL WEATHER SERVICE. W= WEATHERING STEEL

*NOTE: CORRECTION MADE IN REMARKS FOR EPO250 AND EPO300.

TABLE 4: BRIDGE EXPANSION JOINTS PERFORMANCE EVALUATION AUGUST 1994 *

INFORMATION			CRITERIA										REMARKS
JOINT ID	°F	OPEN (IN)	A	B	C	D	E	F	G	H	I	J	
DOW900XJS	94	1	4	4	4	3	4	4	4	4	4	2	SMALL AMOUNT OF DEBRIS IN THE SHOULDERS. LEAKAGE AT CRACK WHICH IS AN EXTENSION OF A CRACK IN THE ROADWAY SURFACE.
DOW902RCS	94	1.1	4	3	4	3	4	4	4	4	4	4	SEAL LOOKS GREAT. LEAKAGE AT LOCATION OF ANGLE DISPLACEMENT.
EPO250	102	1.3	2	1	4	3	1	2	4	4	4	2	SEAL SEPARATING FROM HEADER IN A 2 FT. SECTION. SMALL CRACKS IN HEADER. SOME LEAKAGE.
EPO300	102	1.3	3	3	W	3	3	3	4	4	4	4	SMALL AMOUNT OF DEBRIS IN SHOULDER. WEATHERING STEEL.
CHE1000EJS	102	1¾	3	3	4	3	2	3	3	3	4	2	CRACKS IN SOME WHEEL PATHS OF RIGHT, CENTER AND LEFT LANES.
WBAEXPBJS	91	-	3	4	4	3	4	4	4	4	4	4	NOT MUCH CHANGE IN APPEARANCE. MATERIAL IS STILL SOFT/ FLEXIBLE. SOME DEBRIS IN SHOULDERS.
WBAACMEJS	91	1	0	0	W	-	0	0	-	-	-	0	JOINT FAILED 8/94.
SYL10MJS	102	1¼	1	4	4	3	1	2	4	4	4	0	SEALANT SURFACE DAMAGE IN CENTER LANE. SEALANT SPLITTING IN RIGHT SHOULDER. LEAKING IN MANY PLACES.
EPO380ESP	102	1.1	2	4	4	3	2	2	4	4	4	2	MICROCRACKING AND SOME SEPARATION OF SEAL AT TOP SURFACE. DEBRIS IN SHOULDERS. A FEW VOIDS IN SEAL IN RIGHT SHOULDER.
KOCH2000SL	91	1¼	2	4	4	2	2	3	4	4	4	2	SOME DEBRIS IN JOINT. SOME PUNCTURES AND BULGES IN SEAL.
KOCHBJS	91	-	4	4	4	4	4	4	4	4	4	4	JOINT LOOKS VERY GOOD. SOME SUPERFICIAL PITTING IN THE SHOULDERS SIMILAR TO THE ROADWAY SURFACE.
RJWFLEX2000	91	1½	1	0	4	3	1	1	2	2	3	-	REPLACED JOINT (3/94) FAILED. HEADER BREAKING DOWN IN CENTER LANE. SEPARATION OF JOINT SYSTEM; LOOSE ANCHORAGE.
DSBDELSTS	96	2¼	3	4	W	2	4	3	3	3	4	4	NOSING LOOKS EXCELLENT. DEBRIS AT MANY LOCATIONS. NOISE AND RIDE BUMP DUE TO DIFFERENTIAL DISPLACEMENT OF HEADERS.
HJPC35	96	¾	2	2	4	3	1	1	3	3	3	2	BROKEN NOSING IN LEFT WHEEL PATH OF CENTER LANE.
HJPC92M	102	1	2	2	4	3	2	3	4	4	4	1	REPAIR TO JOINT SYSTEM IN MAY 1994. CRACK (SEPARATION) AT HEADER AND DECK INTERFACE IN RIGHT SHOULDER ON BOTH SIDES.
PCIRESFIV	102	1-2	2	3	4	3	2	3	4	4	4	-	TRANSVERSE CRACKS IN HEADER (INCLUDING THE SECTION REPLACED 3/8/94). JOINT OPENING VARIES 1" TO 2".

CRITERIA RATING: (0 = FAILURE, 1 = POOR, 2 = FAIR/ AVERAGE, 3 = GOOD, 4 = EXCELLENT)

A= GENERAL APPEARANCE
B= ANCHORAGE
C= CORROSION
W= WEATHERING STEEL
D= DEBRIS ACCUMULATION
E= SURFACE DAMAGE
F= MAINTENANCE (NEED/EASE)
G= NOISE
H= RIDING SURFACE
I= VIBRATION
J= WATER TIGHTNESS

(ONLY WHOLE NUMBER RATINGS PERMITTED)
(COLUMN 6 = AMBIENT AIR TEMPERTURE)

*NOTE: CORRECTION MADE IN REMARKS FOR EPO250 AND EP0300.

TABLE 5: BRIDGE EXPANSION JOINTS PERFORMANCE EVALUATION NOVEMBER 1994 *

INFORMATION			CRITERIA										REMARKS
JOINT ID	°F	OPEN (IN)	A	B	C	D	E	F	G	H	I	J	
DOW900XJS	-	1.9	3	4	4	4	3	4	4	4	4	2	THREE MINOR GROOVES IN NOSING. LEAKAGE AT CRACK WHICH IS AN EXTENSION OF A ROADWAY SURFACE CRACK.
DOW902RCS	-	-	4	3	4	4	4	4	4	4	4	2	SEAL LOOKS GREAT. LEAKAGE AT DISPLACED ANGLE NOT SEAL. WATER STANDING IN JOINT BUT NOT PASSING THROUGH.
EPO250	-	-	1	1	4	3	1	2	4	4	4	2	SEAL SEPARATING FROM HEADER IN A 2 FT. SECTION. SMALL LENGTHWISE CRACKS IN HEADER. LEAKAGE. DEBRIS IN SHOULDERS.
EPO300	-	-	2	3	W	3	3	3	4	4	4	4	VERY SMALL AMOUNT OF DEBRIS IN SHOULDERS. WEATHERING STEEL.
CHE1000EJS	-	1.2	2	1	4	2	2	4	4	4	4	2	TWO CRACKS IN RIGHT LANE. NOSING ALMOST BROKEN. ONE CRACK IN LEFT LANE AND ONE CRACK IN MIDDLE LANE.
WBAEXPBJS	-	-	3	4	4	3	4	4	4	4	4	4	NOT MUCH CHANGE IN APPEARANCE. MATERIAL IS STILL SOFT. SMALL AMOUNT OF DEBRIS.
WBAACMEJS	-	-	0	-	W	-	0	0	-	-	-	0	JOINT FAILED IN AUGUST 1994. ASPHALT PLACED IN TWO TRAFFIC LANES.
SYL10MJS	-	-	1	4	4	3	1	-	4	4	2	0	SEALANT-SURFACE DAMAGE IN CENTER LANE. SEALANT SPLITTING IN RIGHT SHOULDER. LEAKING IN MANY PLACES.
EPO380ESP	-	1.1	2	3	4	3	2/1	4	3	4	3	2	MICROCRACKING IN SEAL AT TOP SURFACE. SEAL SEPARATING IN THE RIGHT LANE. LEAKAGE IN RIGHT AND LEFT LANES.
KOCH2000SL	-	-	2	4	4	3	2	4	4	4	4	1	SOME DEBRIS IN JOINT IN SHOULDERS. PUNCTURES IN THE SEAL ARE VISIBLE IN A FEW LOCATIONS.
KOCHBJS	-	-	3	4	4	4	4	4	4	4	4	4	JOINT LOOKS GOOD. SUPERFICIAL PITTING IN THE SHOULDERS LIKE ROADWAY SURFACE. MINOR DEPRESSIONS IN WHEEL PATH.
RJWFLEX2000	-	-	0	0	4	4	0	-	-	-	-	-	JOINT FAILED IN AUGUST FOR SECOND TIME. MORE HEADER BREAKAGE. SOME ASPHALT WAS PLACED IN THE JOINT.
DSBDELSTS	-	1.9	3	4	W	2	4	3	2	2	4	4	WEATHERING STEEL. DEBRIS IN MANY PLACES. MINOR SURFACE ABRASION IN SPOTS. NOSING IS SOUND AND LOOKS VERY GOOD.
HJPC35	-	0.8	1	1	4	1	2	2	2	2	3	1	FAILURE OF SOUTH HEADER IN A 2 FOOT SECTON. CRACK BETWEEN NORTH HEADER AND DECK IN RIGHT WHEEL PATH.
HJPC92M	-	1	1	2	4	3	1	-	-	-	-	1/0	CRACK AT HEADER AND DECK INTERFACE (FROM SHOULDER TO CENTER TRAFFIC LANE) ON APPROACH SLAB SIDE. LEAKING IN MANY PLACES.
PCIRESFIV	-	-	2	3	4	3	2	3	4	4	4	-	HEADER NOT SIGNIFICANTLY DIFFERENT FROM AUGUST 1994. TRANSVERSE CRACKS IN HEADER AT APPROX. 3 FT INTERVALS.

CRITERIA RATING: (0 = FAILURE, 1 = POOR, 2 = FAIR/ AVERAGE, 3 = GOOD, 4 = EXCELLENT)

A= GENERAL APPEARANCE
B= ANCHORAGE
C= CORROSION
D= DEBRIS ACCUMULATION
E= SURFACE DAMAGE
F= MAINTENANCE (NEED/EASE)
G= NOISE
H= RIDING SURFACE
I= VIBRATION
J= WATER TIGHTNESS

(ONLY WHOLE NUMBER RATINGS PERMITTED)
(COLUMN 6 = AMBIENT AIR TEMPERTURE)

°F= DAILY HIGH TEMPERATURE FROM THE NATIONAL WEATHER SERVICE. W= WEATHERING STEEL

*DURING THE WEEK OF NOVEMBER 14, 1995, TROPICAL STORM GORDAN CAUSED SEVERE WEATHER CONDITIONS IN SOUTH AND CENTRAL FLORIDA. THIS INCLUDED 40-50 MPH WINDS AND INTERMITENT RAINS.

TABLE 6: BRIDGE EXPANSION JOINTS PERFORMANCE EVALUATION
JUNE 1995

INFORMATION			CRITERIA										REMARKS
JOINT ID	°F	OPEN (IN)	A	B	C	D	E	F	G	H	I	J	SEE NOTES IN THE TEXT.
DOW900XJS	97	[13]	3	4	4	4	3	4	4	4	4	2	VERY MINOR BREAKAGE/WEAR AT TOP INSIDE EDGE OF NOSING. JOINT LOKS GREAT OTHERWISE.
DOW902RCS	97	1.4	4	2	4	4	4	4	4	4	4	4	SEAL LOOKS EXCELLENT.
EPO250	102	1.5	1	1	4	4	1	3	4	4	4	2	SEPARATION OF NOSING AT DECK AND SOME LENGTHWISE CRACKS.
EPO300	102	2.2	2	3	W	4	3	3	4	4	4	2	NO MAJOR DAMAGE VISIBLE.
CHE1000EJS	100	-	0/1	0/1	4	3	0/1	1	3	3	4	2/1	BREAKAGE OF NOSING IN FIVE LOACATIONS. NOSING FAILED.
WBAEXPBJS	95	-	3	4	4	4	4	4	4	4	4	4	JOINT IS PERFORMING WELL.
WBAACMEJS	95	-	0	0	W	-	0	0	-	-	-	0	JOINT FAILED 8/94. REPLACEMENT IS PLANNED.
SYL10MJS	96	1.3	1	4	4	4	1	2	4	3	4	0	FAILED DUE TO LEAKING IN MANY PLACES.
EPO380ESP	96	1.1	2/1	3	4	4	1	2	3	3	4	2	SEPARATION OF SEAL FROM ARMOR ANGLES IN SEVERAL REGIONS.
KOCH2000SL	99	1.2	1/0	4	4	3	1/0	4	4	4	4	1	SIX OR MORE PUNCTURE HOLES IN THE SEAL.
KOCHBJS	-	-	-	-	-	-	-	-	-	-	-	-	REMOVED BY ROADWAY RESURFACING CONTRACTOR IN MARCH 1995.
RJWFLEX2000	-	-	-	-	-	-	-	-	-	-	-	-	JOINT FAILED. REPLACED 12/7/94.
DSBDELSTS	102	1.4	3	4	W	1	4	3	3	4	4	4	NOSING LOOKS EXCELLENT. DEBRIS IN MANY LOCATIONS.
HJPC35	102	1.6	1/0	0/1	4	4	1/0	1	3	2	3	1	IN TWO SECTIONS, THE NOSING HAS FAILED.
HJPC92M	95	-	0	-	-	-	-	-	-	-	-	-	JOINT SEPARATION FROM DECK. REPLACEMENT SCHEDULED.
PCIRESFIV	95	1.1	2/1	2/1	4	3	1/2	2	3	3	4	-	BROKEN HEADER (9") IN LEFT LANE. TRANSVERSE CRACKS.
TECHSTARW	89	2	3	4	4	3	4	4	4	4	4	4	DEBRIS IN JOINT. SEAL LOOKS VERY GOOD. NO SEAL ON BARRIER

CRITERIA RATING: (0 = FAILURE, 1 = POOR, 2 = FAIR/ AVERAGE, 3 = GOOD, 4 = EXCELLENT)

A= GENERAL APPEARANCE D= DEBRIS ACCUMULATION G= NOISE J= WATER TIGHTNESS
B= ANCHORAGE E= SURFACE DAMAGE H= RIDING SURFACE
C= CORROSION F= MAINTNANCE (NEED/EASE) I= VIBRATION (ONLY WHOLE NUMBER RATINGS PERMITTED)
(COLUMN 6 = AMBIENT AIR TEMPERTURE)

NOTE: WATER TIGHTNESS RATINGS ARE BASED ON BELOW SURFACE INSPECTIONS IN NOVEMBER 1994 AND ABOVE DECK INSPECTIONS IN JUNE 1995.

TABLE 7 : BRIDGE EXPANSION JOINTS PERFORMANCE EVALUATION (NOVEMBER 1995)

INFORMATION			CRITERIA										REMARKS (SEE NOTES IN THE TEXT)
JOINT ID	°F	OPEN (in)	A	B	C	D	E	F	G	H	I	J	
DOW900XJS	80	1.25	3	4	4	4	3	4	4	4	4	2	VERY MINOR BREAKAGE/WEAR AT TOP INSIDE EDGE OF NOSING. JOINT LOOKS GREAT OTHERWISE.
DOW902RCS	82	1.25	4	2	4	4	4	4	4	4	4	4	SEAL IN A GOOD SHAPE (LOOKS EXCELLENT)
EPO250	82	1.30	1	1	4	3	1	3	3	3	3	2	SEPARATION OF NOSING AT DECK AND SOME LENGTHWISE CRACKS.
EPO300	80	2.2	2	3	W	3	3	3	3	3	4	2	DEBRIS AT SHOULDER, NO MAJOR DAMAGE IS VISIBLE.
CHE1000EJS	82	1.88	0	0	4	2	0	0	2	2	3	1	BREAKAGE OF NOSING IN SIX(6) LOACATIONS. NOSING FAILED.
WBAEXPBJS	89	-	3	4	4	4	4	4	4	4	4	4	JOINT IS PERFORMING VERY WELL.
WBAACMEJS	-	-	0	0	W	-	0	0	-	-	-	0	JOINT FAILED 8/94. JOINT HAS BEEN REPLACED BY DISTRICT.
SYL10MJS	86	1.13	1	4	4	3	1	2	3	3	3	0	FAILED DUE TO LEAKING IN MANY PLACES. SEPERATION OF SEAL.
EPO380ESP	87	1.12	2	3	4	4	1	2	3	3	4	2	SEPARATION OF SEAL FROM ARMOR ANGLES IN SEVERAL REGIONS.
KOCH2000SL	89	1.12	0	4	4	3	0	2	3	3	4	1	SEPERATION OF SEAL AT MANY LOCATIONS. SEAL IS DAMAGED.
KOCHBJS	-	-	-	-	-	-	-	-	-	-	-	-	REMOVED BY ROADWAY RESURFACING CONTRACTOR IN MARCH 1995.
RJWFLEX2000	-	-	-	-	-	-	-	-	-	-	-	-	THE JOINT HAS FAILED. REPLACED 12/7/94.
DSBDELSTS	85	1.75	3	4	W	1	4	3	3	4	4	4	NOSING LOOKS EXCELLENT. DEBRIS IN MANY LOCATIONS-SHOULDER
HJPC35	86	1.75	0	0	4	3	0	1	2	2	3	1	IN TWO SECTIONS(22"&24"), THE NOSING HAS FAILED.
HJPC92M	-	-	0	-	-	-	-	-	-	-	-	-	JOINT HAS FAILED. JOINT HAS BEEN REPLACED BY DISTRICT.
PCIRESFIV	90	1.1	1	2	4	2	1	2	2	2	3	-	BROKEN HEADER (9") IN LEFT LANE. TRANSVERSE CRACKS. DEBRIS
TECHSTARW	88	1.88	3	4	4	3	4	4	3	4	3	4	DEBRIS IN JOINT. SEAL LOOKS VERY GOOD . NO SEAL ON BARRIER

CRITERIA RATING: (0 = FAILURE, 1 = POOR, 2 = FAIR/ AVERAGE, 3 = GOOD, 4 = EXCELLENT)

A= GENERAL APPEARANCE
B= ANCHORAGE
C= CORROSION
D= DEBRIS ACCUMULATION
E= SURFACE DAMAGE
F= MAINTNANCE (NEED/EASE)
G= NOISE
H= RIDING SURFACE
I= VIBRATION
J= WATER TIGHTNESS

(ONLY WHOLE NUMBER RATINGS PERMITTED)

(COLUMN 6 = AMBIENT AIR TEMPERTURE)

NOTE: WATER TIGHTNESS RATINGS ARE BASED ON BELOW SURFACE INSPECTIONS IN NOVEMBER 1994 AND ABOVE DECK INSPECTIONS IN JUNE 1995 AND NOVEMBER 1995.

TABLE 8 : BRIDGE EXPANSION JOINT PERFORMANCE RATING CRITERIA

JOINT EVALUATION PARAMETER	4 EXCELLENT	3 GOOD	2 FAIR/AVERAGE	1 POOR	0 FAILURE
A GENERAL APPEARANCE	CONSIDERING ALL CRITERIA, THE JOINT LOOKS NEW	CONSIDERING ALL CRITERIA THE JOINT APPEARS TO HAVE ONLY MINOR WEAR	CONSIDERING ALL CRITERIA, THE JOINT HAS SOME WEAR, MINOR DISPLACEMENT OR MINOR DAMAGE AT A FEW LOCATIONS	CONSIDERING ALL CRITERIA, THE JOINT HAS MAJOR DAMAGE OR LEAKING OR CRACKING AND IS DETERIORATING	CONSIDERING ALL CRITERIA, THE JOINT HAS MAJOR DAMAGE OF SEVERAL TYPES. THE JOINT HAS FAILED AND NEEDS REPLACING
B ANCHORAGE	THERE IS NO VISIBLE DETERIORATION OF THE ANCHORAGE	VERY SOUND ANCHORAGE	SOUND ANCHORAGE	ANCHORAGE IS WEAK IN A FEW PLACES	ANCHORAGE IS WEAK IN MANY PLACES; ANCHORAGE IS FAILING
C CORROSION	NO CORROSION	A SMALL AMOUNT OF CORROSION IN ONLY AT FEW SPOTS	A SMALL AMOUNT OF CORROSION IN SEVERAL SPOTS	A SMALL AMOUNT OF CORROSION IN MANY/ MOST SPOTS	MAJOR CORROSION IN MOST OR MANY SPOTS
D DEBRIS ACCUMULATION	NO NOTICEABLE DEBRIS IN JOINT	SMALL AMOUNTS OF DEBRIS AT SPOT LOCATIONS	BUILDUP OF DEBRIS AT SPOT LOCATIONS	BUILDUP OF DEBRIS AT MOST LOCATIONS	JOINT IS FILLED WITH COMPACTED MATERIAL
E SURFACE DAMAGE	NO SURFACE DAMAGE; NEARLY NEW APPEARANCE	MINOR DAMAGE TO ARMOR OR NOSING OR SHALLOW SCRAPES, OR TRAFFIC WEAR	MINOR DAMAGE TO ARMOR OR NOSING OR SHALLOW SCRAPES, OR TRAFFIC WEAR OR MINOR CRACKING	MAJOR DAMAGE TO ARMOR, NOSING OR SEAL; OR MAJOR CRACKING OR DELAMINATION OF SEALS	FAILURE OF NOSING OR SEALS. THE JOINT NEEDS REPLACING
F MAINTENANCE (EASE/NEED)	NO MAINTENANCE IS REQUIRED.	THE JOINT ONLY NEEDS TO BE CLEANED	THE JOINT NEEDS TO BE CLEANED AND/OR MAY HAVE A FEW SPOTS THAT NEED MINOR OTHER MAINTENANCE	THE JOINT NEEDS TO BE CLEANED OR HAVE MAJOR REPAIRS	THE JOINT HAS FAILED AND CAN NOT BE REPAIRED. THE JOINT NEEDS TO BE REPLACED.
G NOISE	NO OR SLIGHT NOISE	LOW NOISE	MODERATE NOISE	LOUD NOISE	EXTREMELY LOUD NOISE
H RIDING SURFACE	THE RIDING SURFACE IS VERY SMOOTH	THE RIDING SURFACE IS SMOOTH	THE RIDING SURFACE HAS A SMALL BUMP AT THE JOINT	THE RIDING SURFACE HAS A LARGE BUMP AT THE JOINT	THE RIDE IS UNCOMFORTABLE AND DISCONCERTING; IT IS DANGEROUS
I VIBRATION	NO VIBRATION IS HEARD, FELT OR OBSERVED	LOW VIBRATION	MODERATE VIBRATION	MUCH VIBRATION	EXCESSIVE VIBRATION; THE JOINT IS LOOSE
J WATER TIGHTNESS	NO SIGN OF JOINT LEAKAGE	NOT APPLICABLE	EVIDENCE OF MINIMAL LEAKAGE AT A FEW SPOT LOCATIONS	EVIDENCE OF LEAKAGE AT SEVERAL LOCATIONS	EXCESSIVE LEAKAGE

INSTRUCTIONS: THE JOINT INSPECTOR SHOULD USE THIS SHEET TO HELP HIM/HER DETERMINE THE MOST APPROPRIATE RATING FOR EACH CRITERION (A-J) LISTED ON THE JOINT EVALUATION SHEET. USE ONLY WHOLE NUMBER RATINGS. USE THE REMARKS SECTION ON THE SHEET TO DESCRIBE SPECIFIC DAMAGE (I.E. EXTENT AND LOCATION OF CRACKS, SPALLS, LEAKS AND DAMAGE). PLEASE FILL OUT THE EVALUATION CHART COMPLETELY FOR EACH INSPECTED JOINT. REFER TO THE JOINT IDENTIFICATION SHEET AS NEEDED. REFER TO THE SAMPLE JOINT EVALUATION SHEET. EACH JOINT EVALUATION SHEET SHOULD HAVE A NUMBER PLACED IN THE UPPER LEFT BLOCK. INSPECTOR INITIALS SHOULD BE PLACED IN COLUMN 1. QUESTIONS (FDOR/SRC 6-278-6179)?
THANK YOU FOR YOUR HELP IN RECORDING GOOD DATA.

TABLE 9: BRIDGE EXPANSION JOINT IDENTIFICATIONS

JOINT ID	BRIDGE#	TRAFFIC DIRECT.	END	END BENT	APPROX. LENGTH	SKEW
DOW900XJS	940115	SB	S	1	80'	45.26
DOW902RCS	940115	SB	N	7	80'	45.26
EPO250,EPO300	940116	NB	S	1	80'	45.26
CHE1000EJS	940116	NB	N	7	80'	45.26
WBAEXPBJS	940122	SB	S	1	73'	39.01
WBAACMEJS	940122	SB	N	13	57'	7.16
SYL10MJS	940123	NB	S	1	63'	25.92
EPO380ESP	940123	NB	N	10	58'	11.01
KOCH2000SL	940112	SB	S	1	62'	22.85
KOCHBJS	940112	SB	N	A.S	62'	22.85
RJW2000FLX	940112	SB	N	5	62'	22.85
DSBDELSTS	940111	NB	N	5	62'	22.85
HJPC35	940111	NB	S	1	62'	22.85
HJPC92M	940126	SB	N	3	62'	25.25
PCIRESFIV	940126	SB	S	1	62'	25.25
TECHSTARW	940093	SB	N*	BENT 6	57'	44.75

NOTE: Most bridge's are 58'-9" wide from coping to coping. All bridges have 5% truck traffic. Two bridges have horizontal curves: Bridge #940122 (D=00°59'33", e=0.039 ft/ft) and Bridge #940123 (D=02°1'52", e=0.075 ft/ft). N*=near north end.

TABLE 10 : BRIDGE EXPANSION JOINT INSTALLATION EVALUATION SUMMARY

JOINT SYSTEMS AND SEALS	TYPE			APPROXIMATE LABOR COUNT			INSTALLATION TIME			INSTALLATION COMPLEXITY		
	SYSTEM	SEAL ONLY	OTHER	≤3	4 TO 5	⟩5	QUICK	AVERAGE	EXTENDED	SIMPLE	AVERAGE	COMPLEX
X.J.S. EXPANSION JOINT SYSTEM	X			X				X			X	
DOW 902 RCS JOINT SEALANT		X		X			X			X		
CEVA 250 JOINT SYSTEM	X				X				X		X	
CEVA 300 JOINT SYSTEM	X				X				X			X
CHEMCRETE 1000 EXPANSION JOINT SYSTEM	X			X					X		X	
EXPANDEX BURIED JOINT SYSTEM			BJS	X				X				X
WABOCRETE ACM EXPANSION JOINT	X			X					X			X
SYLCRETE 10 MINUTE JOINT SEALANT		X		X			X			X		
EVAZOTE 380 ESP (SEAL)		X		X			X			X		
KOCH 2000 SL BRIDGE JOINT SEALING SYSTEM		X		X			X			X		
KOCH BJS JOINT SYSTEM			BJS	X				X				X
FLEXCON 2000 JOINT SEALING SYSTEM	X			X				X			X	
DELCRETE ELASTOMERIC CONCRETE/STEELFLEX STRIP SEAL SYSTEM	X				X				X			X
JEENE STRUCTURAL JOINT SEALING SYSTEM (PC35)	X				X			X			X	
JEENE STRUCTURAL JOINT SEALING SYSTEM (PC92M)	X					X		X			X	
RESURF IV			NOSING	X				X			X	
TECHSTAR W300 SEAL		X			X		X			X		

BJS= BURIED JOINT SYSTEM. INSTALLATION TIME: QUICK= ≤2 HOURS , AVERAGE= 2 TO 5 HOURS, EXTENDED = >5 HOURS. INSTALLATION COMPLEXITY BASED UPON FDOT OBSERVATIONS AND CONSIDERATIONS OF SEVERAL ITEMS (NUMBER AND DIFFICULTY OF STEPS; EQUIPMENT, SKILL & PERCISION REQUIREMENTS; ETC.)

CHAPTER V

LOAD TEST AND STATE MATERIALS OFFICE EVALUATION

5.0 GENERAL

This report gives the latest results available on the expansion joint test program. There will be a total of seventeen (17) joints or seals on eight (8) bridges. The test program has been in effect for the last two years. Data and results from the load tests evaluation performed in March 1994 and June 1995 will be presented and discussed in this chapter.

For the seventeen (17) joints or seals on eight (8) bridges, the basic data collected include the following:

1. Joint opening/movement (3 directions: longitudinal, transverse. and vertical (relative and absolute)).
2. The bridge and joint vibration will serve as reference data for comparison to future test data.
3. Strain (stress) in the header material.

The actual data collected for each bridge joint depends upon the actual conditions at the joint. For example, if only the seal was replaced at the joint, strain in the header material was not applicable.

5.1 LOAD TEST EVALUATION

The SRC used the FDOT's load test trucks to note the performance of the joints and bridges several times during the test program. This load testing provides information concerning actual joint performance under traffic loads. In addition, test results will be used to help monitor for future signs .of deterioration. The SRC monitored the joints during and after test loading to determine strains and movements. This required the use of a computer data acquisition system And instrumentation. The first load tests were done during the week of March 7, 1994. Loaded with 24 or 30 testing blocks, the Departments load test vehicles traveled at 55 and 60 mph to test the bridges dynamically. The dimensions of the Departments load test vehicle and the loads for 24 and 30 testing blocks, are shown in Figure 3. Figure 70 shows one test vehicle in motion during the second set of load tests performed in June 1995.

The SRC conducted two load tests to note the performance of the joints and bridges under traffic loads. This load testing provides information concerning-actual joint performance under traffic loads. In addition, test results will be used to help monitor for future signs of deterioration. The first load tests were done during March 1994. Loaded with 24 or 30 testing blocks (100.8 kips, and 113.7 kips, respectively), the Departments load test vehicles traveled at 55 and 60 mph to test the bridges dynamically.

5.2 INSTRUMENTATION AND DATA COLLECTION

During the tests, strain gauges, accelerometers, and Linear Voltage Displacement Transducers (LVDT), were used to monitor the strains, vibrations, and displacements of the bridges and- expansion joint elements. Some typical instrumentation used is shown in Figures 4, 5, and 6 of chapter 2 and Figures 71 and 72 Figure 73 shows the side and end views for the instrumentation layout for I-95 North Bound, North End bridge over Midway Road. Figure 74 shows the side and end views for the instrumentation layout for 1-95 North Bound, North End bridge over Glade's Road. Data from the test was recorded using a Megadac Data Acquisition System and TCS (Test Control Software) produced by Optim Electronics Corporation. Data from the test was collected and recorded using a high speed data acquisition system. Typical results for both (March 1994 and June 1995) Load Test Evaluations will be discussed in this chapter.

5.2.1 Average Daily Traffic

The official Average Daily Traffic (ADT) and percent truck traffic reported in Table l is from the FDOT Structural' Inventory and Appraisal' Reports. Copy of each report for each bridge is in Appendix E. For each bridge the ADT was approximately 15,000 with 5% truck traffic.

5.2.2 Joint Opening/movement (Crack Gauges and Lvdt's)

In general, joints will experience vertical, longitudinal and transverse movement. The two sides of the joint will have differential movement. To measure these movements, crack gauges and LVDT's were used. The longitudinal opening of the joint was measured with a crack gauge across the opening. Transverse movement of the joint could be measured by placing a crack gauge with one end attached to a stationary point off the bridge and the other end attached to the bridge (one on each side of the joint) and oriented to give the transverse movement. To measure the vertical displacement; two (2) LVDT's per joint were needed. Since the bridge decks are skew, two gauges were placed across the joint: one parallel with the barrier wall (coping) and one perpendicular to the skew of the joint. Using two gauges helped eliminate or reduce errors inaccuracy due to misalignment. Thus, two (2) crack gauges and two (2) LVDT's were required at each joint to measure joint movement.

5.2.3 Deck Temperature (Thermistor)

To record ambient air temperatures and bridge surface temperatures, two (2) thermistors per bridge were used. The Geokon readout box was used to record the temperature readings.

5.2.4 Bridge And Joint Vibration (Accelerometers And Vibrometers)

In general, a total of six (6) accelerometers/vibrometers were installed in same bridge, three accelerometers in each end span. The first accelerometer was to measure the transverse direction acceleration. The second accelerometer was to measure the vertical direction acceleration. Finally, the third accelerometer was to measure the longitudinal direction acceleration.

5.2.5 Strain in Header Material-(Strain Gauges)

In some headers strain gauges were used to measure strain in the material. Also, a rosette: a three-gauge 45-degree rectangular rosette was used to measure strain in the Burried Joint System.

5.3 FIELD LOAD TEST RESULTS

The load test results indicated that the joint systems were functioning within the design limitations. The joint openings and other movements were relatively small and well below the design movement ranges for the joint systems and seals.

Some analyzed typical results are shown in figures 75 through 90.

Figure 75 shows that the maximum joint opening under loading from FDOT test vehicle was 0.012 inches. For the joint on I-95 North: Bound, North End bridge over Midway Road.

Figure 76 shows the maximum vertical deflection of 0.04 inches. At center line of I-95 North Bound, North End bridge over Midway Road:

Figure 77 shows that a maximum strains of 47 micro strains at a quarter span of I-95 North Bound, North: End bridge over Midway Road.

Figure 78 shows that a maximum horizontal acceleration of 0.14 g of I-95 North Bound, North End bridge over Midway Road.

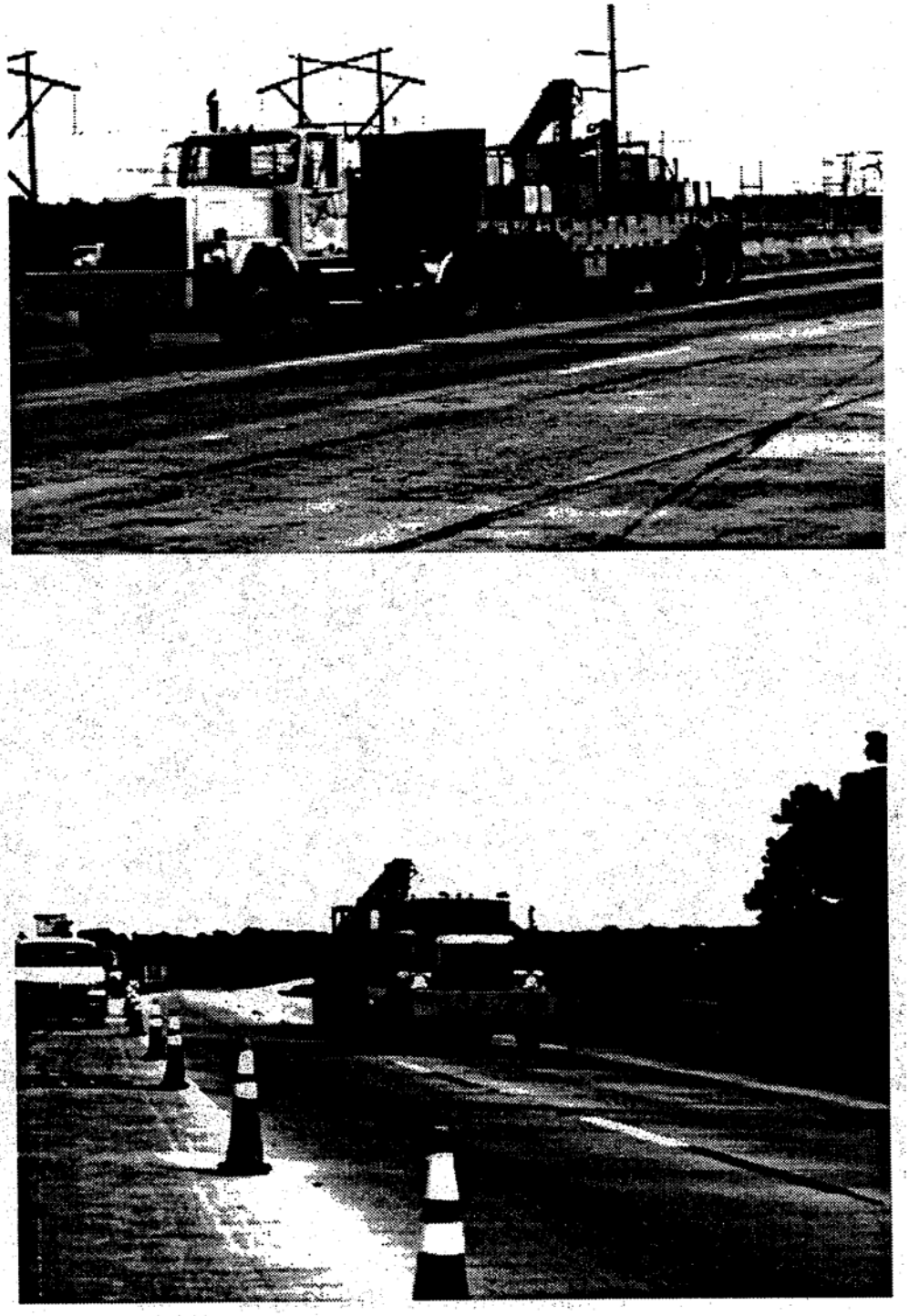
Similar typical results for other joints/bridges are shown in Figures 79 through 90.

5.4 STATE MATERIALS OFFICE EVALUATION

The State Materials Office (SMO) did not perform material property tests on the joint products as requested by SRC. The SRC requested testing for materials used in joint systems which were performing well in Fall 1994. This included materials for the following joint systems or seals:

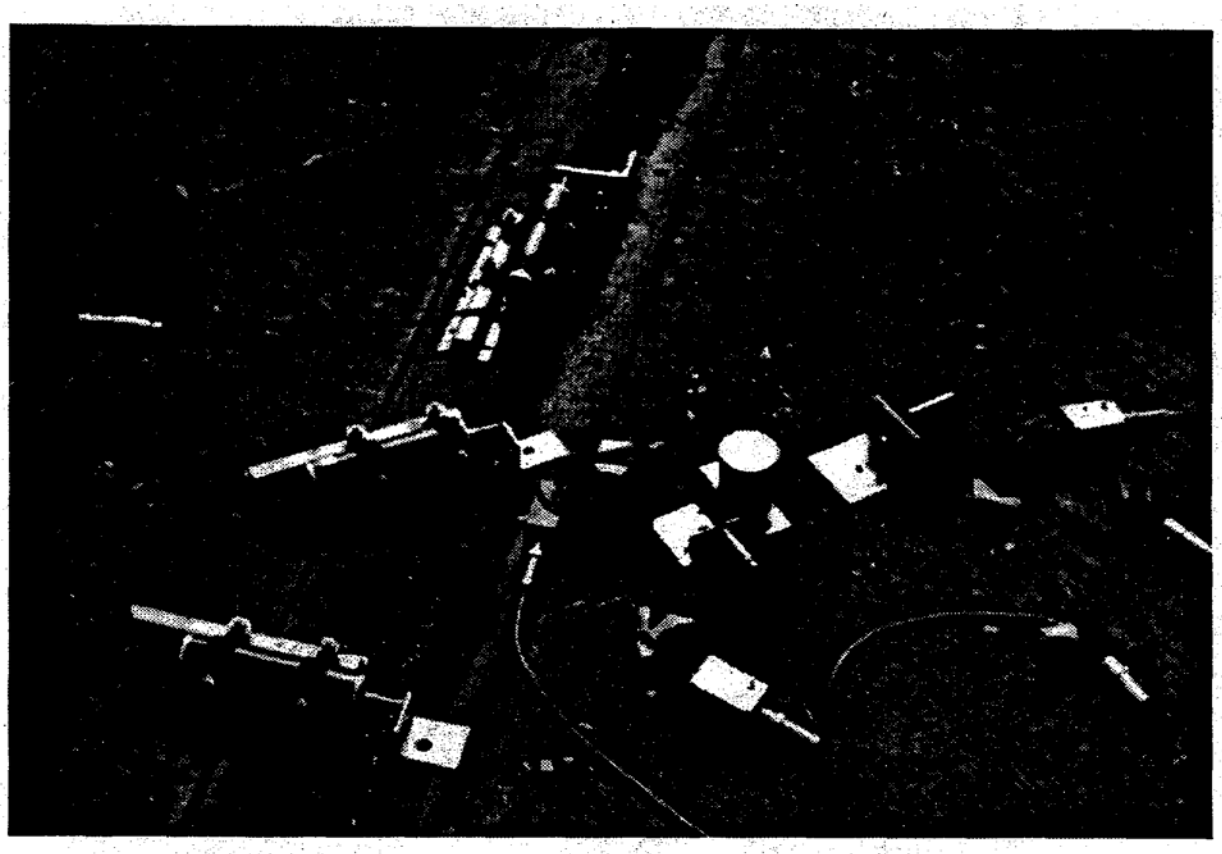
> Techstar W 300 Seal, X.J.S. Expansion Joint System, Dow 902 RCS Joint Sealant, Evazote 380 ESP Seal, Koch 2000 SL Bridge Joint Sealant, DelcreteElastomeric Concrete/ Steelflex Strip Seal System, Jeene Structural Sealing Joint System (PC35) and RESURF IV.

Since the SMO did not perform material tests (See Letter: in Appendix F), the joint products were evaluated solely based upon field installation and performance. The SRC will recommend joint products for the Department's Qualified Products List based upon field performance.



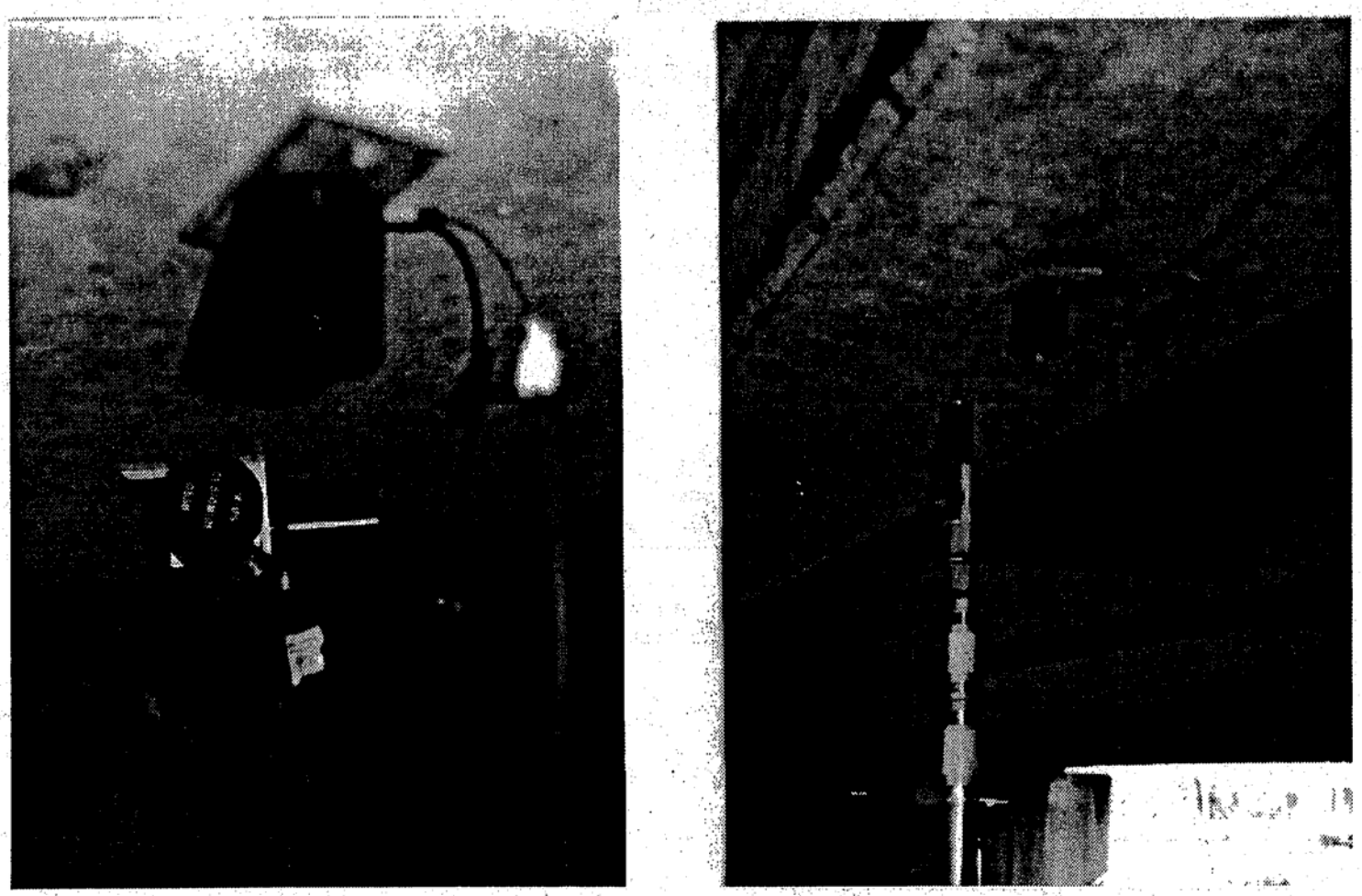
FDOT Load Test Vehicle in Motion During Test

Figure 70



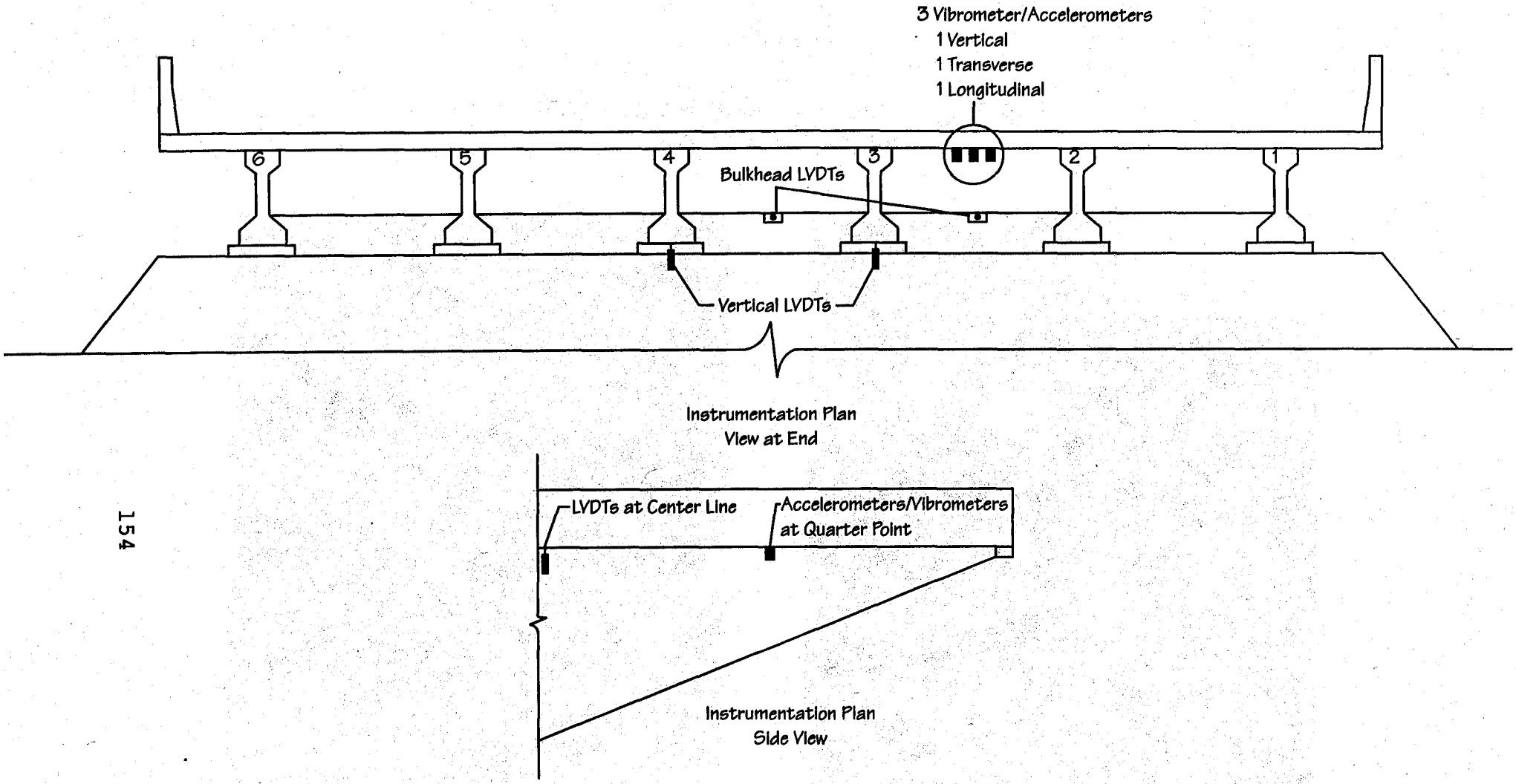
Accelerometers and Linear Voltage
Displacement Tranducers (LVDT's)
Measuring Bridge Deck and Joint response

Figure 71



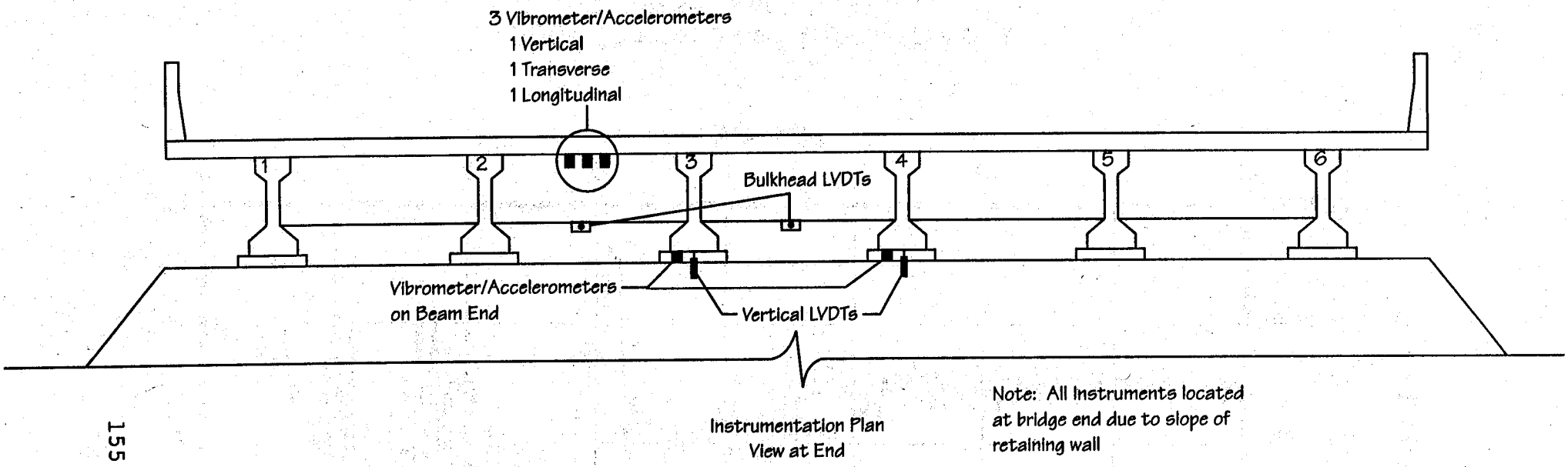
Typical Instrumentation
(LVDT Strain Gages and Accelerometers)

Figure 72



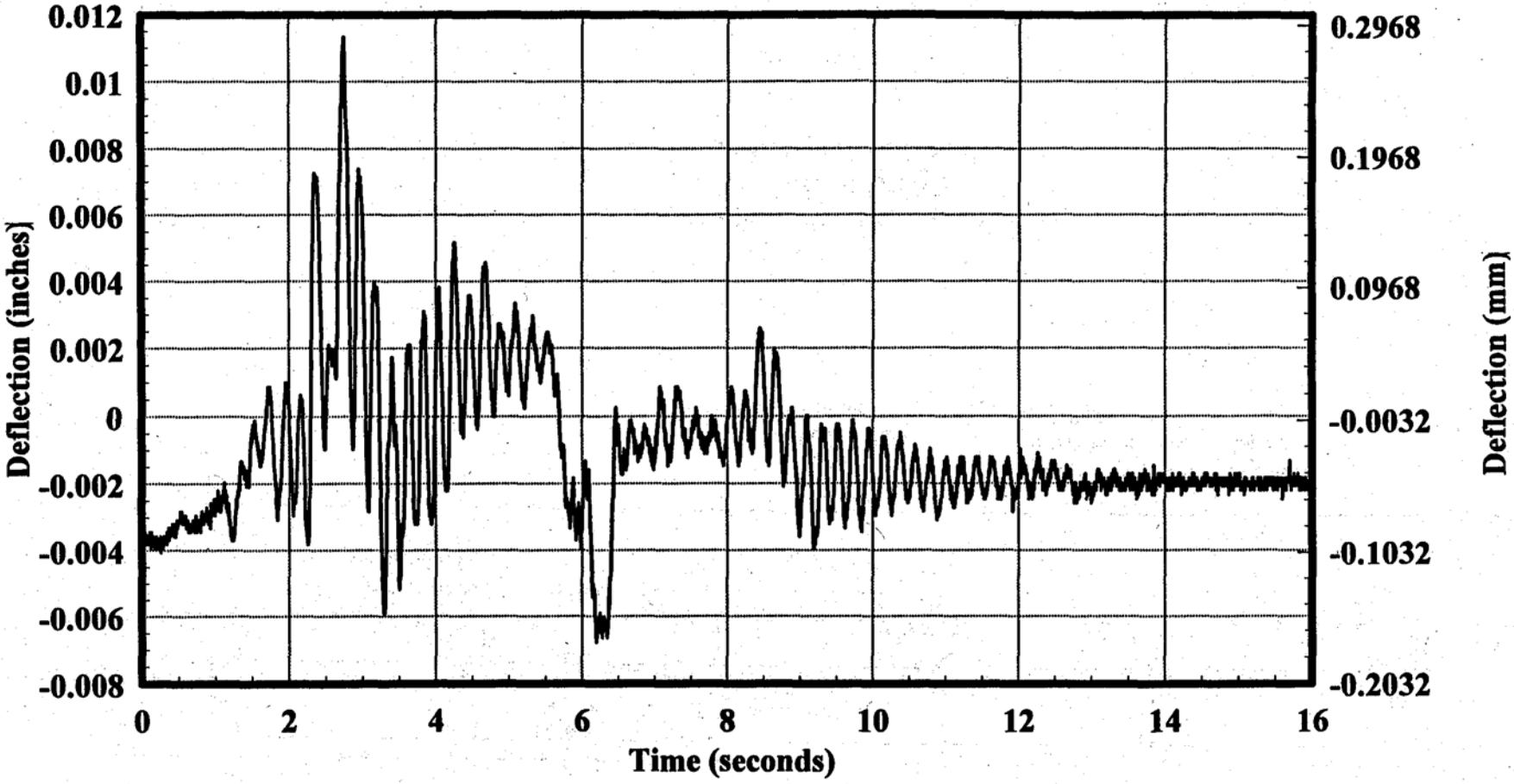
Instrumentation Layout for
Midway Road
North Bound, North End

Figure. 73



Instrumentation Layout for
Glade's Road Bridge
North Bound, North End

Figure 74



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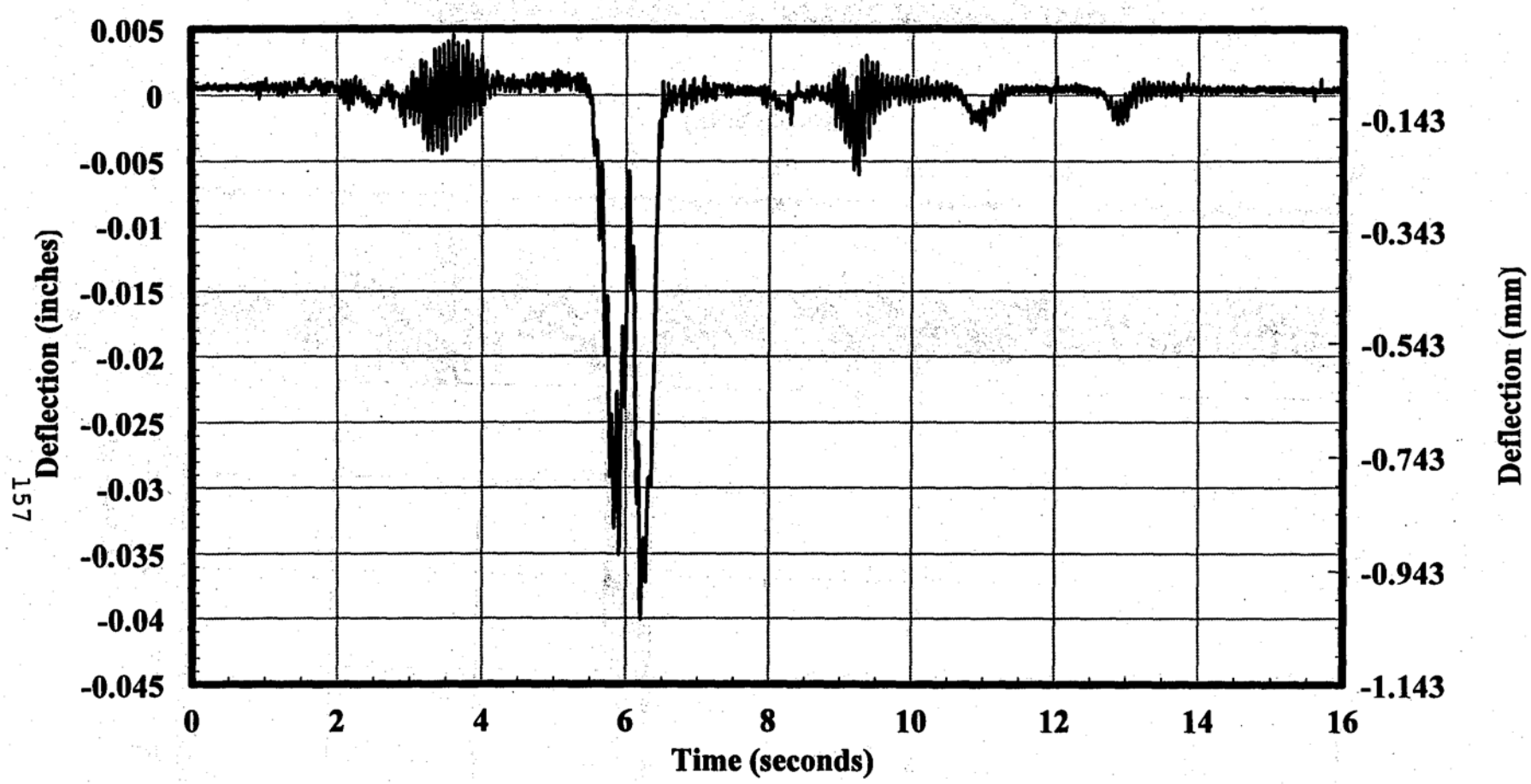
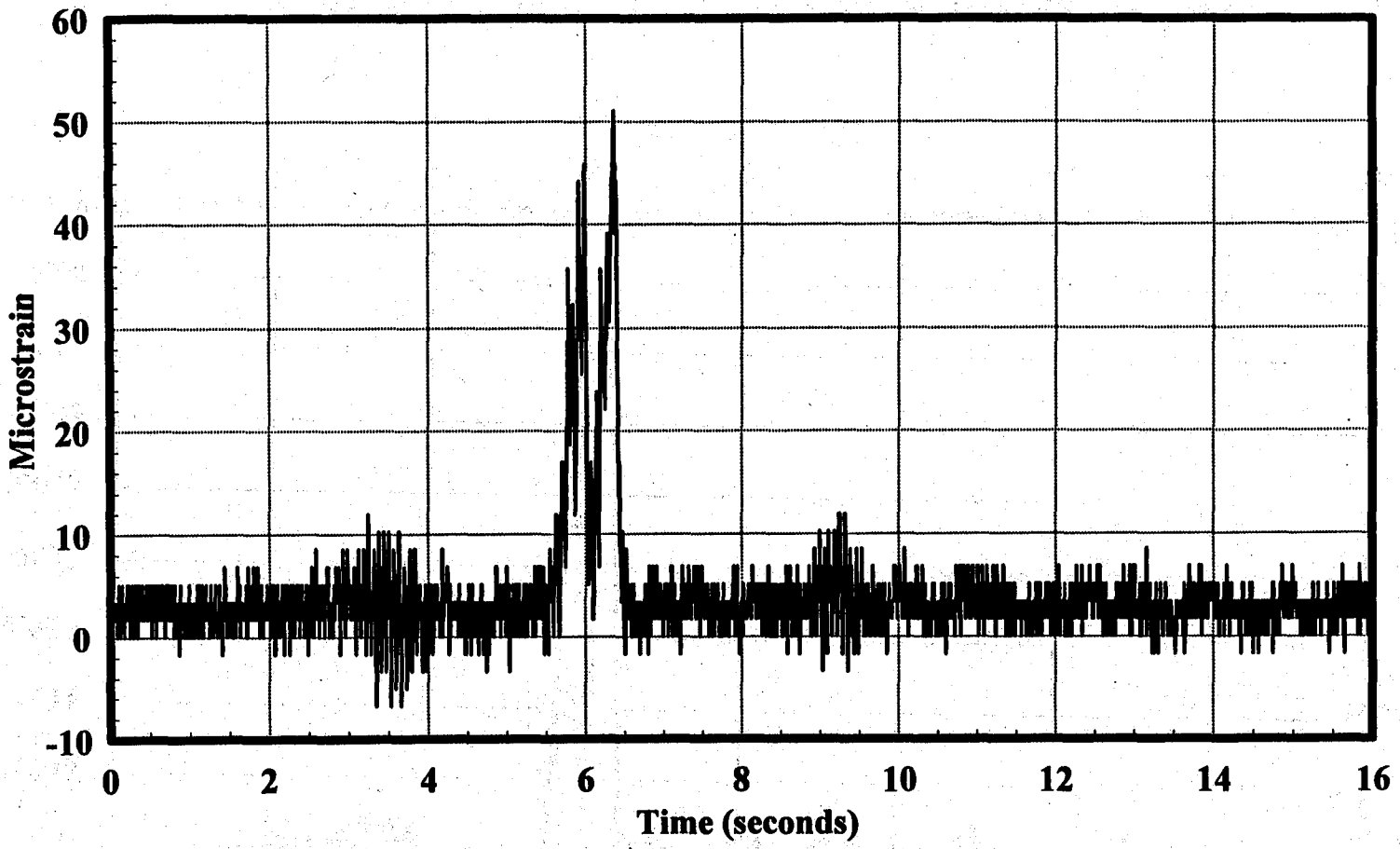
Joint Opening on Midway Bridge
North Bound, North End
March 1994

Fig. 75



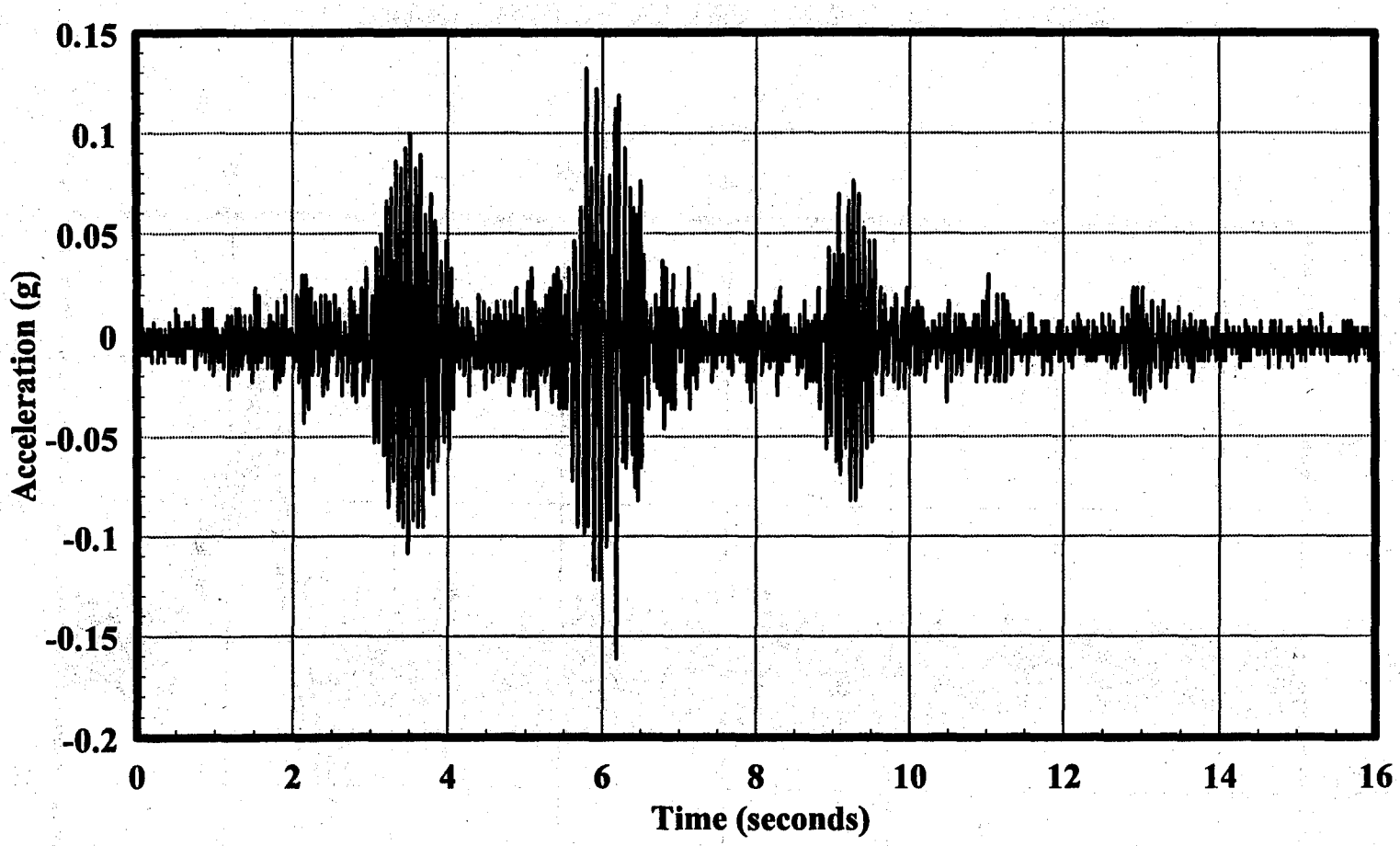
Vertical Deflection at Center Line on Midway Bridge
North Bound, North End
March 1994

Fig. 76



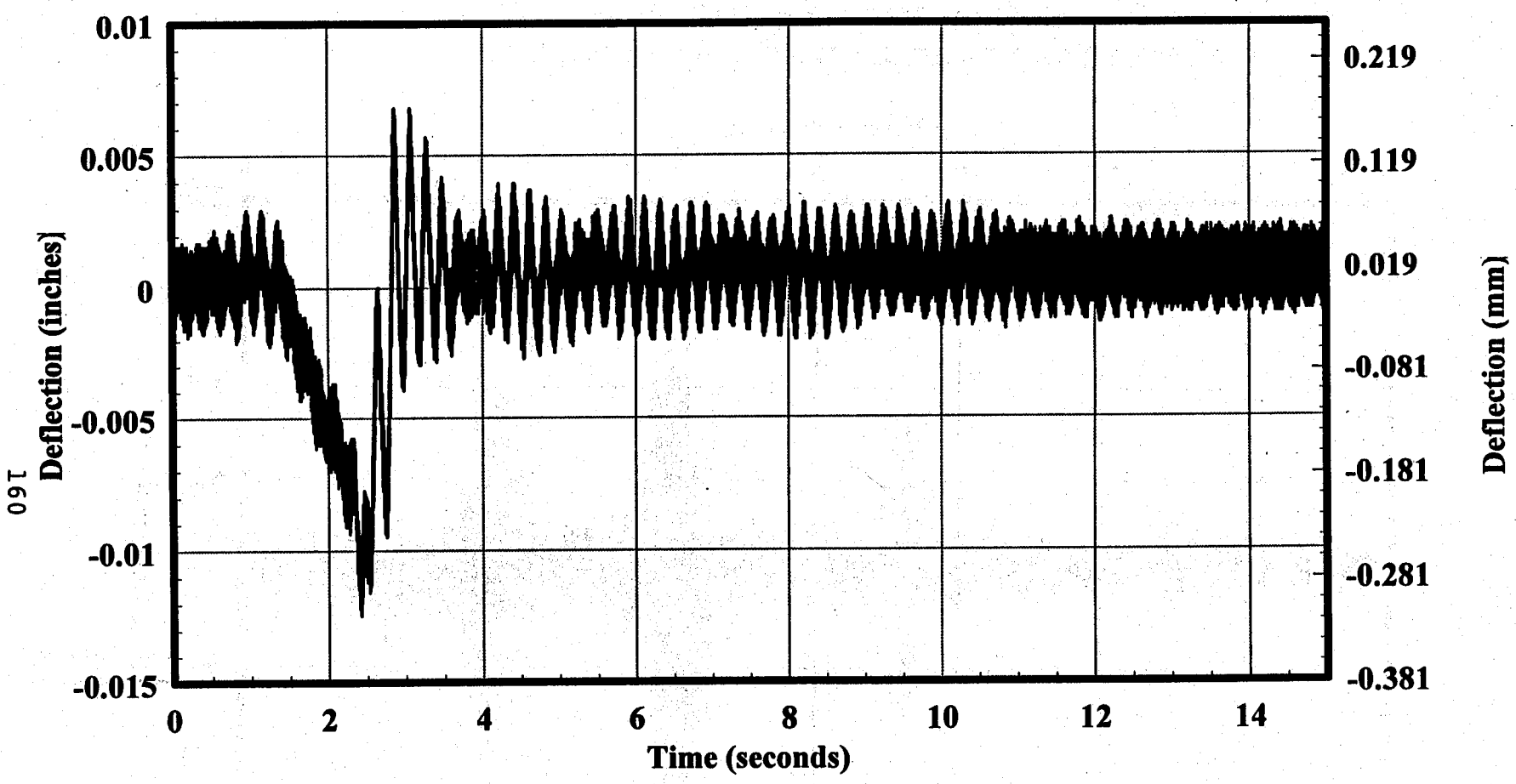
Strain at Quarter Point on Midway Bridge
North Bound, North End
March 1994

Fig. 77



Horizontal Acceleration on Midway Bridge
North Bound, North End
March 1994

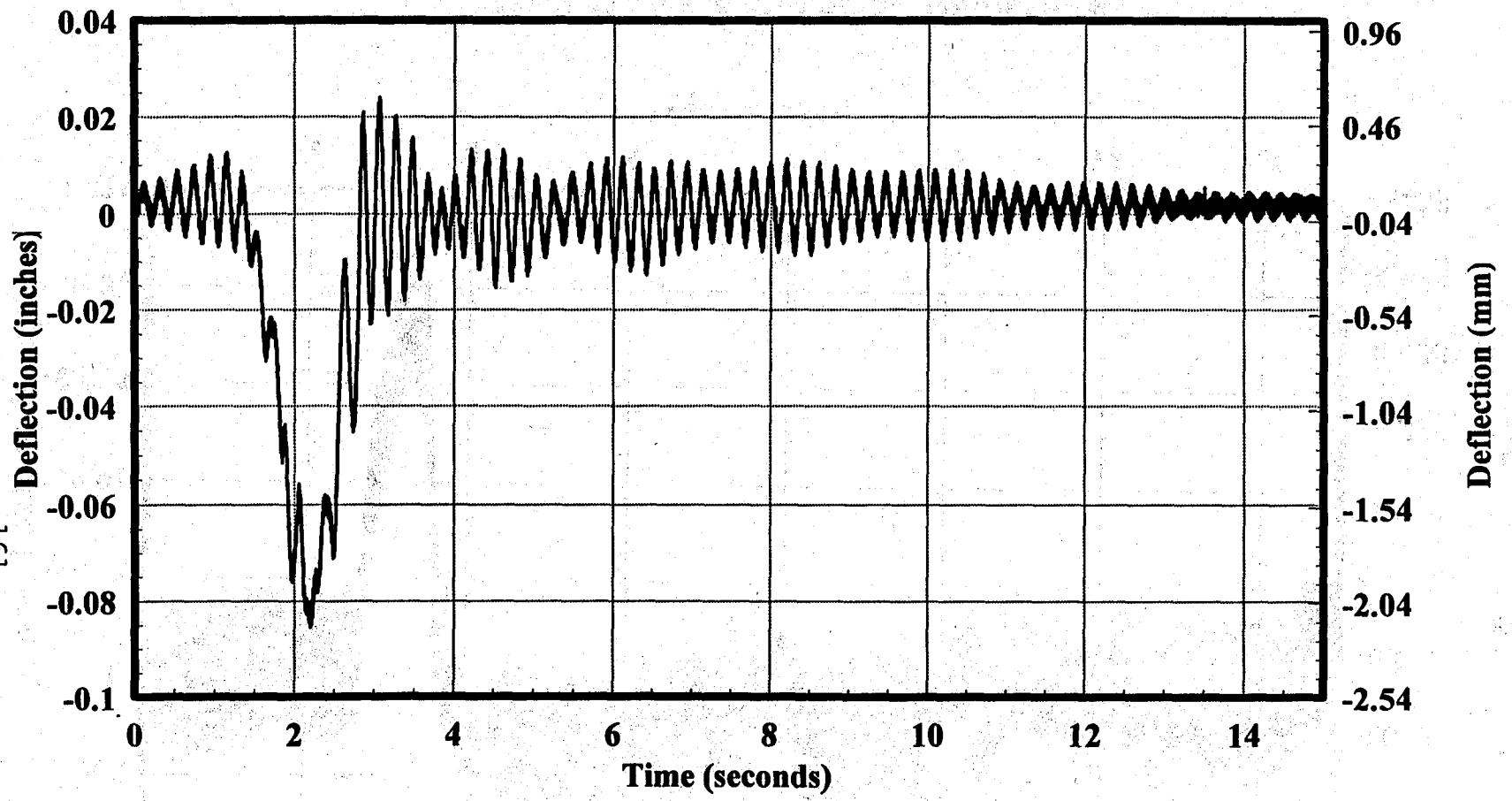
Fig. 78



160

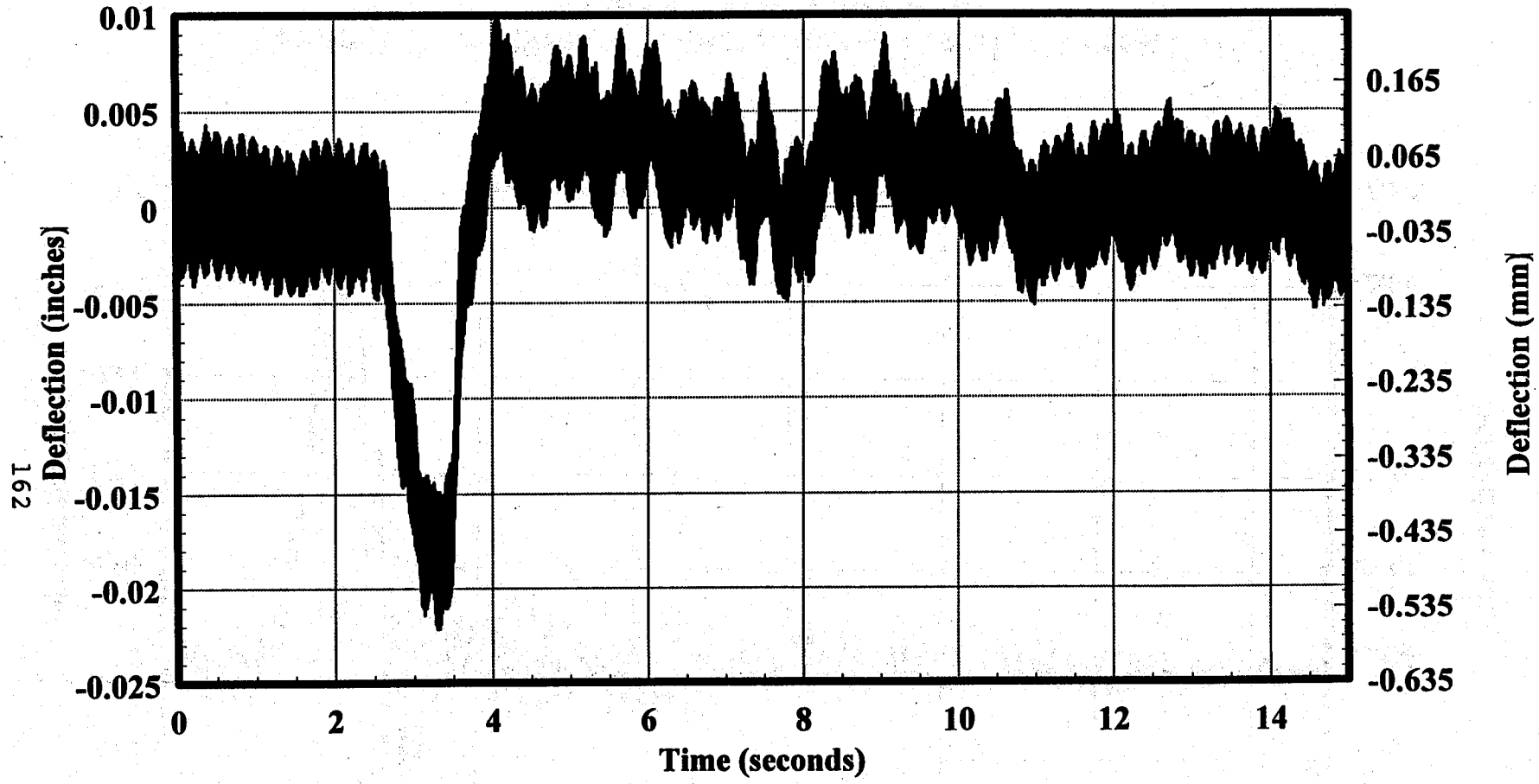
Joint Opening on Ten Mile Creek Bridge
South Bound, South End
March 1994

Fig. 79



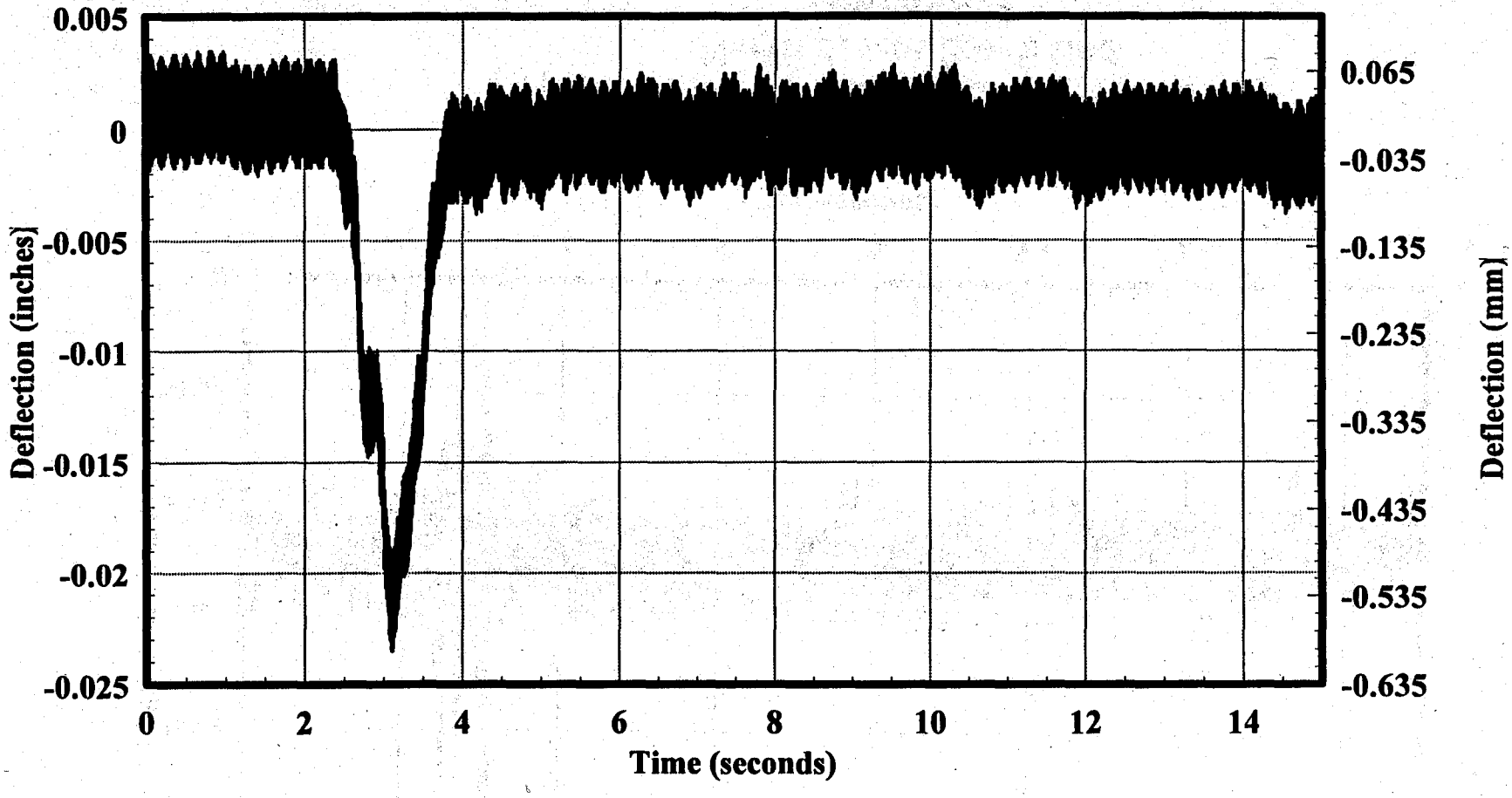
Vertical Deflection at Center Line on Ten Mile Creek Bridge
South Bound, South End
March 1994

Fig. 80



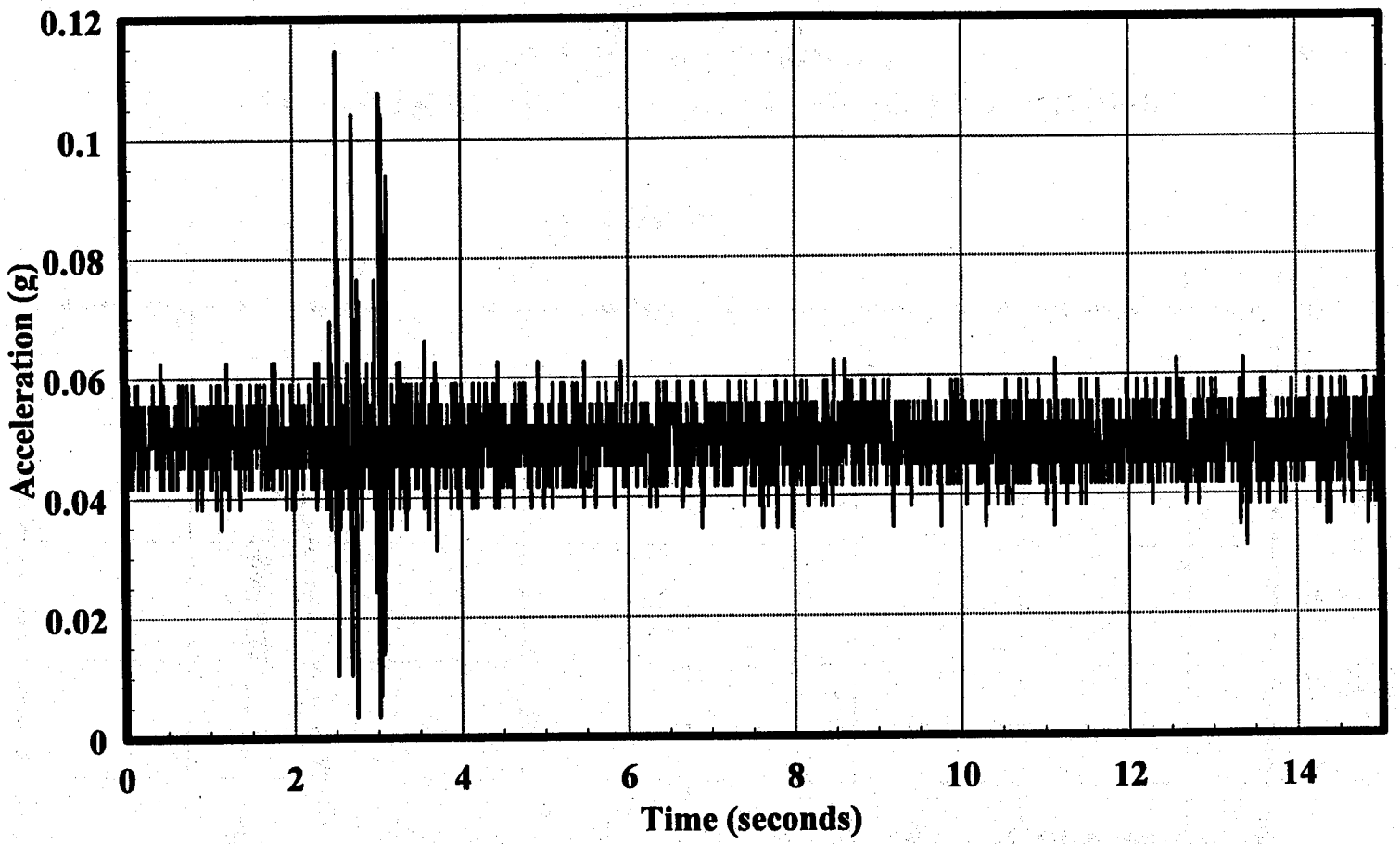
Joint Opening on Glades Road Bridge
North Bound, South End
March 1994

Fig. 81



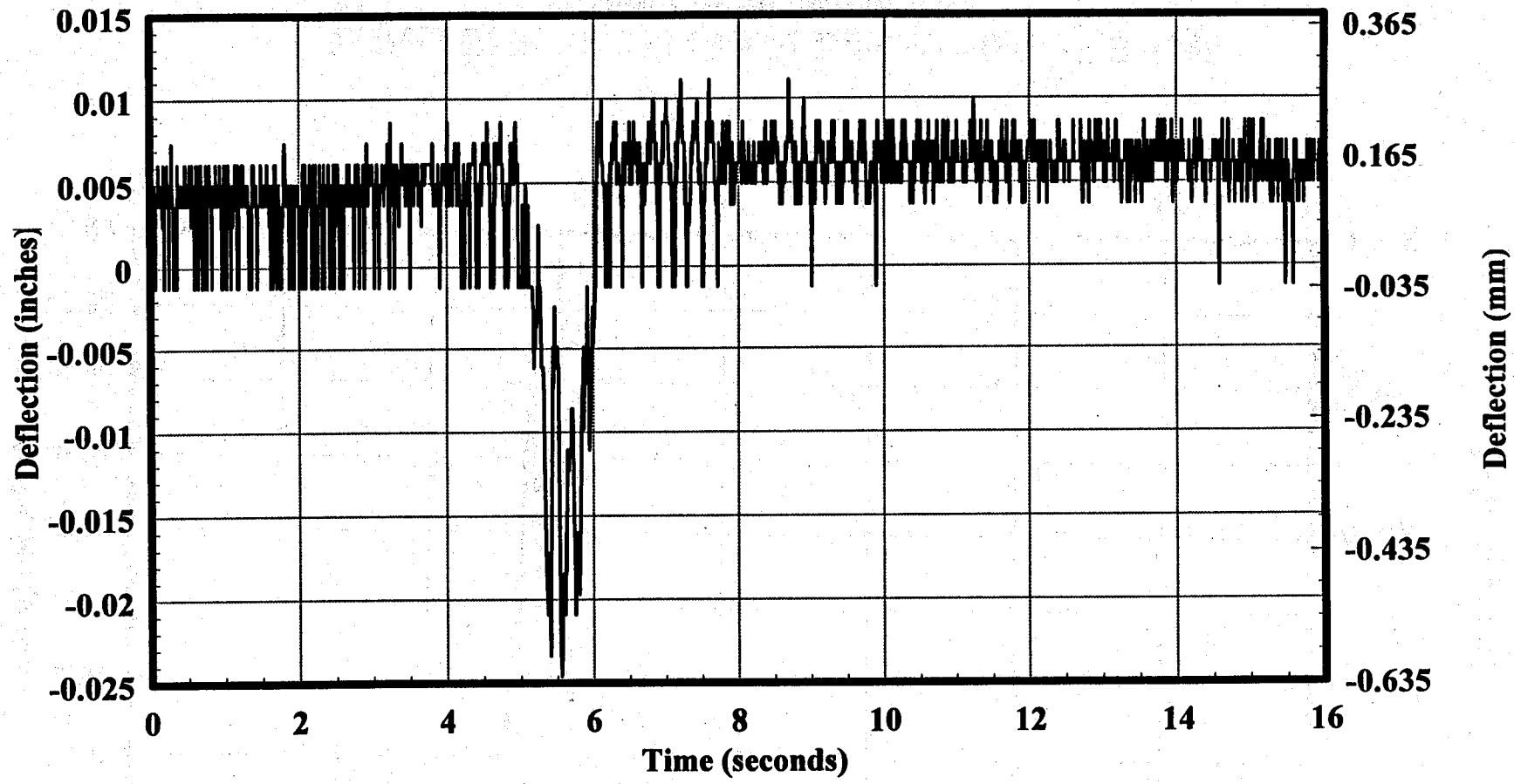
Vertical Deflection at Joint on Glades Road Bridge
North Bound, South End
March 1994

Fig. 82



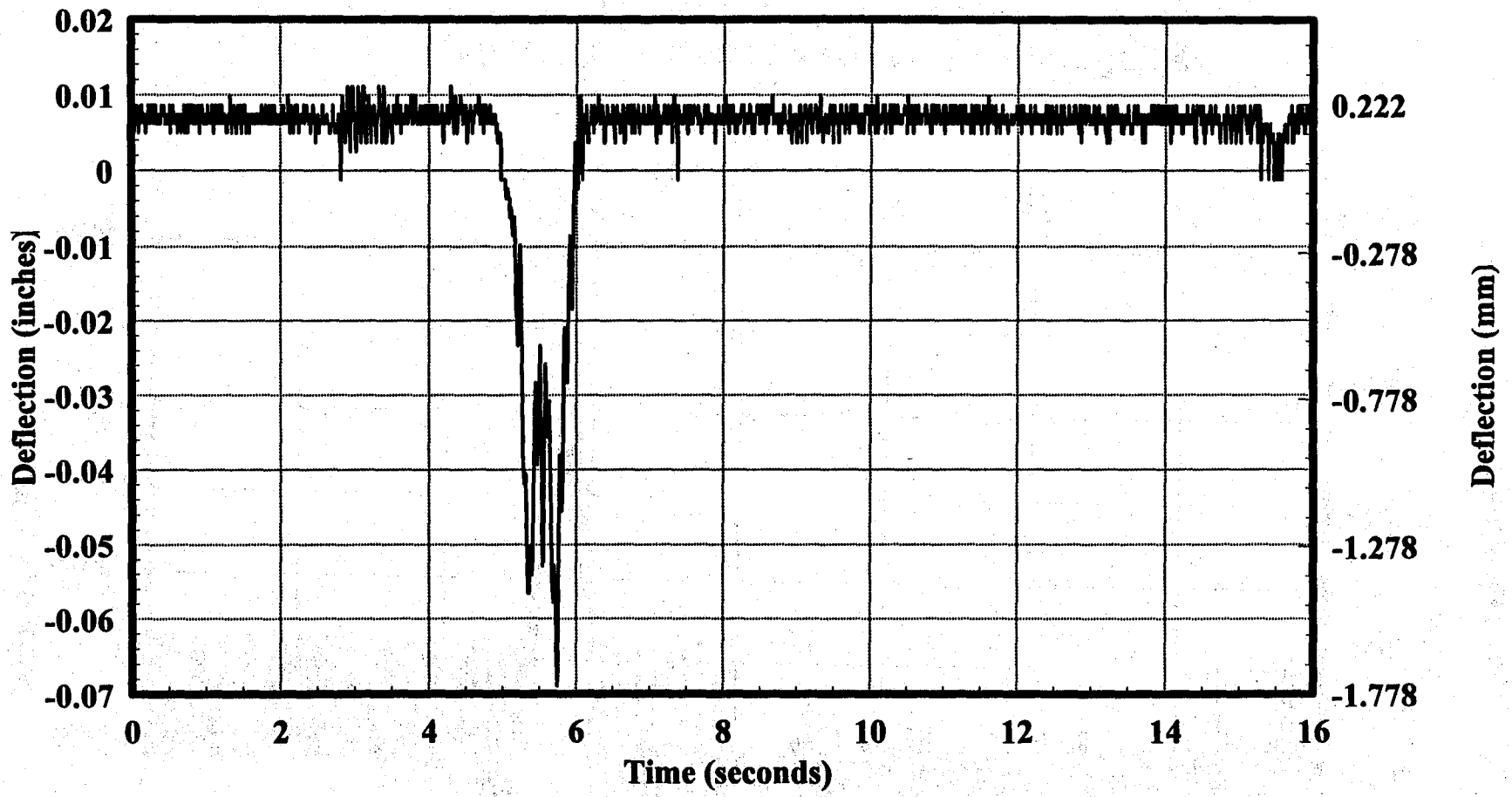
Acceleration on Slab for Glades Road Bridge
North Bound, South End
March 1994

Fig. 83



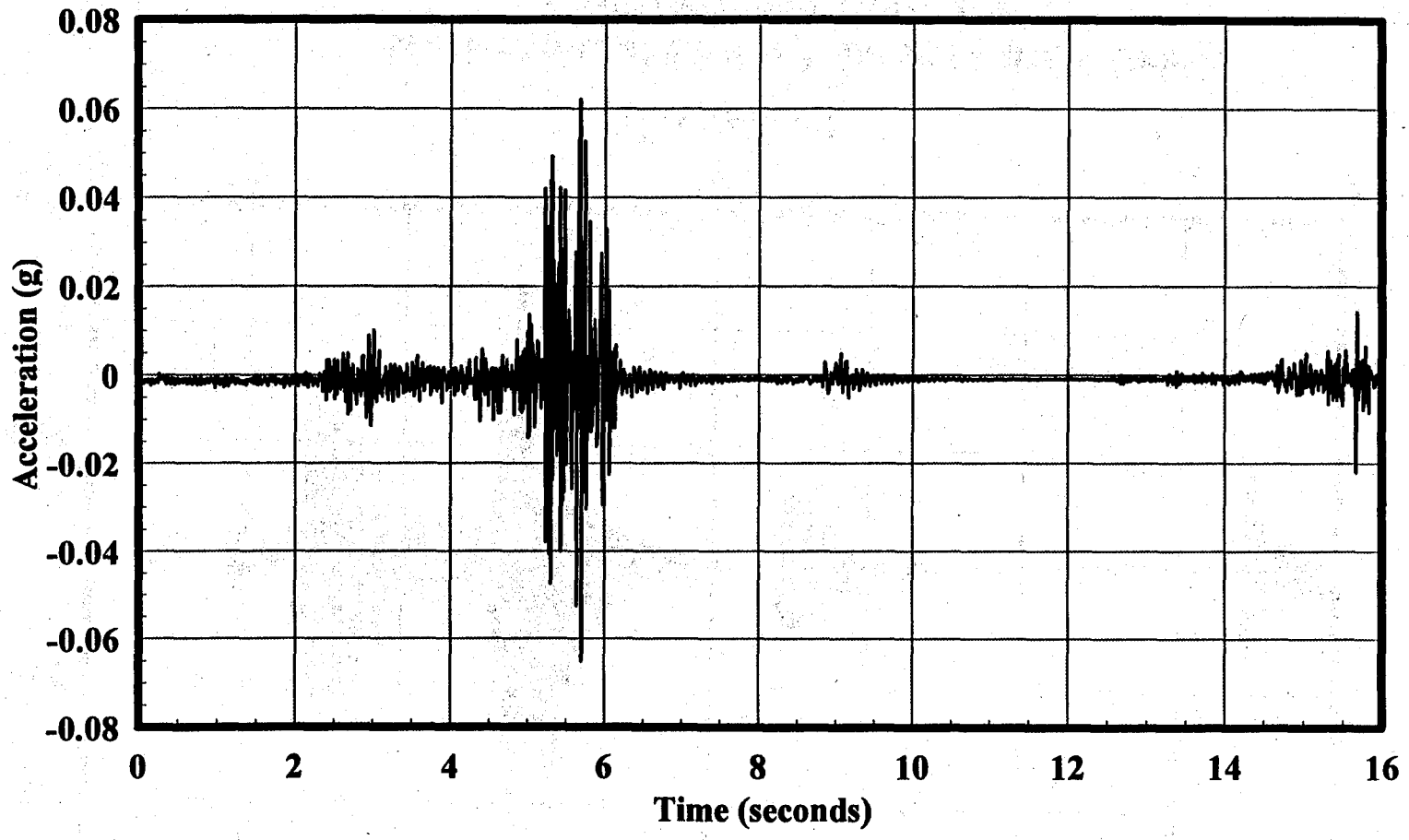
Vertical Deflection at Joint on Midway Bridge
North Bound, North End
June 1995

Fig. 84



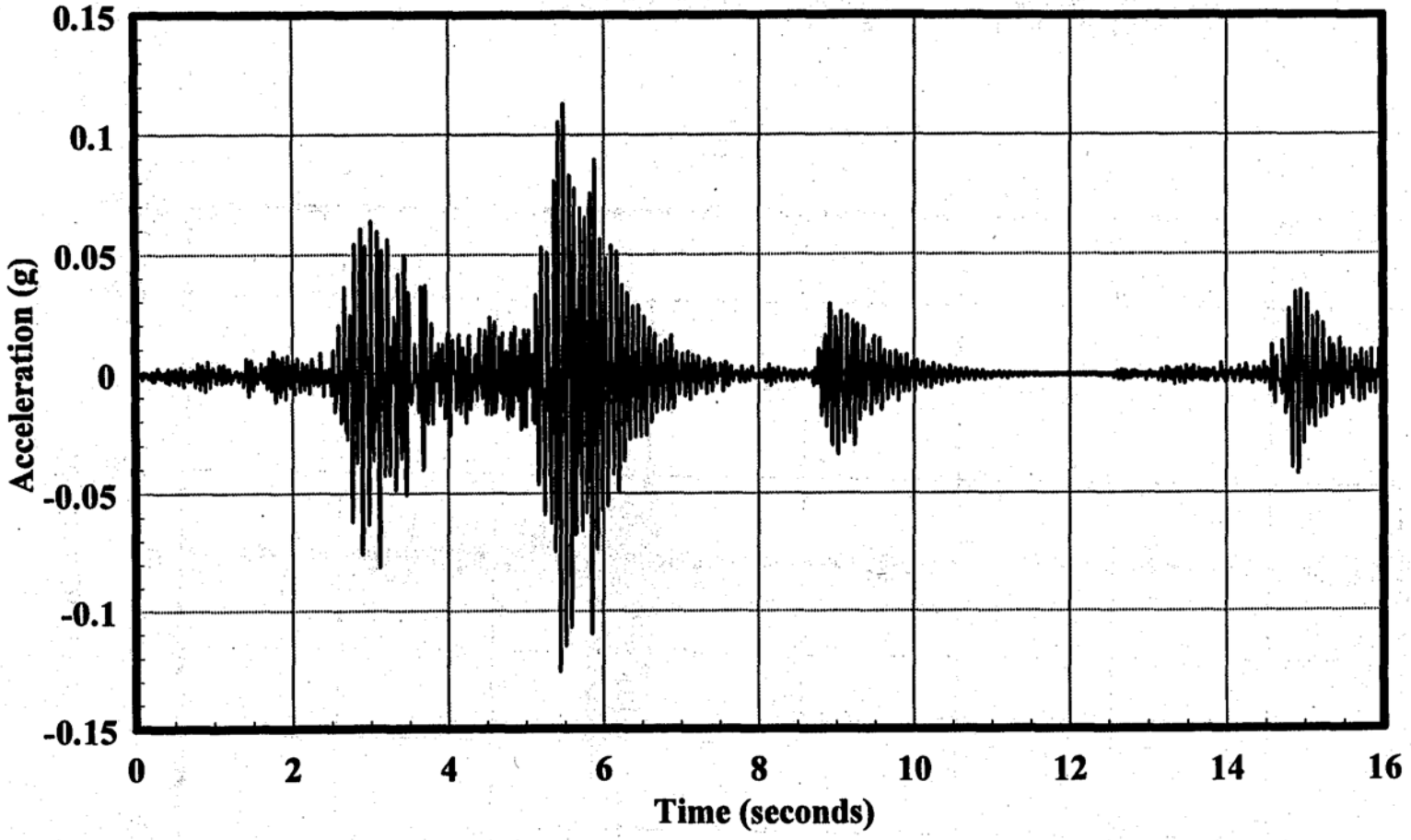
Vertical Deflection at Center Line on Midway Bridge
North Bound, North End
June 1995

Fig. 85



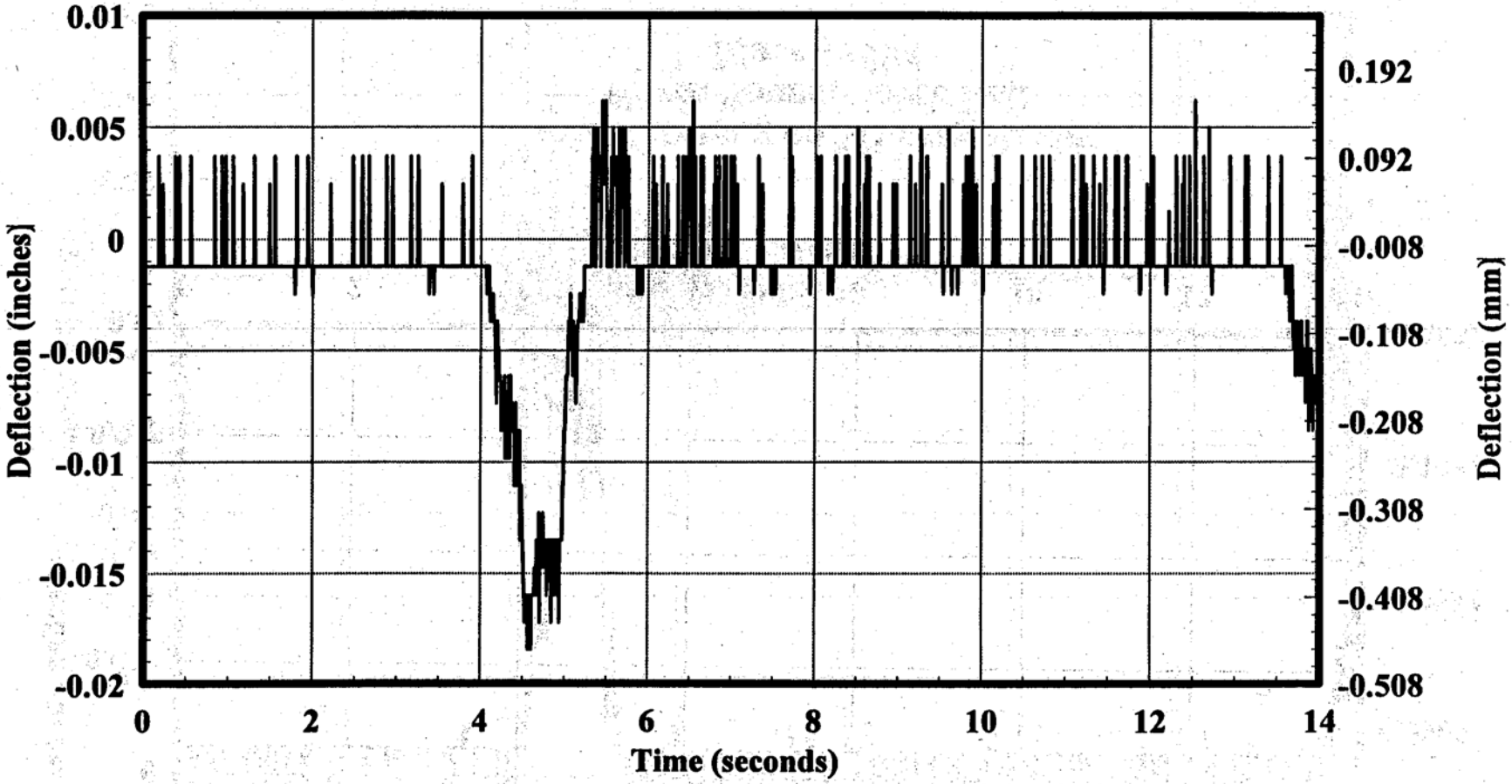
Acceleration on Slab on Midway Bridge
North Bound, North End
June 1995

Fig. 86



Acceleration at Center Line on Midway Bridge
North Bound, North End
June 1995

Fig. 87



Joint Opening on Glades Road Bridge
North Bound, South End
June 1995

Fig. 88

CHAPTER VI

SURVEY ON DISTRICT JOINT/SEAL SYSTEM USE IN FLORIDA

6.0 GENERAL

To ascertain which joint system and seals were in use in the Florida district offices, the Structures Research Center(SRC) asked each District (1-8) Maintenance Engineer to complete a survey in summer 1994. Responses were received from all districts except District 6. A copy of the survey is shown in Appendix C.

We have designed the survey to gather information on the performance of bridge expansion joints in the Districts. This information will supplement the information that we are obtaining in the FDOT Bridge Expansion Joint Test Program. All information, including the information from the survey, will be considered for the establishment of the Qualified Products List for bridge expansion joints.

The survey is in three (3) parts:

Part I is a questionnaire concerning which joint systems and seals a District uses and whether there are performance problems associated with the elements. It is a five (5) page, easy-to-answer questionnaire.

Part II is the District Performance History and Evaluation information for the joint systems and seals the District uses. Part II allows the District to provide details on the performance of each "named" joint system or seal (i.e., CEVA 250 Joint System, DOW 902 RCS Joint Sealant, or other particular joint systems) used in the District.

Part III is for recording performance problems of "named" joint systems or seals. The Districts were asked to complete part III for all joint systems and seals with a record of problems in use.

The Districts were also asked to provide relevant comments, and information that may not have been covered in the survey. As shown in Table 11, few of the joint systems and seal in the test program are in use in the districts. Some comments and survey responses are summarized in this Chapter and in Appendix C.

6.1 SUMMARY OF DISTRICT COMMENTS

6.1.1 District One

In, District I, probably 90% of the bridge joints are one of the following two:

1. Large 2"-3" wide elastomeric compression seals with armor angles with the 45° studs. Sample details are attached.
2. Small (approx. 1" wide) hot poured rubberized sealant with a backer rod.

Typical armor angle and elastomeric seal joint failures include:

1. Loose armor angles due to poor consolidation during concrete: placement during construction.

2. Seals being set too high and above the road/joint surface that allows traffic: to wear them out. Subsequently, they come partially out and we [District 1] have to remove them to avoid a safety hazard.

3. Seals being "sucked out" by the large (18 wheels) truck traffic running over them at high speeds.

4. Weathering of the seals where they begin to crack.

In October 1987, a Jeene Joint System was installed on I-75 in Charlotte County over the Peace River as a test project. In July 1988 (less than one year), the nosing failed at three different locations.

OTHER TYPES IN USE:

Armored Joint Elastomeric Compression Seal

- Given an overall rating of good.
- Armor Joint breaks loose.
- Seal coming loose from Armor Joint.

A.R. Plus

- Given an overall rating of excellent.
- Difficulty in maintaining joints on a regular basis due to lack of resources.

6.1.2 District Two

This District specifies Silicon Joint. Sealant according to the FDOT specifications for contract joint work. The District's maintenance crews use DOW 902 Joint Sealant (Two Parts) for most of joints.

Jeene Structural Joint Sealing System (PC35)

- Given an average rating overall and recommended.
- Joint has lost bond with header in several locations.
- Minor surface damage.

Dow 902 RCS Joint Sealant

- Given an excellent rating and highly recommended.
-Sometimes a joint may need:-a spot cleaning.

6.1.3 District Three

DOW 902 RCS Joint Sealant

- Given an overall rating of good and recommended.
- Simple installation of Joint Sealant:

Chemcrete 1000 Expansion Joint System

- Given an overall rating of good and recommended.

Wabocrete ACM Expansion Joint

- Given an overall rating of Poor and not recommended.
- Anchorage is unstable.
- Problems occurring with the riding surface, vibrations, and water tightness as joint fails.
- Appears that the rigidity of the joint creates the problems.

KOCH BJS Joint System

- Received a good rating and recommendation.
- Good for extra large openings.

Flexcon 2000 Joint Sealing System

- Given an overall rating of good.
- Anchorage is bonding to interface well

Jeene Structural Joint Sealing System (PC 35)

- Given an overall rating of good and recommended.
- Maybe used in narrow to medium joint openings.

OTHER TYPES IN USE:

Resurf II Polymer Concrete
- Adheres good to clean stable concrete.

Nitrile Rubber Permanent Sealant 983

- Fair, but not recommended, life of product is too short

6.1.4 District Four

XJS Expansion Joint System

- Demo joint to replace and armor angle.
- Nosing damage in wheel paths at only nine months.
- Seal looks good.

DOW 902 RCS Joint Sealant

- No problems.

Evazote 380 ESP (Seal)

-Recently installed, thus conditions are unknown.

Jeene Structural Joint Sealing System (PC 35)

- Nosing show damage due to vehicular impact.
- Some water leakage.

Jeene Structural Joint Sealing System (PC92M)

- A dozen bridges failed within the first year.
- Nosing broke up.
- Replace with the PC 35 model.

OTHER TYPES IN USE:

Resurf II

- Rated as Poor:
- Early water leakage failure, thought to be due to bad surface preparation.
- When applied in thin layers nosing received slight damage in 3 to 5 years.
- When applied in thick layers, bond loss: and traverse cracking occured.

Gentire Transflex Waboflex

- One failure
- Joint broke up and a piece of bent steel plate was standing up in roadway.

6.1.5 District Five

The Joints being used on an 1-4 project are:

- Evazote 380 ESP (E-Poxy Industries, Inc.)
- Belzona 2221 (Belzona, Inc.)
- RJ Series Strip Seal System w/ Flexcon A/C (R.J. Watson, Inc.)
- Dow 902 RCS Joint Sealant (Dow Corning)

DOW 902 RCS Joint Sealant

- Given a rating of excellent, however it was only recently installed.
- Recommended.

Chemcrete 1000 Expansion Joint System

- Rated as Poor, and received a Not recommended.
- Wings separated from a seal, header material damaged at wheel line.
- Anchorage: header material separated.
- Not suitable for high truck volume, or severe impacts.

Wabocrete ACM Expansion Joint

- Received a good rating, and recommended.
- Header material has performed well.

KOCH BJS Joint System

- Given an excellent rating and strongly recommended.
- Nice looking joint. Excellent for asphalt W. S. (Wearing Surface) application.

Flexcon2000 Joint-Sealant System

- Just installed, looks excellent, and is recommended:

Jeene Structural Joint Sealing System (PC 35, PC92M)

- Previously had PC92M but joints failed. Replaced by manufactorer at their cost.
- Rated as good.

6.1.6 District Six

No response to survey.

6.1.7 District Seven

The vast majority of expansion joint problems can be traced to either poor installation or the selection of a joint system or material that is not of the proper size.

OTHER TYPES IN USE:

.

Armor Joint System/two(2) steel angles with a compression seal

- Rated as fair to good, and is recommended.
- Anchorage: Voids in the concrete created during construction prevented adequate bond to anchorage.
- Maintenance; Steel angles: loosen,: they must be removed from the concrete and reinstalled.
- Water tight: Appears that poor installation is main contributor to this problem.

Premolded Back Up- Poured in place Sealant

- Good rating and recommended.
- When properly installed, problems are minor.

6.1.8 District Eight

Jeene Structural Joint ;Sealing System (PC 35, PC92M)

- Random areas of concrete header failure occur at most joints within four years.

TABLE 11: SUMMARY OF SURVEY ON DISTRICT JOINT USE

DISTRICT		XJS	DOW902	CEVA250	CEVA300	CHE1000	WBABJS	WBAACM	SYL10M	EPO380	KOCHSL	KOCHBJS	FLEX2000	DELCRETE	JEENEPC35	JEENEPC92M	RESURFIV	TECHSTAR
1	U														Y			
	P														Y			
	R																	
2	U		Y												Y			
	P														Y			
	R		Y												Y			
3	U		Y			Y		Y				Y	Y		Y			
	P							Y										
	R		Y			Y		N				Y	Y		Y			
4	U	Y	Y							Y					Y	Y		Y
	P	Y													Y	Y		
	R																	
5	U		Y			Y		Y				Y	Y		Y			
	P					Y												
	R		Y			N		Y				Y			Y			
6	U																	
	P																	
	R																	
7	U																	
	P																	
	R																	
8	U														Y			
	P														N			
	R														Y			

U=USE, P=PROBLEMS, R=RECOMMEND, Y = YES

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

The test program began in Spring 1993 and concluded in December 1995. As of February 1996, the oldest joint system in the test program has been in place for nearly three years. The last seal installed in November 1994 has been in place for fifteen (15) months.

As stated in Chapters 3 and 4, several test joint systems and seals have failed, a few are performing poorly, and some are performing well.

The following products have failed: Chemcrete 1000 Expansion Joint, Sylcrete 10 minute Joint Sealant, KOCH 2000 SL Bridge joint sealing system, Flexcon 2000 joint sealing system, Jeene structural joint sealing system (PC35), Jeene structural joint sealing system (PC92M), and,Resurf IV.

As of November 1995, the following: products were performing poorly: CEVA 250 joint system, and Evazote 380 ESP.

The following products were performing satisfactorily or very well: Dow 902 RCS Joint sealant, XJS Expansion joint system, CEVA 300 joint system, Expandex Buried Joint system, Delcrete Elastomeric Concrete/Steelflex strip seal system, and Techstar W 300 Seal.

The KOCH BJS system was performing well at the time it was accidentally removed by a resurfacing contractor. The Techstar W 300 seal was performing well but has not been in place long enough to complete the required two years evaluation period. The Jeene structural seal performed well during the test period although the Polymeric concrete nosing products (PC35 and PC92M) both failed. See tables 3 through 9 for more details concerning the performance of all the test products. As discussed in Chapter 5, the State Material Office did not complete the material evaluation for the test products. Therefore, the SRC evaluation and recommendation of joint products are based solely on field performance histories.

Based on more than two years of testing and observation, the SRC recommends that the MOT Products Evaluation section place the following products on the FDOT's initial qualified products list for bridge expansion joints and seals:

1. DOW 902 RCS Joint Sealant
2. XJS Expansion Joint System
3. Ceva 300 Joint System
4. Expandex Buried Joint System
5. KOCH BJS Joint System
6. Delcrete/Elastomeric Concrete/Steel Flex Strip Seal System
7. Jeene Structural Seal (The seal only not the system)

While the Techstar W 300 Seal is performing very well, it is not recommended to the QPL at this time due to the fact the two years evaluation will not be complete until November 1996. The SRC recommends another two year field evaluation be conducted for other products which developed problems during the test program before they are considered for the QPL.

In conclusion, the solution for expansion joint system problems (such as water tightness, debris accumulation and anchorage) is not to enhance the joint products only. The solution appears to have many factors starting from the design to the installation and maintenance phases of the expansion joint system. The manufacturer should provide clear and detailed installation procedure for the expansion joint system.

It is recommended that the expansion joint system or seal be installed by the joint manufacturer or a contractor who is certified by the specific joint manufacturer. A technical engineer from the joint manufacturer is to be present during all phases of joint installation and construction.

After the initial Qualified Products List is established, other joint systems may be added to the QPL in the future. To decide which expansion joint systems may be added to the QPL, the MOT will consider the following information: Product Evaluation Preliminary Application, MOT criteria for expansion joints, test data and specifications provided by the manufacturer, performance, history for the product, and, if deemed necessary, a demonstration installation. If all of this information for a particular joint system is satisfactory, the MOT will add the system to the Qualified Product List. After being added to the QPL, if an expansion joint system fails to demonstrate its adequacy (i.e., performs unsatisfactorily in the field), it may be removed from the QPL.

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APPENDIX A

CONTACT PERSONS

NOTE: Since the beginning of the test program in Fall 1993, several Companies have changed names, ownership or suppliers. Harris Specialty Chemical, Inc., acquired Hydrozo/Jeene and Watson Bowman Acme Corporation. Pavement Technology and Maintenance, Inc. changed its name to Structures Maintenance, Inc. The supplier for both the XJS expansion joint systems and the DOW Corning 902 RCS Joint Sealant is now Coastal Construction Products, Inc., instead of the Fred R. Filler Company of Georgia, Inc. The address and phone number for Chemplex Products, Inc. are no longer valid.

TABLE A.1 : BRIDGE EXPANSION JOINT PROJECT : CONTACT PERSONS				
JOINT INSTALLATIONS I-95 SAINT LUCIE COUNTY				
JOINT SYSTEM OR SEAL	COMPANY	CONTACT	TELEPHONE #	FAX #
X.J.S. EXPANSION JOINT SYSTEM	S.S.I./ COASTAL CONSTRUCTION PRODUCTS, INC.	MR. DENNIS GARVIN	(800) 226-5777	(813) 289-6934
DOW 902 RCS JOINT SEALANT	DOW CORNING CORPORATION/COASTAL CONSTRUCTION PRODUCTS, INC.	MR. DENNIS GARVIN	(800) 226-5777	(813) 289-6934
CEVA 250 JOINT SYSTEM/ CEVA 300 JOINT SYSTEM	EPOXY INDUSTRIES,INCORPORATED	MR. RICK BYERLY MR. TERRY ECK	(518) 756-6193	(518) 756-3003
CHEMCRETE 1000 EXPANSION JOINT SYSTEM	CHEMPLEX PRODUCTS,INCORPORATED	MR. KEN MAXCY	(813) 885-6574	(813) 885-6496
EXPANDEX BURIED JOINT SYSTEM	WATSON BOWMAN ACME CORPORATION/ HARRIS SPECIALTY CHEMICAL, INC.	MR. STEPHEN PABST	(716) 691-7566	(716)691-9239
WABOCRETE ACM EXPANSION JOINT	WATSON BOWMAN ACME CORPORATION/ HARRIS SPECIALTY CHEMICAL, INC.	MR. STEPHEN PABST	(716) 691-7566	(716)691-9239
SYLCRETE 10 MINUTE JOINT SEALANT	SYLVAX CORPORATION	MR. DAVID MONTGOMERY	(813) 654-7613	(813) 651-1403
EVAZOTE 380 ESP (SEAL)	EPOXY INDUSTRIES,INCORPORATED	MR. RICK BYERLY MR. TERRY ECK	(518) 756-6193	(518) 756-3003
KOCH 2000 SL BRIDGE JOINT SEALING SYSTEM	KOCH/STRUCTURES MAINTENANCE INC.	MR. LEE NORMAN	(404) 961-8590	(404) 961-8650
KOCH BJS JOINT SYSTEM	KOCH/STRUCTURES MAINTENANCE INC.	MR. LEE NORMAN	(404) 961-8590	(404) 961-8650
FLEXCON 2000 JOINT SEALING SYSTEM	R.J. WATSON, INCORPORATED	MR. STEWART WATSON	(716) 741-2166	(716) 741-2580
DELCRETE ELASTOMERIC CONCRETE/STEELFLEX STRIP SEAL SYSTEM	THE D.S. BROWN COMPANY	MR. KYLE ROBINSON	(404) 998-4511	(404) 992-5053
JEENE STRUCTURAL JOINT SEALING SYSTEM (PC35)	HARRIS SPECIALTY CHEMICAL, INC.	MR. TOM HEATON	(904) 828-4954	(904) 828-4996
JEENE STRUCTURAL JOINT SEALING SYSTEM (PC92M)	HARRIS SPECIALTY CHEMICAL, INC.	MR. TOM HEATON	(904) 828-4954	(904) 828-4996
RESURF IV	POLYMER CONCRETE,INCORPORATED	MR. GLENN ROBINSON	(205) 682-4296	(205) 682-4549
TECHSTAR W300 SEAL	TECHSTAR, INC.	MR. WARREN BROWN	(419) 424-0888	(419) 424-5959

APPENDIX B

JOINT SUMMARY SHEETS

JOINT SUMMARY SHEETS

In this appendix, a Joint Summary Sheet is provided for. each test element. The information on this sheet comes from three major sources: 1) manufacturer literature, 2) FDOT observations during installations, and 3) the Preliminary Product I Evaluation Application (PPEA) completed by the supplier. For Approximate Installation Time, the classifications (Quick, Average, Extended) are based on two (2) hours or less, between two (2) and five (5) hours, or greater than five (5) hours, respectively. Consideration must be given to the nature of the test installation (i.e. armored joint system or seal only and also length of joint).

The Approx. Actual Installation Time Lapse is essentially, the time recorded from start of joint (or seal installation)., not including: the removal of the existing joint system, to the time that traffic could be placed on the bridge. In many cases, if the installation time was long enough, the workers stopped for a break. However, at times this break was coordinated with a curing process. Where possible such information is included in the comments. Classifying, the installation procedure complexity as Simple, Average or Complex is a result of the FDOT observations and considerations of several items (i.e., the number of steps, the difficulty of steps, the equipment requirements, and the need for precision or skill). The classification is not a scientific measurement, it is a reasonable professional judgment.

JOINT SUMMARY SHEET

PRODUCT TRADE NAME: CHEMCRETE 1000 EXPANSION JOINT SYSTEM PRODUCT MANUFACTURER: Chemplex Products, Inc.

REPRESENTATIVE: Mr. Ken Maxcy
REPRESENTATIVE ADDRESS: 6089 Johns Road, Suite 1, Tampa, Fl 33634-4489
SUPPLIER PHONE#: (800) 821-2037

TEST JOINT LOCATION: Bridge #940116, NE Bent, Saint Lucie County
BRIDGE NAME: I-95 over Glades Road (Northbound)
FIELD PERFORMANCE SUMMARY: See section 3.1.2.

INSTALLATION DATE: July 27, 1994/ August 18, 1994
APPROXIMATE JOINT LENGTH INSTALLED: 45 feet/ 35 feet

APPROXIMATE LABOR COUNT: <3 X 4 –5__ >5___
APPROXIMATE INSTALLATION TIME: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIME LAPSE: 6 HRS/ 7.5 HRS

INSTALLATION PROCEDURE COMPLEXITY: SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME: 1.5 to 2 Hours

TYPICAL EQUIPMENT: heat lance, taps wood, card board, sir compressor, buckets, drill with paddle stem, trowels, special soldering tool.

INSTALLATION NOTES/ COMMENTS: The removal contractor left the joint wet. Chemplex needed to dry the joint before installing the joint system. This made the installation time longer. Also, the opening was larger than anticipated. The installation was systematic and progressed smoothly. The installation steps were as follows: 1. Remove any loose concrete; 2. Dry wet concrete using a heat lance; 3. Use compressed sir to clean the opening; 4. Place tape on the concrete deck along both sides of the joint (for a clean finished joint); 5. Place blockout/form (wood and cardboard) to form joint opening; 6. Apply epoxy primer (a two part mix) to bottom and sides of the concrete; 7. Heat sand and rock aggregate; 8. Mix Part A and Part B resin epoxy, 9. Mix sand-aggregate mixture to the epoxy mixture; 10. Pour the mixture into the joint.

MATERIAL COMPOSITION: Chemcrete 1000 is a two component polyurethane mixed with a specific blend of dried aggregate.

APPROXIMATE SERVICE LIFE/ WARRANTY: 5 year single source warranty.

MANUFACTURER RECOMMENDED USES: Expansion joint system for bridges, parking decks, and other concrete surfaces. Repair material for spalled Concrete.

FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: No steel in system; very easy to install; quick cure; excellent adhesion to steel and concrete; very abrasion resistant; cures to 3500-4000 psi within 7 days.

Note: The address and phone number for Chemplex Products, Inc. are no longer valid.

JOINT SUMMARY SHEET

PRODUCT TRADE NAME: DOW CORNING 902 RCS JOINT SEALANT
PRODUCT MANUFACTURER: Dow Corning Corporation

REPRESENTATIVE: Dave Ellwanger
REPRESENTATIVE ADDRESS: P. O. Box 3767, Sarasota, Fl 34230-3767
SUPPLIER PHONE#: (813) 953-5888

TEST JOINT LOCATION: Bridge #940115, NE Bent, Saint Lucie County .
BRIDGE NAME: 1-95 over Glades Road (South Bound)

FIELD PERFORMANCE SUMMARY: See section 3,2.2

INSTALLATION DATE: April 19/ April 20, 1993
APPROXIMATE JOINT LENGTH INSTALLED: 48 feet/ 32 feet

APPROXIMATE LABOR COUNT: ≤3 X 4 –5 _ >5 __
APPROXIMATE INSTALLATION TIME: OUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIME LAPSE: 1.5 hrs/ 1.0 hrs
INSTALLATION PROCEDURE COMPLEXITY: SIMPLE AVERAGE COMPLEX

APPROXIMATE CURE TIME: The sealant takes time to cure (up to 48-160 hours for 100% cure) but traffic can be placed on the bridge as soon as the sealant is installed.

TYPICAL EQUIPMENT: chisel, tape measure, duct tape; wood, air compressor, trowels; sand blast equipment, pump or gun for 902, sprayer, mixer

INSTALLATION NOTES/ COMMENTS: The sealant was placed with a W recess in the traffic lanes but was nearly flush with the bridge deck in the shoulders : After the existing seal was removed, the joint opening was sandblasted. Next, a two part primer was applied: A foam backer rod was installed: The two part silicon sealant was installed using a special pump designed to mix the components.

MATERIAL COMPOSITION: 100% silicone rubber sealant
APPROXIMATE SERVICE LHFJ WARRANTY: New product introduced in 1991. There are some installations with two (2) plus years of service life.

MANUFACTURER RECONIIVIENDED USES: Bridge expansion joints 1" to 3"wide,: 50% o movement. The product has been used for joints up to 4.5" wide.

FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Rapid cure, easy use, high movement ability, low modulus, seals irregular surfaces and convenient disposal pak.
Note: The Supplier for Dow Conning RCS Joint Sealant is now coastal construction products, Inc.

JOINT SUMMARY SHEET

PRODUCT TRADE NAME: X.J.S. EXPANSION JOINT SYSTEM PRODUCT
MANUFACTURER: Silicon Specialties, Inc.

REPRESENTATIVE: Fred R. Hiller Company of Georgia, Inca,
REPRESENTATIVE ADDRESS: P. O. Box 620129-30360, Atlanta, Ga. 30362 SUPPLIER
PHONE#: (404) 451-4661
TEST JOINT LOCATION: Bridge #940115, SE Bent, Saint Lucie County
BRIDGE NAME: I-95 over Glades Road (South Bound)
FIELD PERFORMANCE SUMMARY: See section 3.3.2
INSTALLATION DATE: April 19/ April 20, 1993
APPROXIMATE JOINT LENGTH INSTALLED: 31.5 feet.(on one header only).
APPROXIMATE LABOR COUNT: ≤3 X 4 –5__>5___
APPROXIMATE INSTALLATION TIME: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL TIME LAPSE: 4 hrs (X.J.S. System)/ 1.0 hr (sealant only)
INSTALLATION PROCEDURE COMPLEXITY: SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME: The nosing material was given a one (1) hour cure. The sealant used is the Dow Corning 902 RCS sealant. This sealant takes time to cure (up to 48 or more hours for 100% cure). Traffic was placed on the bridge
as soon as the sealant was installed, the roadway was clear, and the MOT was removed. This was possible because, the sealant was recessed into the joint and therefore would not come in contact with the traffic.
TYPICAL EQUIPMENT: tape measure, duct tape, wood, air compressor, trowels, sand blast equipment, pump or gun for 902 RCS, sprayer, mortar mixer, torch; wheel barrow,
INSTALLATION NOTES/ COMMENTS: Workers placed the complete X.J.S. System only in locations where the existing armor angle was weak or broken. This resulted in-only about 31.5 feet of nosing material being placed on only one: side of the joint. Since a torch was used to remove the armor angle, a minimal amount of the nosing material was used to fill the voids caused by the angle removal and . concrete spalling. After removing the existing seal and the loose armor angle, workers sandblasted the joint opening. They placed a form to keep the joint open. Next, they placed the nosing material on the south joint header. After the nosing cured, a two part primer was applied and a foam backer rod was installed. The two part silicon sealant was installed using a •special pump designed to mix the components. The sealant was placed with a '/s" recess in the ***traffc*** lanes but was nearly flush with the bridge deck in the shoulders. The 902 RCS sealant was placed in the entire 80 ft width of the joint Thus, inmost of the joint (all except 31.5 ft), the Dow Coming sealant was placed in the joint with the original armor in place: 48 feet and 32 feet of sealant on 4/19 and 4/20, respectively.
MATERIAL COMPOSITION: Silspec 900 PNS, a two part polymer combined with a flint aggregate and Dow Coming 902 RCS, a rapid curing, self-leveling silicone.
APPROXIMATE SERVICE LIFE/ WARRANTY: New product introduced in 1991. The Silspec 900 PNS has been tested for over 5 years with the Oklahoma DOT.
MANUFACTURER RECOMMENDED USES: Expansion joint system in the construction *of* bridges, highways, airfields, and other high traffic areas. A system for repairing and/or reconstructing failed expansion joints.
FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Provides a rapid curing, cost effective method for constructing or reconstructing a variety of expansion joint configurations. It is easily placed in the field by maintenance or construction forces.
Note: The supplier for XJS Expansion Joint System is now coastal construction Products, Inc.

JOINT SUMMARY SHEET
PRODUCT TRADE NAME: DELCRETEELASTOMERIC CONCRETE/ STEELFLEX STRIP SEAL SYSTEM
PRODUCT MANUFACTURER: The D. S. Brown Company

REPRESENTATIVE: Kyle A. Robinson
REPRESENTATIVE ADDRESS: 1753 Ellenwood Drive, Roswell, Georgia 30075
SUPPLIER PHONE#: (404) 998-4511

TEST JOINT NUMBER: 12
TEST JOINT LOCATION: Bridge #940111, NE Bent, Saint Lucie County
BRIDGE NAME: I-95 over Midway Road (North Bound) FIELD PERFORMANCE
SUMMARY: See section 3.4.2
INSTALLATION DATE: August 26/ August 27, 1993

APPROXIMATE JOINT LENGTH INSTALLED: 32 feet/ 30 feet
APPROXIMATE LABOR COUNT: ≤ 3 __ 4 -5 X >5 __

APPROXIMATE INSTALLATION TIME: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL TIME LAPSE: 7 hrs. / 8.5 hrs.
INSTALLATION PROCEDURE COMPLEXITY: SIMPLE AVERAGE COMPLEX

APPROXIMATE CURE TIME: Primer 30 min. cure/ Delerete l to 1.5 hrs. cure

TYPICAL EQUIPMENT: sandblasting equipment, mixer, measuring containers, trowels; hand saw, drill; hammers, crow bat, air compressor, pry bar, long handle scrapper, paint brushes, pliers.

INSTALLATION NOTES/ COMMENTS: The steps for the installation of the D.S. Brown expansion joint system were as follows: sandblasting and using compressed air to clean the: joint opening, bolting the armor angles in place in the opening and cutting off the bolt tops; placing styrofoam in the joint; placing a primer on the surfaces of the opening; allowing the primer to cure for thirty minutes; mixing and placing the Delcrete; and installing the seal. While the Delcrete cured (≈ 1.5 hours), workers installed the seal. The Delcrete was mixed in small batches and was easy to pour. Delcrete was self-leveling and did °not require heat:- Placing and leveling the armor angles was the most time consuming part of the joint installation. This process made the installation complex. The workers worked slowly especially on the second' day. It seemed that the joint system could have been installed in less time on both days, especially day two (8/27/93). The joint system installed at this location, is designed for up to 4 inches of movement. This is much more movement than is needed at the location. The joint system can be formed to turn up along the barrier wall at the ends. This was not done on the test installation because the angle of the upturn was incorrect so the armor angles were cut in the field.

MATERIAL COMPOSITION: Delcrete-Polyurethane base material. Steelflex Strip seal - A36 or A588 steel & neoprene gland.

APPROXIMATE SERVICE LIFE/ WARRANTY:
MANUFACTURER RECOMMENDED USES: Rehabilitation of bridge expansion joints. New bridge expansion joints.
OUTSTANDING FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Delcrete remains flexible at high and low temperatures. Delcrete can accept traffic one hour after the final pour. Steelflex strip seal gland is easily replaced/ maintained.

JOINT SUMMARY SHEET
PRODUCT TRADE NAME: EVAZOTE 380 ESP SEAL
PRODUCT MANUFACTURER: Epoxy Industries, Incorporated

REPRESENTATIVE: Ms. Terry Eck.
REPRESENTATIVE ADDRESS: 14 West Shore Street, Ravena, New York 12143
SUPPLIER PHONE#: (800) 883-3400/ (518) 756-6193

TEST JOINT LOCATION: Bridge #940123, NE Bent; Saint Lucie County
BRIDGE NAME: 1-95 over Ten Mile Creek (North Bound) FIELD

PERFORMANCE SUMMARY: See section 3.5.2

INSTALLATION DATE: July 29, 1993
APPROXIMATE JOINT LENGTH INSTALLED: 35 feet/ 23 feet

APPROXIMATE LABOR COUNT: ≤3 X 4 –5 __ >5__

APPROXIMATE INSTALLATION TIME: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIME LAPSE: 1 hour/
INSTALLATION: PROCEDURE COMPLEXITY: SIMPLE AVERAGE COMPLEX

APPROXIMATE CURE TIME: The epoxy has a 30 minute setting time.

TYPICAL EQUIPMENT: air compressor, Teflon heating iron, sand blasting equipment, trowels, small paint brushes.

INSTALLATION NOTES/ COMMENTS: In general, the proper width of the seal is 25% larger than the expansion joint opening. For the test installation, workers removed the existing seal and then sandblasted clean the joint opening. After mixing the two components of the epoxy, workers applied epoxy to the vertical sides of the armor and the two sides of the seal. Next, workers installed the seal into the joint such that the seal was flush with the deck surface. The epoxy was allowed to: cure or-thirty (30) minutes before traffic was returned to. the bridge. To form the seal along the barrier walls, a small section of the seal was cut and heat welded (using the iron) to the seal ends.
MATERIAL COMPOSITION: Ethylene vinyl acetate, closed cell cross linked nitrogen blown foam.
APPROXIMATE SERVICE LIFE/ WARRANTY:
MANUFACTURER RECOMMENDED USES: Expansion/ contraction joints, water stop, pressure relief joints, and seismic joints for bridges, buildings and other structures. Waterproof joint filler, gasket. material.
OUTSTANDING FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Excellent chemical resistance, excellent movement range, cost advantageous, ultraviolet resistant.

JOINT SUMMARY SHEET

PRODUCT TRADE NAME: CEVA 250 Joint System
PRODUCT MANUFACTURER: Epoxy Industries, Incorporated
REPRESENTATIVE: Ms. Terry Eck
REPRESENTATIVE ADDRESS: 14 West Shore Street, Ravena; New York 12143
SUPPLIER PHONE#: (800) 883-3400/ (5181756-6193
TEST JOINT LOCATION: Bridge #940116, SE Bent; Saint Lucie County
BRIDGE NAME: 1-95 over Glades Road (North Bound)
FIELD PERFORMANCE SUMMARY: See section 3.6.2
INSTALLATION DATE: July 26/ July 28,1993
APPROXIMATE JOINT LENGTH INSTALLED: 23 feet/ 15 feet
APPROXIMATE LABOR COUNT: ≤3__ 4 -5 X >5___
APPROXIMATE INSTALLATION TIME: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIME LAPSE:
INSTALLATION PROCEDURE COMPLEXITY: SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME: "Traffic, may be resumed four hours after Novul Crete is placed"(Epoxy Industries, Inc. 1991).
TYPICAL EQUIPMENT: mixer, sir compressor, iron, sand blasting equipment, trowels, small paint brushes.
INSTALLATION NOTES/ COMMENTS: This was the first test joint installed after using the FDOT's contractor to remove the existing joint. Before the installation began, there was a significant delay caused by disagreements associated with the FDOT removal contract. This delay did impact the installation-of the CEVA 250 and CEVA-300 Systems. The difference between the two systems is that armor angle is installed in the CEVA 300-System but not in the CEVA 250 System. Because of the resulting time constraints, the joint supplier's representative and crew did' not install the systems as planned in two distinct halves. Instead, beginning at the right barrier-wall, workers installed four (4) sections of the joint system: 23 feet of the CEVA 250 System, 26 feet of the CEVA 300 System, 15 feet of the CEVA 250 System,; and 16.feet (approximately) of the CEVA 300 System , Because of the time pressures, the workers installed the first section of the CEVA 250 Joint System with several curves in both the nosing and the seal. The general appearance of the joint was less than pleasant. According to Mr. Tom Meacham, General Manager and site representative for Epoxy Industries, Inc., the forms slipped during the installation but sufficient time did not exist to properly correct. the situation. Mr. Meacham believes the problem areas (spalling) in the joint are at locations where the. forms slipped
MATERIAL COMPOSITION: Evazote 380 ESP: Ethylene vinyl acetate, closed cell cross, linked nitrogen blown foam; Novui Crete: modified elastomeric compound consisting of aggregate, resin & hardener; Evapox Bonder #1: resin, hardener.
APPROXIMATE SERVICE LIFE/ WARRANTY: Five (5) year with on site technical representative.
MANUFACTURER RECOMMENDED USES: Joint system for bridges, parking garages, waterfront/shipping piers, mass transit structures, commercial buildings, stadiums, ramps, airports, seismic joints.
OUTSTANDING FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Waterproof, non extruding; cost efficient; quiet; ultra violet & weather resistant, handles; 60% o compression and 30% tension, 120% shear, 100% vertical and horizontal movement; nosing can be poured to any dimensions; chemical resistant, maintenance free; curbs and intersections are leak proof.

JOINT SUMMARY SHEET
PRODUCT TRADE NAME: CEVA 300 Joint System
PRODUCT MANUFACTURER: Epoxy Industries, Incorporated
REPRESENTATIVE: Ms. Terry Eck
REPRESENTATIVE ADDRESS: 14 West Shore Street, Ravena, New York 12143 SUPPLIER
PHONE#: (800) 883-3400/ (518) 756-6193
TEST JOINT LOCATION: Bridge #940116, SE Bent, Saint Lucie County
BRIDGE NAME: I-95 over Glades Road (North Bound) FIELD PERFORMANCE
SUMMARY: See section 3.6.3 INSTALLATION DATE: July 27/ July 28, 1993
APPROXIMATE JOINT LENGTH INSTALLED: 26 feet/ 16 feet
APPROXIMATE LABOR COUNT: ≤ 3__ 4 -5 X >5__
APPROXIMATE INSTALLATION TIME: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIME LAPSE:
INSTALLATION PROCEDURE COMPLEXITY: SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME: "Traffic may be resumed four hours after Novul Crete is placed"(Epoxy Industries, Inc. 1991).
TYPICAL -EQUIPMENT: mixer, air compressor, iron,-:sand blasting equipment, trowels, small paintbrushes.
INSTALLATION NOTES/COMMENTS:: This was the first test joint installed after using the FDOT's contractor to remove the existing joint Before the installation began, there was a significant delay caused by disagreements associated with the FDOT removal contract. This delay did impact the installation of the CEVA 250 and CEVA 300 Systems. The difference between the two systems is that armor angle is installed in the CEVA 300 System but not in the CEVA 250 System. Because of the resulting time constraints, the joint supplier's representative and, crew did not install the systems as planned in two distinct halves. Instead, beginning at the right barrier wall, workers installed four (4) sections of the joint system: 23 feet of the CEVA 250 System, 26 feet of the CEVA 300:System;15 feet of the CEVA 250 System, and 16 feet (approximately) of the CEVA 300 System. Under the time pressures, the workers installed the joint sections such that the general appearance of the joint was less than pleasant The surface of the nosing does not have a smooth finish. According to Mr. Tom Meacham, General Manager and site representative for Epoxy Industries, Inc., the forms slipped during the installation but sufficient time did not exist to properly correct the situation. Mr. Meacham believes the.spelling near the transition from one joint system to the other is in a location where the forms slipped.
MATERIAL COMPOSITION: Evazote 380 ESP: Ethylene vinyl acetate, closed cell cross linked nitrogen blown foam; Novul Crete: modified elastomeric compound consisting of aggregate, resin &hardener, Evapox Bonder #l : resin,hardener.; weathering steel (armor).
APPROXIMATE SERVICE LIFE/ WARRANTY: Five (5) year with on site technical representative.
MANUFACTURER RECOMMENDED USES: Joint system for bridges, parking garages, waterfrout/shippingpiers, mass transit structures, commercial buildings, stadiums, ramps, airports, seismic joints.
OUTSTANDING FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Waterproof, non extruding; cost efficient; quiet; ultra violet & weather resistant; handles 60% compression and 30% o tension, 120% shear, 100% vertical and horizontal movement; nosing can be poured to any` dimensions; chemical resistant, maintenance free; curbs and intersections are leakproof.

JOINT SUMMARY SHEET
PRODUCT TRADE NAME: JEENE STRUCTURAL SEALING JOINT SYSTEM (PC35)
PRODUCT MANUFACTURER: Hydrozo/Jeene, Incorporated

REPRESENTATIVE: Mr. Tom Heaton
REPRESENTATIVE ADDRESS: 8570 Phillip Highway, #103, Jacksonville, Florida 32256-1608
SUPPLIER PHONE#: (904) 739-0401

TEST JOINT LOCATION: Bridge #940111, SE Bent, Saint Lucie County
BRIDGE NAME: 1-95 over Midway Road (North Bound) FIELD PERFORMANCE

SUMMARY: See section 3.7.2
INSTALLATION DATE: August 25/ August 26, 1993
APPROXIMATE JOINT LENGTH INSTALLED: 36 feet/ 26 feet
APPROXIMATE LABOR COUNT: ≤3__ 4 -5 X >5__
APPROXIMATE INSTALLATION TIME: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIME LAPSE: 4.45 hours/ 3.5 hours
INSTALLATION PROCEDURE' COMPLEXITY: SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME: 0.75 to 2.5 hours (nosing)
TYPICAL EQUIPMENT: torch, hammers, buckets, concrete saw, wheelbarrow, jackhammer, sandblasting equipment, mortar mixer, air compressor, paint brushes, air pump.
INSTALLATION NOTES/ COMMENTS: Hydrozo/Jeene came well prepared and had all equipment necessary to both remove the existing joint and install the new joint. The FDOT's contractor began removing the existing joint system using the concrete saw. Near the end of the process, the saw-blade broke. Hyrozo/Jeene used a torch to cut the armor angles in section so that the removal process could be completed. The installation of the Jeene joint included: sandblasting; and cleaning the joint opening, placing taped styrofoam in the joint opening to prevent the nosing from entering; applying a primer to the surfaces, mixing the nosing materials in the mortar mixer; placing the nosing;-curing the nosing; removing the Styrofoam; cleaning the joint with compressed air, grinding: the top: and inside surface of the joint opening; sandblasting the joint; cleaning the joint with compressed air, applying a primer, placing adhesive (ADE-52) on the seal and the vertical walls of the joint; installing and pressurizing the seal; and cleaning up the excess adhesive.
MATERIAL COMPOSITION: polymer concrete (liquid polymer, fiber mesh, sand, aggregate) and extruded neoprene seal.
APPROXIMATE SERVICE LIFE/ WARRANTY: Five (5) year limited warranty.
MANUFACTURER RECOMMENDED USES: Bridge deck expansion joint.
OUTSTANDING FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Excellent thermal, load & dynamic movements (100% of nominal dimension). Total waterproofing capability. Longevity in use.
Note: Hydrozo/Jeene Inc. has been: acquired by Harris specialty Chemicals, Inc.

JOINT SUMMARY SHEET
PRODUCT TRADE NAME: JEENE STRUCTURAL SEALING JOINT SYSTEM (PC92M)
PRODUCT MANUFACTURER: Hydrozo/Jeene, Incorporated

REPRESENTATIVE: Mr. Tom Heaton
REPRESENTATIVE ADDRESS: 8570 Phillip Highway, #103, Jacksonville, Florida 32256-1608
SUPPLIER PHONE#: (904) 739-0401

TEST JOINT LOCATION: Bridge #940126, NE Bent, Saint Lucie County
BRIDGE NAME: 1-95 over the Turnpike (South Bound)
FIELD PERFORMANCE SUMMARY: See section 3.8.2
INSTALLATION DATE: August 23/ August 24, 1993
APPROXIMATE JOINT LENGTH INSTALLED: 36 feet/ 26 feet
APPROXIMATE LABOR COUNT: ≤ 3__ 4 –5__ >5X
APPROXIMATE INSTALLATION TUVIE: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL TIM LAPSE: 5 hours/ 4 hours
INSTALLATION PROCEDURE COMPLEXITY: SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME: 10 minutes (primer)/ 2 hours (nosing)
TYPICAL EQUIPMENT: torch, hammers; buckets, concrete saw, wheel barrow, jack hammer, sand blasting equipment, drill with paddle wheel, air compressor, paint brushes, air pump.
INSTALLATION NOTES/ COMMENTS: Hydrozo/Jeene came well prepared and had all equipment necessary to both remove the existing joint and install the new joint. Because the FDOT's contractor was behind-schedule and still working at Bridge #940122, on 823 Hydrozo/Jeene began to remove the existing joint. Workers used torches to remove the armored steel , and a jackhammer to remove the concrete to create the necessary blockout for the right shoulder and the right and middle traffic lanes. All American Concrete Cutting-Company. (AACCC) made a saw cut on each side of the steel angle to help Hydrozo/Jeene finish removing the angle from the joint. On 8/24 AACCC removed the remainder of the original joint. The installation of the Jeene joint included: sandblasting, and cleaning the joint opening, placing a form to prevent the nosing from entering the joint, applying a primer to the surfaces, mixing and placing the nosing in ½ c.f. batches, curing the nosing for two (2) hours and installing and pressurizing the seal. Workers began to install the seal, after the nosing had cured for one (1) hour, the workers removed the form, used a grinder to roughen the vertical walls of the nosing, applied adhesive and installed the nosing.
MATERIAL COMPOSITION: Part A & B mix of PC92M (polymer concrete), fiber mesh, silica sand, and extruded neoprene.
APPROXIMATE SERVICE LIFE/ WARRANTY: Five (5) year limited warranty.
MANUFACTURER RECOMMENDED USES: Bridge deck expansion joint.
OUTSTANDING FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Excellent thermal, load & dynamic movements (100% of nominal dimension). Total waterproofing capability. Longevity in use.
Note: Hydrozo/Jeene Inc. has been acquired by Harris specialty Chemicals, Inc.

JOINT SUMMARY SHEET

PRODUCT TRADE NAME: KOCH BJS BRIDGE JOINT SYSTEM PRODUCT
MANUFACTURER: Koch Materials
REPRESENTATIVE: Lee Norman; Pavement Technology & Maintenance, Inc.
REPRESENTATIVE ADDRESS: P.O. Box 721, Ellenwood, Georgia 30049-0721
SUPPLIER PHONE#: (904) 961-8590

TEST JOINT LOCATION: Bridge #940112, NE Approach' Slab, Saint Lucie County
BRIDGE NAME: I-95 over Midway Road (South Bound)
FIELD PERFORMANCE SUMMARY: 3.9.2

INSTALLATION DATE:	July 28, 1993/ July 29, 1993
APPROXIMATE JOINT LENGTH INSTALLED:	35 feet/ -27 feet
APPROXIMATE LABOR COUNT:	≤3 X 4 –5__ >5__
APPROXIMATE INSTALLATION TIME:	QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIME LAPSE:	2.75 hours/ 2.50 hours
INSTALLATION PROCEDURE COMPLEXITY:	SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME:	30 minutes

TYPICAL EQUIPMENT: pavement saw, shovels,. compressed air lances, rotating drum mixer, digital temperature sensor, double oil jacketed melter, two (2) ton roller, and sand blasting equipment.

INSTALLATION NOTES/ COMMENTS: The KOCH BJS BRIDGE JOINT SYSTEM was placed at the beginning of the north approach slab instead of at an end bent joint.: Mr. Lee Norman noticed that the asphalt was cracked across the roadway width at that location and stated that the joint system was well suited for this situation. The FDOT agreed to have the joint system installed at the beginning of the approach. slab. The installation crew did the following: removed a 20 in wide strip of asphalt; cleaned the opening using compressed air; heated the existing asphalt pavement at the edges of the opening; poured a layer of hot asphalt (BJB Binder) in the joint; placed a metal (bridging) plate in the joint; poured hot asphalt (BJB Binder) to cover the plate; heated aggregate to 275-325 °F; Installed the KOCH BJS System in three layers; compacted the joint with a two (2) ton roller; poured a thin layer of hot asphalt; and sprinkled the top with silica sand.

MATERIAL COMPOSITION: Thermoplastic polymeric modified asphalt.

APPROXIMATE SERVICE LIFE/ WARRANTY: 18 year old system being used world wide. Introduced in the U.S in 1988.

MANUFACTURER RECOMMENDED USES: Replacement of expansion joint systems on bridges; Emergency repair and maintenance of existing systems. Stress relief joints (Virginia Joints).
OUTSTANDING FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Long lasting; smooth riding; 100% waterproof rapid installation time; reasonable price.

JOINT SUMMARY SHEET

PRODUCT TRADE NAME: KOCH 2000 SL BRIDGE JOINT SEALANT
PRODUCT MANUFACTURER: Koch Materials
REPRESENTATIVE: Lee Norman, Pavement Technology & Maintenance, Inc.
REPRESENTATIVE ADDRESS: P.O. Box 721, Ellenwood; Georgia 30049-0721
SUPPLIER PHONE#: (904)-961-8590

TEST JOINT LOCATION: Bridge #940112, SE Bent, Saint Lucie County
BRIDGE NAME: I-95 over Midway Road (South Bound)
FIELD PERFORMANCE SUMMARY: See section 3.10.2
INSTALLATION DATE: July 28;1993/ July 29,1993
APPROXIMATE JOINT LENGTH INSTALLED: 35 feet/ 27 feet
APPROXIMATE LABOR COUNT: ≤3 X 4 -5__ >5__
APPROXIMATE INSTALLATION TIME: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIME LAPSE: 1.25 hours/ 0.75 hours
INSTALLATION PROCEDURE COMPLEXITY: SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME: None needed.

TYPICAL EQUIPMENT: sandblasting equipment, sir compressor, hand mechanical mixer.

INSTALLATION NOTES/ COMMENTS: At this joint, the existing armor angles remained in place. Only anew, seal was installed. This involved a very simple five (5) step process: 1. Sandblasting and cleaning the joint opening; 2. Placing duct tape in the bottom and sides of the joint; 3. Installing a polyethylene foam backer rod in the joint; 4. Mixing the pre-measured two (2) part sealant (1 bucket and I packet proportion). This took about 5 minutes; 5. Pouring the sealant into the joint leaving a ½" recess; 6. Since no cure time was required as soon as the sealant was poured, the joint was ready for traffic.
MATERIAL COMPOSITION: Two component polysulfide seal containing resin plasticizer, polymer, coal tar pitch, etc.
APPROXIMATE SERVICE LIFE/ WARRANTY:
MANUFACTURER RECOMMENDED USES: Bridge expansion joint sealant, sealant for the Flexcon2000 Joint System.
FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: ability to withstand impact forces; jet blast resistant, self leveling; quick setting; superior watertight seal; rapid installation time.

JOINT SUMMARY SHEET

PRODUCT TRADE NAME: RESURF IV
PRODUCT MANUFACTURER: Polymer Concrete Incorporated
REPRESENTATIVE: Mr. Glenn Robinson
REPRESENTATIVE ADDRESS: P.O. Box 610, Camden, Alabama 36726
SUPPLIER PHONE#: (205) 682-4296

TEST JOINT LOCATION: Bridge #940126, SE Bent, Saint Lucie County
BRIDGE NAME: I-95 over the Turnpike (South Bound)
FIELD PERFORMANCE SUMMARY: See section 3.11.2
INSTALLATION DATE: August 23/ August 24, 1993/ March 8, 1994
APPROXIMATE JOINT LENGTH INSTALLED: 36 feet/ 26 feet/ 19.7 feet
APPROXIMATE LABOR COUNT: ≤3 X 4 –5__ >5__
APPROXIMATE INSTALLATION TIME: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIME-LAPSE: 4 hours/ 3.75 hours/ 4 hours
INSTALLATION PROCEDURE COMPLEXITY: SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME: l hour
TYPICAL EQUIPMENT: buckets, wheelbarrow, paint brushes, hoe, hammer, screw driver, wire brush; stick, wood boards.
INSTALLATION NOTES/ COMMENTS: All American Concrete Cutting Company made fairly clean and smooth cuts to create a 3"x4" blockout on each side of the joint opening. Mr. Glenn Robinson and Dr. Thomas Hairston installed the RESURF IV. The Two men cleaned the joint by hand since- they did not have sandblasting equipment. In addition to cleaning, the joint installation included the following steps: Priming the surfaces with catalyzed RESURF resin; Using wooden boards painted with a silicone: and gasoline mixture) to block the joint opening, mixing the measured and catalyzed resin; Mixing the aggregate blend and adding the resin; placing the RESURF IV material in the openings; finishing the material by troweling, screeding, tapping, and feathering; Curing the nosing for 1 hour, and removing the wooden forms (boards). Several of the boards did not peel easily on the first, day of installation. Since, RESURF IV is only a header (or nosing) material a seal was needed to complete the joint: . Hydrozo/ Jeene agreed to supply and install a Jeene seal. Therefore, during the initial installation, Hydrozo/Jeene installed a seal after the RESURF IV installation was complete. During the March 1994 repair, the Jeene seal was broken in the repaired sections. Thus, the joint was left open.R. J. Watson supplied some KOCH 2000 SL BRIDGE JOINT SEALANT for FDOT workers to seal the joint opening.
MATERIAL COMPOSITION: Styrene diluted polyester resin, specially modified siliceous aggregate blend catalyst
APPROXIMATE SERVICE LIFE/ WARRANTY: Product introduced in 1993
MANUFACTURER RECOMMENDED USES: Repairs to Portland Cement Concrete Any non-vertical or overhead spall repair, to concrete.
OUTSTANDING FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: All properties of any top quality polymer concrete plus vastly improved flexibility, shrinkage and workability.

JOINT SUMMARY SHEET
PRODUCT TRADE NAME: FLEXCON 2000 JOINT SEALING SYSTEM PRODUCT
MANUFACTURER: R. J. Watson, Inc.
REPRESENTATIVE: Pavement Technology and Maintenance, Inc.
REPRESENTATIVE ADDRESS: P.O. Box 721, Ellenwood; Georgia, 30049
SUPPLIER PHONE#: (404) 961-8590
TEST JOINT LOCATION: Bridge #940112, NE Bent, Saint Lucie County
BRIDGE NAME: 1-95 over Midway Road (South Bound)
FIELD PERFORMANCE SUMMARY: See section 3.122
INSTALLATION DATE: July 28, 1993/ July 29, 1993/ March 14,1994
APPROXIMATE JOINT LENGTH INSTALLED: 0 feet/ 20 feet/ 18 feet (repaired)
APPROXIMATE LABOR COUNT: ≤3 X 4 –5__ >5__
APPROXIMATE INSTALLATION TIME: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIME LAPSE: 3.5 hours/ 3.75 hours
INSTALLATION PROCEDURE COMPLEXITY:. SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME: 30 minutes (in general, 1-3 hours; depending upon the ambient temperature)
TYPICAL EQUIPMENT: sand blasting equipment, air compressor, buckets, trowels, propane torch, mechanical drill mounted mixer, power grinder, turntable fixed blade mixer.
INSTALLATION NOTES/ COMMENTS: Workers installed approximately twenty (20) feet of the FLEXCON 2000 JOINT SEALING SYSTEM; this included the right traffic lane and approximately five (5) feet of the middle traffic lane. To install the joint the work crew did the following: 8. Sandblasted and cleaned the joint blockout (opening); 2. Placed a wood form (two boards taped with duct tape and spaced with small wood planks). in the joint, opening; 3. Taped the sides of the joint with duct tape; 4. Mixed the two (2) part polymer concrete nosing material. The sand and aggregate mixture were mixed and the liquid components were mixed separately before being combined; 5. Placed the nosing material using a bucket and trowels. PT&M and RJW finished placing the nosing material at 11:10 am; 6. Allowed the nosing material to cure for about 30 minutes; 7. Removed the wood forms; 8. Used a grinder; to roughen the inside surface of the nosing, material; 9. Cut foam backer strips and placed them in the joint opening; 10. Mixed and placed the two (2) part epoxy sealant (KOCH 2000 SL POLYSULPHIDE BRIDGE JOINT SEALANT); The sealant was mixed for five (5) minutes in the plastic bucket in which it is packaged. The crew placed the joint sealant in approximately twenty (20) minutes; 11. Once the sealant was poured, no additional cure time was required
MATERIAL COMPOSITION: Flexcon A/C Elastomeric Concrete (epoxy resin, polyurethane, prepolymer, sand; aggregate) and Polysulphide Sealant
APPROXIMATE SERVICE` LIFE/ WARRANTY: Product introduced in 1993.
MANUFACTURER RECOMMENDED USES: Bridge deck.joint-sealing system; parking deck or building joint seal.
OUTSTANDING FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Totally field molded which eliminates shop drawings; Elastomeric concrete nosing eliminates reflective cracking which is common with armored joints.
Note: Pavement Technology and maintenance, Inc. has changed it's name to Structures Maintenance, Inc.

JOINT SUMMARY SHEET
PRODUCT TRADE NAME: SYLCRETE 10 MINUTE JOINT SEALANT
PRODUCT MANUFACTURER: The Sylvax Corporation
REPRESENTATIVE: Mr. David Montgomery
REPRESENTATIVE ADDRESS: 780 West Lumsden Suite P, Brandon Florida 33511
SUPPLIER PHONE#: (813) 654-7613
TEST JOINT LOCATION: Bridge #940123, SE Bent, Saint Lucie County
BRIDGE NAME: 1-95 over Ten Mile Creek (North Bound)
FIELD PERFORMANCE SUMMARY: See section 3.13.2
INSTALLATION DATE: July 27, 1993/ August 18, 1993
APPROXIMATE JOINT LENGTH INSTALLED:
APPROXIMATE LABOR COUNT: ≤3 X 4 –5__ >5__
APPROXIMATE INSTALLATION TIME: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIME LAPSE: 2.5 hours/ 1.75 hours
INSTALLATION PROCEDURE COMPLEXITY: . SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME: 10 minutes
TYPICAL EQUIPMENT: a cloth, foam backer rod, tape, a small- bucket, a caulk gun, a hand held electric grinder, a small generator (with cord),gloves, specially made seal applicator.
INSTALLATION NOTES/ COMMENTS: The SYLCRETE sealant was installed in a joint with the existing armored angles in place. The installation, process was very simple. It required very little equipment and manpower. Not only was the installation process easy and quick, the noise level was very low and there were no noticeable fumes. Cleanup was also very easy since there was almost no waste products or other debris. The installation steps were as follows: 1) Cleaned the armor angle on the inside of the joint with a hand held grinder, 2) Cleaned the surface and the inside leg of the armored angles with denatured alcohol; 3) Installed foam backer rods; 4) Used silicon caulk to seal any gaps left by the foam backer rod; 5) Applied the primer (Concrete Mender) to seal any corrosion that might be present. This assures good adhesion of the seal; 6) Using special application gun, apply the seal material approximately 1/4" below the deck surface. However, in the shoulders, the seal was made approximately level to the roadway to help prevent debris buildup; 7) Wait 10 minutes for the product to cure.
MATERIAL COMPOSITION: Polyurethane Elastomer.
APPROXIMATE SERVICE LIFE/ WARRANTY:
MANUFACTURER RECOMMENDED USES: For sealing 2" or larger cracks and joints on roads; bridges, highways, airport runways and taxiways, and parking structures.
OUTSTANDING FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Bonds without priming; Positive Sealing (expands and contracts); Fast Curing; All Climate Use; Traffic Bearing; Creep Resistant.

JOINT SUMMARY SHEET
PRODUCT TRADE NAME: EXPANDEX BURIED JOINT SYSTEM
PRODUCT MANUFACTURER: Watson Bowman ACME Corporation
REPRESENTATIVE: Ronald P. Poleon
REPRESENTATIVE ADDRESS: 7783A Bells Ferry Road, Woodstock Ga 30188
SUPPLIER PHONE#: (404) 924-0845
TEST JOINT LOCATION: Bridge #940122, SE Bent, Saint Lucie County
BRIDGE NAME: 1-95 over Ten Mile Creek (South Bound)
FIELD PERFORMANCE SUMMARY: See section 3.14.2
INSTALLATION DATE: August 23 & 24,1993
APPROXIMATE JOINT LENGTH INSTALLED: 44 feet/ 29 feet
APPROXIMATE LABOR COUNT: ≤3 X 4 –5__ >5__
APPROXIMATE INSTALLATION TIME: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIM LAPSE: approximately 3 hours
INSTALLATION PROCEDURE COMPLEXITY: SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME: time required for the joint system to cool.
TYPICAL EQUIPMENT: rakes, shovels, hot air lances, rotating drum mixer, digital temperature sensor, double oil jacketed melter, compacting roller, and sand blasting equipment.
INSTALLATION NOTES/ COMMENTS: As the. contractor removed the existing armored joint, he cut a 20" wide strip (2" deep where possible) in the deck. Members of the FDOT bridge crew placed quick set concrete in the opening to fill the deep voids and create the 20" by 2" deep blockout required for the installation of the Expandex Buried Joint System. The installation procedure includes the following steps. Sandblasting and sweeping the joint opening clean; placing foam in the joint; placing a metal plate in the bottom and center of the opening; installing nails to hold the plate in place; melting and heating the elastomeric binder to a minimum of 350 °F; heating the blockout with a hot air lance; applying hot binder to cover the plate and sides and bottom of the opening, heating the aggregate and binder in a rotating drum mixer to a minimum of 250°F; filling the joint opening with the hot EXPANDEX material; compacting the joint level with the roadway with a roller, pouring a thin layer of binder to fill any rough areas; and sprinkling the top with sand.
MATERIAL COMPOSITION: Polymeric modified asphalt.
APPROXIMATE SERVICE LIFE/ WARRANTY: Introduced in 1991.
MANUFACTURER RECOMMENDED USES: Buried expansion joint for small movement (up to 2") joints.
OUTSTANDING FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Seals and waterproofs joint openings finished joint is flush with the roadway so it is smooth riding and quiet, Easy to install and maintain.
Note: Watson Bowman ACME Corporation and Hydrozo/Jeene, Inc. has been changed to Structures Maintenance.

JOINT SUMMARY SHEET
PRODUCT TRADE NAME: WABOCRETE ACM STRIP SEAL EXPANSION JOINT
PRODUCT MANUFACTURER: Watson Bowman ACME Corporation
REPRESENTATIVE: Ronald P. Poleon
REPRESENTATIVE ADDRESS: 7783A Bells Ferry Road, Woodstock Ga 30188
SUPPLIER PHONE#: (404)-924-0845
TEST JOINT LOCATION: Bridge #940122, NE Bent, Saint Lucie County
BRIDGE NAME: I-95 over Ten Mile Creek (South Bound) FIELD PERFORMANCE SUMMARY: See section 3.15.2
INSTALLATION DATE: August 19,20,23, 1993.
APPROXIMATE JOINT LENGTH INSTALLED: 35 feet/ 22 feet
APPROXIMATE LABOR COUNT: ≤3 X 4 –5__ >5__
APPROXIMATE INSTALLATION TRUE: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIME LAPSE: 6 hrs. /6.5 hrs.
INSTALLATION PROCEDURE COMPLEXITY: SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME: 1 to 2 hours
TYPICAL EQUIPMENT: sandblasting equipment, hand drill, jiffy mixer, buckets, trowels, crow bar, sir compressor; pry bars, paint brushes.
INSTALLATION NOTES/ COMMENTS: The steps for the installation of the Wabocrete ACM Expansion Joint System were gas follows: suspending the steel extrusions in the blockout using adjustable leveling devices; sandblasting and using compressed sir to clean the joint, opening, placing taped foam in the joint; mixing the Wabocrete Acm material in (mixing the liquid components far 5 minutes and then adding the aggregate and mixing for 5-10 more minutes) in small batches; placing the batches of the nosing until the blockout is filled; allowing the nosing to cure for 1.75 hours; removing the foam form; and installing the seal.
MATERIAL COMPOSITION: 100% solids, oil modified polyurethane with aggregate component.
APPROXIMATE SERVICE LIFE/ WARRANTY: Introduced in 1990.
MANUFACTURER RECOMMENDED USES: Wabocrete ACM -elastomenc header material for use with Watson Bowman ACME expansion joint systems; concrete patching material. Rehabilitation of bridge expansion joints.
OUTSTANDING FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Requires no heat for curing; Requires no priming of metal or concrete; Conveniently packaged and easy to mix and install.

JOINT SUMMARY SHEET

PRODUCT TRADE NAME: TECHSTAR W300 SEAL
PRODUCT MANUFACTURER: Techstar, Inc.
REPRESENTATIVE: Mr. Warren Brown
REPRESENTATIVE ADDRESS: 532 Sutton place, Findlay OH 45840
SUPPLIER PHONE#: (419)424-5959/(419)424-5959

TEST JOINT LOCATION: Bridge #940093, Bent 6, Saint Lucie County
BRIDGE NAME: 1-95 over Belcher Canal (South Bound)
FIELD PERFORMANCE SUMMARY: See section 3.16.2
INSTALLATION DATE: November 18, 1994
APPROXIMATE JOINT LENGTH INSTALLED: 40 ft.
APPROXIMATE LABOR COUNT: ≤3__ 4-5 X >5__
APPROXIMATE INSTALLATION TIME: QUICK AVERAGE EXTENDED
APPROX. ACTUAL INSTALL. TIME LAPSE:
INSTALLATION PROCEDURE COMPLEXITY: SIMPLE AVERAGE COMPLEX
APPROXIMATE CURE TIME:
TYPICAL EQUIPMENT: A grader, and sandblasting equipment

INSTALLATION NOTES/ COMMENTS: The installation of the Techstar seal was quick and simple. The procedure for installing the seal included the following: 1. removing the original seal; 2. sandblasting the armor angles; applying adhesive to both sides of the seal; 3. inserting the seal by hand such that the highest part of the seal is 1/8" below the decks and using a grader to check the final elevation of the seal. Work began at 10:00 am on November 18, 1994.
Workers took approximately 15 minutes to remove the original seal and sandblast the opening in preparation for installing the Techstar seal. After the preparation was finished, in an additional 15 minutes, the crew installed the seal in one shoulder and one traffic lane. The seal was installed as one continuous unit. Instead of cutting the seal, workers rolled it up and protected it with safety cones. After the traffic was switched' to the opposite lane, the group installed the seal in the. second lane and other shoulder of the bridge. This installation required approximately l 5 minutes also. Therefore, four men completed the total installation of the Techstar W300 seal in approximately 45 minutes (excluding the time required to switch the traffic). Techstar, Inc. used Delastibond Adhesive supplied by the D.S. Brown Company.
MATERIAL COMPOSITION: Neoprene
APPROXIMATE SERVICE LIFE/WARRANTY: MANUFACTURER RECOMMENDED USES: Highway Bridge Expansion Joints, also can be used on other structures with expansion joints.
OUTSTANDING FEATURES/ ADVANTAGES CLAIMED BY MANUFACTURER: Easily installed, long lasting seal.

APPENDIX C

BRIDGE EXPANSION JOINT SURVEY

BRIDGE EXPANSION JOINT SURVEY
District:_____ Suncom Number:_____
Person completing survey:_____, Title_____
Please return the completed survey to: FDOT Structures Research Center (SRC), Central Office, Mail Station 80. SRC Suncom #: 278-6179.

Part I: DISTRICT USE Of JOINT SYSTEMS AND SEALS

1. X.J.S. EXPANSION JOINT SYSTEM

A. Is the X.J.S. EXPANSION JOINT SYSTEM used in the District? Yes or no?
If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for the joint system.

B. Have there been any performance problems with the X.J S. JOINT SYSTEM? Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint system.

2. DOW 902 RCS JOINT SEALANT

A. Is the DOW 902 RCS JOINT SEALANT used in the District? Yes or no?
If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for the joint system.

B. Have there been any performance problems with the DOW 902 RCS JOINT SEALANT? Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint sealant.

3. CEVA 250 JOINT SYSTEM

A. Is the CEVA 250 JOINT SYSTEM used in the District? Yes or no?
If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for the joint system.

B. Have there been my performance problems with the CEVA 250 JOINT SYSTEM? Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint system.

4. CEVA 300 JOINT SYSTEM

A. Is the CEVA 300 JOINT SYSTEM used in the District? Yes or no?_____
If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for the joint system.

B. Have there been any performance, problems with the CEVA 300 JOINT SYSTEM? Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint system.

5. CHEMCRETE 1000 EXPANSION JOINT SYSTEM

A. Is the CHEMCRETE 1000 EXPANSION JOINT SYSTEM used in the District? Yes or no?___If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for the joint system.

B. Have there been performance problems with the CHEMCRETE 1000 EXPANSION JOINT SYSTEM? Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint system.

6. EXPANDEX BURIED JOINT SYSTEM

A. Is the EXPANDEX BURIED JOINT SYSTEM used in the District? Yes or no?_____ If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for the joint system.

B. Have there been any performance problems with the EXPANDEX BURIED JOINT SYSTEM ? Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part: III) for the joint system.

7. WABOCRETE ACM EXPANSION JOINT

A. Is the WABOCRETE ACM EXPANSION JOINT used in the District? Yes or no?_____ If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for the joint system:

B. Have there been my performance problems with the WABOCRETE ACM EXPANSION JOINT? Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint system.

8. SYLCRETE 10 MINUTE JOINT SEALANT

A. Is the SYLCRETE 10 MINUTE JOINT SEALANT used in the District? Yes or no?_____ If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for the joint system.

B. Have there been an performance problems with the SYLCRETE 10 MINUTE JOINT SEALANT? Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint system.

9. EVAZOTE 380 ESP (SEAL)

A. Is the EVAZOTE 380 ESP (SEAL) used in the District? Yes or no? _____If yes, please complete a PERFORMANCEMISTORY AND EVALUATION SHEET (Part II) for the joint system.

B. Have there been any performance problems with the EVAZOTE 380 ESP (SEAL Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint system.

10. KOCH 2000 SL BRIDGE JOINT SEALING SYSTEM

A. Is the KOCH 2000 SL BRIDGE JOINT SEALING SYSTEM used in the District? Yes or no?_____ If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (PartII) for the joint system.

B. Have there been any performance problems with the KOCH 2000 SL BRIDGE JOINT SEALING SYSTEM? Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint sealant.

11. KOCH BJS JOINT SYSTEM

A. Is the KOCH BJS JOINT SYSTEM used in the District? Yes or no? _____If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET. (Part 11) for the joint system.
B. Have there been my performance problems with the KOCH BJS JOINT SYSTEM? Yes or no?_____ If yes please complete the "PERFORMANCE PROBLEMS" TABLE (Part, III) for the joint system.

12. FLEXCON 2000 JOINT SEALING SYSTEM

A. Is the FLEXCON 2000 JOINT SEALING SYSTEM used in the District? Yes or no? _____If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for the joint system.

B. Have there been any performance problems with the FLEXCON 2000 JOINT SEALING SYSTEM? Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint system.

13. DELCRETE ELASTOMERIC CONCRETE/ STEELFLEX STRIP SEAL SYSTEM

A. Is the DELCRETE / STEELFLEX STRIP SEAL SYSTEM used in the District? Yes or no?____If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for the joint system.

B. Have there been any performance problems with the DELCRETE / STEELFLEX STRIP SEAL SYSTEM? Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint system.

14. JEENE STRUCTURAL JOINT SEALING SYSTEM (PC35)

A. Is the JEENE STRUCTURAL JOINT SEALING SYSTEM (PC35) used in the District? Yes or no?_____ If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for the joint system.

B. Have there been any performance problems with the JEENE STRUCTURAL JOINT SEALING SYSTEM (PC35)? Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint system.

15. JEENF STRUCTURAL JOINT SEALING SYSTEM (PC92M)

A. Is he JEENE STRUCTURAL JOINT SEALING SYSTEM (PC92M) used in the District? Yes or no?_____ If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for the joint system.

B: Have there been my performance problems with the JEENE STRUCTURAL JOINT SEALING SYSTEM (PC92M)? Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint system.

16. SURF IV

A. Is the RESURF IV used in the District? Yes or no?_____ If yes, please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for the joint system.

B. Have there been my performance problems with RESURF IT Yes or no?_____ If yes, please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for RESURF

17. OTHER JOINT SYSTEMS AND SEALS

A. Please list other joint systems or seals (not mentioned: in 1-16 above) that are used in the District.

B. Please complete a PERFORMANCE HISTORY AND EVALUATION SHEET (Part II) for each of the joint systems or seals listed in 17A.

C. Have there been performance problems with any of the joint systems or seals listed in 17A? Yes or no?_____ If yes, please list (below) the joint systems or seals which have problems.

D. Please complete the "PERFORMANCE PROBLEMS" TABLE (Part III) for the joint systems or seals listed above in 17C.

BRIDGE EXPANSION JOINT SURVEY

District: _____ Suncom Number: _____
Person completing survey: _____, Title _____

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): _____.
All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)?
B. Name of the Manufacturer? _____
C. What is the **approximate number** of joints (units)? _____
D. What is the **average age** of the units? _____
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
E. What is the **approximate age of the oldest** unit? _____
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE		
GENERAL APPEARANCE		
ANCHORAGE		
DEBRIS ACCUMULATION		
SURFACE DAMAGE		
MAINTENANCE (EASE/NEED)		
RIDING SURFACE		
VIBRATION		
WATER TIGHTNESS		

H. Do you recommend this joint system (or seal) for use in other Districts?
_____ Yes, I highly recommend it.
_____ Yes, I recommend it.
_____ No, I do not recommend it. Why not?_____

BRIDGE EXPANSION JOINT SURVEY

District: _____ Suncom Number: _____
Person completing survey: _____, Title _____

Part III: PERFORMANCE PROBLEMS TABLE
Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): _____.

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#:	BRIDGE NAME:	BRIDGE LOCATION:
BRIDGE LENGTH:		BRIDGE SKEW:
JOINT LOCATION:		JOINT OPEN RANGE:
ADT:	% TRUCK TRAFFIC:	# OF TRAFFIC LANES:

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE			
DEBRIS ACCUMULATION			
SURFACE DAMAGE			
WATER TIGHTNESS			
VIBRATION			

BRIDGE EXPANSION JOINT SURVEY

District: 1 Suncom Number: 749-7727

Person completing survey: TOM GARCIA, Title MAINT. ENGINEER

10/24/94

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): ARMORED JOINT, ELASTOMERIC COMP. SEAL

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS			
BRIDGE#: 120106	BRIDGE NAME: NONE	BRIDGE LOCATION: I-75 OVER DANIELS PKWY (LEE CO.)	
BRIDGE LENGTH: 240'-4"		BRIDGE SKEW:	
JOINT LOCATION: N. END ABUT (#5) S.B.		JOINT OPEN RANGE: MAX 2½", MIN 2¼" PER PLANS	
ADT: 1991 = 12350 ON PLANS	% TRUCK TRAFFIC: ?	# OF TRAFFIC LANES: 2	

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	*ABOUT 4' SECTION OF SOUTH ANGLE IN OUTSIDE LANE WAS CUT OUT & REMOVED. WAS REPAIRED PREVIOUSLY(?) BY MAINT BUT FAILED	?	
DEBRIS ACCUMULATION	NONE		
SURFACE DAMAGE	BESIDES * ABOVE THE SEAL IS WEATHER CRACKED AND COMPRESSED TOO MUCH SEE * COMMENT		
WATER TIGHTNESS	SEAL CRACKS, PLUS ABOUT 4' PC. REMOVED WHERE ANGLE WAS CUT OUT.		
VIBRATION	NONE (WITH LOOSE ANGLE REMOVED)		
* JOINT MEASURED 1¼" @ NOON (TEMP ~ 80°±) AND IS MUCH SMALLER OR TIGHTER THAN EXPECTED FOR THE RELATIVELY COOLER DAY. WE EXPERIENCE 90°-100° TEMP IN SUMMER. THE OTHER 4 JTS MEASURED ABUT #1 = 1 3/8",			
PIER #2 = 1 11/16", PIER #3 = 1 11/16" AND PIER #4 = 1½". IT APPEARS THE BRIDGE WAS BUILT WITH JOINTS TOO SMALL.			
BRIDGE BUILT 1979			

BRIDGE EXPANSION JOINT SURVEY

District: 1 Suncom Number: 749-7727

Person completing survey: TOM GARCIA, Title MAINT. ENGINEER

10/24/94

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): ARMORED JOINT, W/ELASTOMERIC COMP SEAL.

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS			
BRIDGE#: 120107	BRIDGE NAME: NONE	BRIDGE LOCATION: I-75 OVER DANIELS PKWY (LEE CO.)	
BRIDGE LENGTH: 240'-4"		BRIDGE SKEW:	
JOINT LOCATION: BENT #3 N.B.		JOINT OPEN RANGE: MAX 2½", MIN. 2¼" PER PLAN.	
ADT: 1991 = 12350 ON PLAN	% TRUCK TRAFFIC: ?	# OF TRAFFIC LANES: 3 (HAS RAMP EXCEL LANE)	

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	OK-SOLID, THIS JOINT WAS ONCE REPAIRED DUE TO BECOMING FROM DECK. (COMMON PROBLEM FOR US) (*)		
DEBRIS ACCUMULATION	STONES COLLECTED IN TOP OF JT. IN EMENGENCY LANE NEAR GUTTER @ PARAPET WALL.		
SURFACE DAMAGE	NONE		
WATER TIGHTNESS	NO SEAL IN PLACE. REMOVED WHEN IT POPPED OUT. TRAF HAZ. (APPROX 30' OUT)		
VIBRATION	NOW SOLID (*)		
* = MEASURED	JOINT @ 1 3/4" @ NOON APPROX	80° TEMP.	

BRIDGE EXPANSION JOINT SURVEY

District: 1 Suncom Number: 749-7727

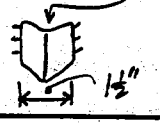
Person completing survey: TOM GARCIA, Title MAINT. ENGINEER

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): JENNE JOINT SYSTEM WITH POLYMER CONCRETE & QUARTZ NOSIN

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS			
BRIDGE#: 010057	BRIDGE NAME: PEACE RIVER BR.	BRIDGE LOCATION: I-75 S.B. OVER PEACE RIV. CHAR. CO.	
BRIDGE LENGTH:		BRIDGE SKEW:	
JOINT LOCATION: PIER 42, OUTSIDE LANE & EMER LANE		JOINT OPEN RANGE: 1½" ±	
ADT:	% TRUCK TRAFFIC:	# OF TRAFFIC LANES: 2 + INSIDE & OUTSIDE EMER. LANES	

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	POLYMERIC NOSING (SILICA SAND, QUARTZ & EPOXY) FAILED ABOUT 4' LENGTH IN OUTSIDE LANE		
DEBRIS ACCUMULATION	INSIGNIFICANT NEAR EDGELINE (WHEEL AREA)		
SURFACE DAMAGE	NOSING BROKE OUT. 4' SEAL REMOVED IN THAT AREA.	9 MOS.	ONE
WATER TIGHTNESS	OPEN SECTION 4' NOTED ABOVE SOME/SLIGHT WEATHER CRACKING OF SEAL IN CENTER V-GROOVE.		
VIBRATION	N/A 		
NOTE: REFER TO PHOTO LOG INCLUDED WITH THIS REPORT. LOG (PICTURES) TAKEN BACK IN 1987 WHEN JOB WAS DONE. I HAVE TAKEN PHOTOS 10-25-94 OF THE 2 JTS (42+44)			
WHICH JOINT 44 IS HOLDING UP OK. NO SPALLING OF THE NOSING AREA.	WHEN I HAVE DEVELOPED I'LL SEND YOU A SET.		

BRIDGE EXPANSION JOINT SURVEY

District: 01 Suncom Number: 549 5666
Person completing survey: DAVE RESTLE, Title H.M.S. III

Part III: PERFORMANCE PROBLEMS TABLE
Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): ELASTOMERIC COMPRESSION

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#: 130104	BRIDGE NAME: TROOPER J. D. YOUNG	BRIDGE LOCATION: N/B I-75 OVER MANATEE RIVER
BRIDGE LENGTH: .701 miles		BRIDGE SKEW:
JOINT LOCATION:		JOINT OPEN RANGE: 3"
ADT:	% TRUCK TRAFFIC:	# OF TRAFFIC LANES: 3

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	1 ARMOR JOINT HAS BROKEN LOOSE FROM NOSE ABOUT 12' OF IT. (REMOVED)	13 YR.	1
DEBRIS ACCUMULATION	DUE TO A little SETTLING	7 to 8 ?	All
SURFACE DAMAGE	ABOVE ANCHORAGE	13 YR.	1
WATER TIGHTNESS	DUE TO PUSHING OR SETTLING DOWN OF THE ELASTOMERIC SEAL	?	MOST
VIBRATION	SMALL VIBRATION IN ARMOR JOINTS	13 YR	2

BRIDGE EXPANSION JOINT SURVEY

District: 01 Suncom Number: 549-5666
Person completing survey: DAVE RESTLE, Title H.M.S. III

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): ELASTOMERIC COMPRESSION.
All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)?
B. Name of the Manufacturer? _____
C. What is the **approximate number** of joints (units)? 12
D. What is the **average age** of the units? 10-15 YEARS
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
E. What is the **approximate age of the oldest unit**? 10-15 YEARS
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
F. **In general**, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**).

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	GOOD	
GENERAL APPEARANCE	AVERAGE	JOINTS HAVE SETTLED IN A FEW SPOTS
ANCHORAGE	AVERAGE	IN ONE LOCATION THE ELASTOMERIC SEAL HAS COME OUT DUE TO THE ARMOR JOINT BREAKING LOOSE
DEBRIS ACCUMULATION	AVERAGE	DUE TO SETTLING DEBRIS ARE VISABLE IN A FEW SPOTS
SURFACE DAMAGE	AVERAGE	
MAINTENANCE (EASE/NEED)	AVERAGE	
RIDING SURFACE	GOOD	EXCEPT ONE CENTER LANE ARMOR JOINT MISSING 12'
VIBRATION	GOOD	2 ARMOR JOINTS LOOSE
WATER TIGHTNESS	AVERAGE	

H. Do you recommend this joint system (or seal) for use in other Districts?
_____ Yes, I highly recommend it.
✓ Yes, I recommend it.
_____ No, I do not recommend it. Why not? _____

BRIDGE EXPANSION JOINT SURVEY

District: 01 Suncom Number: 549-5666
Person completing survey: DAVE RESTLE, Title H.M.S. III

Part III: PERFORMANCE PROBLEMS TABLE
Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): ELASTOMERIC COMPRESSION

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#: 130084	BRIDGE NAME: SR 64	BRIDGE LOCATION: S/B I-75 OVER SR 64
BRIDGE LENGTH: .494 miles		BRIDGE SKEW:
JOINT LOCATION:		JOINT OPEN RANGE: 2"
ADT:	% TRUCK TRAFFIC:	# OF TRAFFIC LANES: 3

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	NO PROBLEM		
DEBRIS ACCUMULATION	VERY MINUTE		
SURFACE DAMAGE	NO PROBLEM		
WATER TIGHTNESS	NO PROBLEM		
VIBRATION	NONE		

BRIDGE EXPANSION JOINT SURVEY

District: 01 Suncom Number: 549-5666
Person completing survey: DAVE RESTLE, Title H.M.S. III

Part III: PERFORMANCE PROBLEMS TABLE
Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): ELASTOMERIC COMPRESSION

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS			
BRIDGE#: 130065	BRIDGE NAME: BRADEN RIVER	BRIDGE LOCATION: I-75 S/B OVER BRADEN RIVER	
BRIDGE LENGTH: .210 miles		BRIDGE SKEW:	
JOINT LOCATION:		JOINT OPEN RANGE: 2"	
ADT:	% TRUCK TRAFFIC:	# OF TRAFFIC LANES: 3	

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	ELASTOMERIC SEAL COMEING LOOSE FROM ARMOR JOINT IN SOME SPOTS	10-13	ALL 4
DEBRIS ACCUMULATION	DEBRIS BUILD UP DUE TO SEAL SETTLING IN SOME SPOTS	8 TO 10?	ALL 4
SURFACE DAMAGE	ONE JOINT SEAL PUSHED THROUGH, ABOUT 2' LENGTH	8 TO 10	1
WATER TIGHTNESS	LEAKAGE IN SOME SPOTS WERE SEAL HAS SETTLED	8 TO 10	ALL 4
VIBRATION	VERY LITTLE		

BRIDGE EXPANSION JOINT SURVEY

District: 1 Suncom Number: SC 549-7030
Person completing survey: H. Wayne Cochran, Title Assistant Maint. Engineer

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): A R PLUS
All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? HOT POUR
B. Name of the Manufacturer? CRAFCO
C. What is the approximate number of joints (units)? 200
D. What is the average age of the units? Some joints approx. 1 yr. Some as much as 10 yr.
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
E. What is the approximate age of the oldest unit? 10-15 yr.
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for OVERALL PERFORMANCE).

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	EXCELLENT	The major problem we have is not having the resources to maintain joints on a regular basis.
GENERAL APPEARANCE	good	
ANCHORAGE	GOOD	
DEBRIS ACCUMULATION	GOOD	
SURFACE DAMAGE	POOR to FAIR	
MAINTENANCE (EASE/NEED)	FAIR	
RIDING SURFACE	FAIR	
VIBRATION	FAIR	
WATER TIGHTNESS	FAIR	

H. Do you recommend this joint system (or seal) for use in other Districts?
YES Yes, I highly recommend it.
____ Yes, I recommend it.
____ No, I do not recommend it. Why not? _____

BRIDGE EXPANSION JOINT SURVEY

District: Two Suncom Number: 862-7000
Person completing survey: Marty Humphries, Title Asst. Load Rating Eng.

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): Jeene Struc. Joint Sealing Sys. (PC35)
All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? comp. seal
B. Name of the Manufacturer? _____
C. What is the **approximate number** of joints (units)? 16
D. What is the **average age** of the units? 2-5 years
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
E. What is the **approximate age of the oldest unit?** 3 years
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	Average	
GENERAL APPEARANCE	Average	
ANCHORAGE	POOR	The joint has lost bond with the header in several locations. probably poor preparation!
DEBRIS ACCUMULATION	GOOD	
SURFACE DAMAGE	GOOD	
MAINTENANCE (EASE/NEED)	Average	
RIDING SURFACE	GOOD	
VIBRATION	GOOD	
WATER TIGHTNESS	POOR	(See "Anchorage")

H. Do you recommend this joint system (or seal) for use in other Districts?
____ Yes, I highly recommend it.
__✓__ Yes, I recommend it. – in specific situations this joint would be a good choice. However, I feel prep. in installing the joint is vital.
____ No, I do not recommend it. Why not? _____

BRIDGE EXPANSION JOINT SURVEY

District: TWO Suncom Number: 862-7000
Person completing survey: Marty Humphries, Title Asst. Load Rating Eng.

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): DOW 902 RCS JOINT Sealant (Two Part)
All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? sealant
B. Name of the Manufacturer? Dow Chemicals
C. What is the **approximate number** of joints (units)? many
D. What is the **average age** of the units? 1-5 → 2 years
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
E. What is the **approximate age of the oldest** unit? 3 years
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	Excellent	
GENERAL APPEARANCE	Excellent	
ANCHORAGE	Excellent	
DEBRIS ACCUMULATION	Good	
SURFACE DAMAGE	Excellent	
MAINTENANCE (EASE/NEED)	Good	Sometimes a joint may need spot cleaning
RIDING SURFACE	GOOD	depends on concrete nosing.
VIBRATION	GOOD	
WATER TIGHTNESS	Excellent	

H. Do you recommend this joint system (or seal) for use in other Districts?
✓ Yes, I highly recommend it. I believe this sealant when installed properly
____ Yes, I recommend it. is an excellent system.
____ No, I do not recommend it. Why not? _____

BRIDGE EXPANSION JOINT SURVEY

District: Two Suncom Number: 862-7000
Person completing survey: Marty Humphries, Title Asst. Load Rating Engineer.

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): Jeene joint PC 35.

5 JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS			
BRIDGE#: 760043 760044	BRIDGE NAME: Rice Creek Bridges	BRIDGE LOCATION: U.S. 17 / Rice Creek Putnam Co.	
BRIDGE LENGTH: 1960'		BRIDGE SKEW: No skew	
JOINT LOCATION: 8 locations		JOINT OPEN RANGE: varies 1.5 → 3 inches	
ADT: 4562	% TRUCK TRAFFIC: 10%	# OF TRAFFIC LANES: 2 lanes each way	

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	The joint has lost bond in several locations	3 yrs	at several spots one joint has lost bond.
DEBRIS ACCUMULATION	minor debris accumulation		
SURFACE DAMAGE	minor surface damage.		
WATER TIGHTNESS	Due to anchorage		
VIBRATION	Not a problem		

BRIDGE EXPANSION JOINT SURVEY

District: 3 Suncom Number: 676-8008

Person completing survey: GERALD BRAZILE, Title D-3 BRIDGE REPAIR ENGR.

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): DOW 902 RCS JOINT SEALANT.

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, (seal only), etc.)? SEALANT, COLD PROCESSED.

B. Name of the Manufacturer? DOW CORNING CORPORATION

C. What is the **approximate number** of joints (units)? 3

D. What is the **average age** of the units? 2 - 5 YEARS

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the **approximate age of the oldest unit?** 2 - 5 YEARS

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. **In general**, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	GOOD	SIMPLE INSTALLATION OF JOINT SEALANT, USING PUMPING APPLICATORS
GENERAL APPEARANCE	GOOD	
ANCHORAGE	GOOD	BONDING TO INTERFACE
DEBRIS ACCUMULATION	GOOD	
SURFACE DAMAGE	GOOD	
MAINTENANCE (EASE/NEED)	GOOD	
RIDING SURFACE	FAIR	DETERMINED BY WIDTH OF OPENING
VIBRATION	GOOD	
WATER TIGHTNESS	GOOD	

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it. 231

__X__ Yes, I recommend it.

_____ No, I do not recommend it. Why not?_____

BRIDGE EXPANSION JOINT SURVEY

District: 3 Suncom Number: 676-8008

Person completing survey: GERALD BRAZILE, Title D3 BRIDGE REPAIR ENGINEER

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): CHEMCRETE 1000 EXPANSION JOINT SYSTEM.

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? SANTOPRENE PRE-FORMED SEAL

B. Name of the Manufacturer? CHEMPLEX PRODUCTS, INC.

C. What is the **approximate number** of joints (units)? 1

D. What is the **average age** of the units? 2 - 5 YEARS

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the **approximate age of the oldest** unit? 2 1/2 YEARS

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. **In general**, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	GOOD	SYSTEM SHOULD PERFORM FOR VARIOUS JOINT OPENINGS. THE ENCASED ANCHORAGE APPEARS TO PROMOTE GOOD STABILITY.
GENERAL APPEARANCE	GOOD	
ANCHORAGE	GOOD	SANTOPRENE SEAL ENCASED IN MATERIAL TYPE BLOCKOUT (CHEMCRETE)
DEBRIS ACCUMULATION	GOOD	
SURFACE DAMAGE	GOOD	
MAINTENANCE (EASE/NEED)	GOOD	
RIDING SURFACE	GOOD	
VIBRATION	GOOD	
WATER TIGHTNESS	GOOD	

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it. 232

__X__ Yes, I recommend it.

_____ No, I do not recommend it. Why not?_____

BRIDGE EXPANSION JOINT SURVEY

District: 3 Suncom Number: 676-8008

Person completing survey: GERALD BRAZILE, Title D3 BRIDGE REPAIR ENGINEER

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): WABOCRETE ACM EXPANSION JOINT.

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? METAL EXTRUSION WITH STRIP SEAL.

B. Name of the Manufacturer? WABOCRETE

C. What is the **approximate number** of joints (units)? 39

D. What is the **average age** of the units? 5-10 YEARS

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the **approximate age of the oldest** unit? 9 YEARS

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. **In general**, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	POOR	APPEARS RIGIDITY OF JOINT SYSTEM CREATES A PROBLEM. ALSO STEEL EXTRUSION & WABO ~~MATERIAL MAY NOT BOND/OR BE PARTIALLY IN~~ compatible.
GENERAL APPEARANCE	POOR	
ANCHORAGE	POOR	TOO RIGID, AND UNSTABLE.
DEBRIS ACCUMULATION	FAIR	NORMAL
SURFACE DAMAGE	POOR	MAINLY TO BLOCK-OUT PORTION
MAINTENANCE (EASE/NEED)	FAILURE	SOME MAINTENANCE OF JOINT BEFORE COMPLETE FAILURE PROLONGS COMPLETE JOINT FAILURE
RIDING SURFACE	FAILURE	DANGEROUS AND UNCERTAIN
VIBRATION	FAILURE	PROGRESSION AS JOINT FAILS.
WATER TIGHTNESS	FAILURE	NORMALLY LOST AS CRACKS/SPALLS APPEAR.

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it. 233

_____ Yes, I recommend it.

__X__ No, I do not recommend it. Why not? TOO RIGID/POOR ANCHORAGE SYSTEM

BRIDGE EXPANSION JOINT SURVEY

District: 3 Suncom Number: 676-8008

Person completing survey: GERALD BRAZILE, Title D3 BRIDGE REPAIR ENGINEER

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): WABOCRETE ACM EXPANSION JOINT

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#: 500086 L	BRIDGE NAME: DEWEY M. JOHNSON	BRIDGE LOCATION: I-10(SR8) OVER APALACHICOLA RIVER
BRIDGE LENGTH: 6099'		BRIDGE SKEW: 0
JOINT LOCATION: PIERS 22,44,47,49,50,53,&56		JOINT OPEN RANGE: 1/2" - 3"
ADT: 14000	% TRUCK TRAFFIC: 35	# OF TRAFFIC LANES: 2

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	METAL PORTION OF EXTRUSION BREAKING WELD, AND ANCHORAGE PULLING LOOSE FROM WABOCRETE BLOCKOUT	1 YEAR	>12
DEBRIS ACCUMULATION	APPEARS MINOR PROBLEM - NORMAL CLEANING NECESSARY	NORMAL	ALL
SURFACE DAMAGE	BLOCKOUT FOR CONCRETE DECK NORMALLY DAMAGED [moderately/severe]. DECK ITSELF SUSTAIN MINOR RAVELING/SPALLING	1 -2 YEARS	> 12
WATER TIGHTNESS	FAILURE AS RIGID WABOCRETE BEGINS CRACKING/SPALLING. LOOSE ANCHORAGE OCCURS.	1 -2 YEARS	> 12
VIBRATION	CONTINUE TO WORSEN AS JOINT FAILURE OCCURS.	1 -2YEARS	> 12

BRIDGE EXPANSION JOINT SURVEY

District: 3 Suncom Number: 676-8008

Person completing survey: GERALD BRAZILE, Title D3 BRIDGE REPAIR ENGINEER

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): WABOCRETE ACM EXPANSION JOINT

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#: 500087 R	BRIDGE NAME: DEWEY M. JOHNSON	BRIDGE LOCATION: I-10 (SR8) OVER APALACHICOLA RIVER
BRIDGE LENGTH: 5478'		BRIDGE SKEW: 0
JOINT LOCATION: PIERS 4, 7, 10,12,26,35,44,& 49		JOINT OPEN RANGE: 5/8" - 3"
ADT: 14000	% TRUCK TRAFFIC: 35	# OF TRAFFIC LANES: 2

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM "NOTE"	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	THIS IS THE RIGHT BRIDGE OF PARALLEL STRUCTURES. THE LEFT IS BRIDGE NO. 500086.		
DEBRIS ACCUMULATION	THE PROBLEMS PERTAINING TO JOINTS ARE ALMOST IDENTICAL FOR BOTH BRIDGES.		
SURFACE DAMAGE			
WATER TIGHTNESS			
VIBRATION			

BRIDGE EXPANSION JOINT SURVEY

District: 3 Suncom Number: 676-8008

Person completing survey: GERALD BRAZILE, Title D3 BRIDGE REPAIR ENGR

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): FLEXCON 2000 SL JOINT SEALING SYSTEM.

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? 2-PART SEALANT

B. Name of the Manufacturer? BRIDGE SAVER, INC. (R.J. WATSON, INC.)

C. What is the approximate number of joints (units)? 5

D. What is the average age of the units? < 1 YEAR

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the approximate age of the oldest unit? < 1 YEAR

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for OVERALL PERFORMANCE)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	FAIR	BRIDGE IN SUPERELEVATED CURVE WITH EX-LARGE JOINT OPENINGS, ANGLE ARMOUR TYPE. USING LARGE BACA ROD: EXTREME THERMAL MOVEMENT.
GENERAL APPEARANCE	FAIR	AFTER REMOVING DIRT AND CHECKING SEALANT: SEALANT IS BONDED AND FLEXIBLE
ANCHORAGE	FAIR	BONDING TO INTERFACE IS GOOD.
DEBRIS ACCUMULATION	POOR	DUE TO EXTREMELY LARGE JOINT OPENINGS AND SEAL BELOW DECK SURFACE, ALLOWS A CATCH BASIN FOR DIRT AND DEBRIS.
SURFACE DAMAGE	FAIR	
MAINTENANCE (EASE/NEED)	FAIR	
RIDING SURFACE	FAIR	
VIBRATION	FAIR	
WATER TIGHTNESS	FAIR	

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it. 236

_X_ Yes, I recommend it. FOR SMALLER AND MORE UNIFORM JOINT OPENINGS

_____ No, I do not recommend it. Why not?_____

BRIDGE EXPANSION JOINT SURVEY

District: 3 Suncom Number: 676-8008

Person completing survey: GERALD BRAZILE, Title D3 BRIDGE REPAIR ENGR.

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): JEENE STRUCTURAL JOINT SEALING SYSTEM (PC35).
All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? COMPRESSION SEAL W/AIR VALVE

B. Name of the Manufacturer? HYDROZO/JEENE, INC.

C. What is the approximate number of joints (units)? 1

D. What is the average age of the units? 5 - 10 YEARS
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the approximate age of the oldest unit? 9 YEARS
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for OVERALL PERFORMANCE)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	GOOD	MAY BE USED IN NARROW TO MEDIUM WIDTH JOINT OPENINGS, ALSO GOOD WHEN JOINT WIDTHS ARE NOT UNIFORM: WARRANTY INCLUDED.
GENERAL APPEARANCE	GOOD	
ANCHORAGE	GOOD	
DEBRIS ACCUMULATION	FAIR	WIDTH OF JOINT OPENING, NORMALLY DETERMINS DEBRIS BUILD-up.
SURFACE DAMAGE	GOOD	
MAINTENANCE (EASE/NEED)	GOOD	
RIDING SURFACE	FAIR	
VIBRATION	GOOD	
WATER TIGHTNESS	GOOD	

H. Do you recommend this joint system (or seal) for use in other Districts?

____ Yes, I highly recommend it. 237

__x__ Yes, I recommend it.

____ No, I do not recommend it. Why not?_____

BRIDGE EXPANSION JOINT SURVEY

District: 3 Suncom Number: 676-8008

Person completing survey: GERALD BRAZILE, Title D3 BRIDGE REPAIR ENGR.

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): KOCH BJS JOINT SYSTEM.

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? BLOCK-OUT WITH KOCH SURFACE TYPE SEAL

B. Name of the Manufacturer? KOCH MATERIALS

C. What is the approximate number of joints (units)? 1

D. What is the average age of the units? 2 - 5 YEARS

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the approximate age of the oldest unit? 3 YEARS

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for OVERALL PERFORMANCE)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	GOOD	GOOD FOR EXTREMELY LARGE OPENINGS: FOR EITHER CONCRETE/ASPHALT BLOCKOUTS. ELASTI - CITY/FLEXIBILITY OF JOINT MATERIAL IS GOOD.
GENERAL APPEARANCE	GOOD	
ANCHORAGE	GOOD	
DEBRIS ACCUMULATION	GOOD	JOINT SURFACE SAME AS ROADWAY SURFACE.
SURFACE DAMAGE	GOOD	
MAINTENANCE (EASE/NEED)	GOOD	NORMAL GUTTERLINE DEBRIS/ROUTINE DECK CLEANING.
RIDING SURFACE	GOOD	
VIBRATION	GOOD	
WATER TIGHTNESS	GOOD	

II. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it. 238

__X__ Yes, I recommend it.

_____ No, I do not recommend it. Why not?_____

BRIDGE EXPANSION JOINT SURVEY

District: 3 Suncom Number: 676-8008
Person completing survey: GERALD BRAZILE, Title D3 BRIDGE REPAIR ENGR.

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): RESURF II.
All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? BLOCKOUT OR NOSING MATERIAL
B. Name of the Manufacturer? DOW CORNING
C. What is the approximate number of joints (units)? 30+
D. What is the average age of the units? 5 - 10 YEARS
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
E. What is the approximate age of the oldest unit? 7 YEARS
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for OVERALL PERFORMANCE)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	GOOD	CAN BE MIXED OF BROADCAST. USED TO REPAIR RAVELING, SPALLING: BLOCKOUT TO PREFORM INTERFACING FOR SEALANT. NORMALLY USED
GENERAL APPEARANCE	GOOD	WITH BACA ROD AND SEALANT. COLORATION CLEAR/CONCRETE WHITE.
ANCHORAGE	GOOD	ADHERES GOOD TO CLEAN STABLE CONCRETE.
DEBRIS ACCUMULATION	GOOD	
SURFACE DAMAGE	GOOD	
MAINTENANCE (EASE/NEED)	GOOD	
RIDING SURFACE	GOOD	
VIBRATION	GOOD	
WATER TIGHTNESS	GOOD	

H. Do you recommend this joint system (or seal) for use in other Districts?
_____ Yes, I highly recommend it.
_X_ Yes, I recommend it.
_____ No, I do not recommend it. Why not?_____

BRIDGE EXPANSION JOINT SURVEY

District: 3 Suncom Number: 676-8008

Person completing survey: GERALD BRAZILE, Title D3 BRIDGE REPAIR ENGR.

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): NITRILE RUBBER - PERMANENT SEALER 983.
All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? SEALANT (COLD PROCESSED)

B. Name of the Manufacturer? THE W. J. RUSCOE COMPANY

C. What is the approximate number of joints (units)? NUMEROUS

D. What is the average age of the units? 2 - 5 YEARS
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the approximate age of the oldest unit? 5 YEARS
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for OVERALL PERFORMANCE)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	FAIR	PRODUCT LIFE TOO SHORT AND A CONTINUOUS RE-SEALING NECESSARY
GENERAL APPEARANCE	FAIR	
ANCHORAGE	FAIR	ADHERES TO CONCRETE, DRY OR DAMP
DEBRIS ACCUMULATION	FAIR	
SURFACE DAMAGE	FAIR	
MAINTENANCE (EASE/NEED)	FAIR	
RIDING SURFACE	FAIR	
VIBRATION	FAIR	
WATER TIGHTNESS	FAIR	LOSES ELASTICITY AS DRYING OCCURS SHRINKAGE CRACKS FORM.

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it. 240

_____ Yes, I recommend it.

X No, I do not recommend it. Why not? LIFE OF PRODUCT TOO SHORT; CONTINUOUS RE-SEALING

BRIDGE EXPANSION JOINT SURVEY

District: 4 Suncom Number: 436 4154

Person completing survey: R LEEVER, Title _____

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): JEENE PC 35.

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)?

B. Name of the Manufacturer? _____

C. What is the **approximate number** of joints (units)? 50-100

D. What is the **average age** of the units? 2-5 YRS

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the **approximate age of the oldest** unit? _____

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE		
GENERAL APPEARANCE		
ANCHORAGE		
DEBRIS ACCUMULATION		
SURFACE DAMAGE	Nosing has shown damage due to vehicle impact	
MAINTENANCE (EASE/NEED)		
RIDING SURFACE		
VIBRATION		
WATER TIGHTNESS	Not Thoroughly monitored. One monitored joint leaked after 3 yrs, presumably due nosing damage	

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it.

_____ Yes, I recommend it.

_____ No, I do not recommend it. Why not? _____

BRIDGE EXPANSION JOINT SURVEY

District: 4 Suncom Number: 436 4154

Person completing survey: R LEEVER, Title _____

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): KOCH BJS & FLEXCON 2000

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)?

B. Name of the Manufacturer? _____

C. What is the **approximate number** of joints (units)? _____

D. What is the **average age** of the units? _____
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the **approximate age of the oldest** unit? _____
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	Contract is in preparation for	
GENERAL APPEARANCE	DX joints on #860061 —	
ANCHORAGE	a concrete slab with	
DEBRIS ACCUMULATION	independent slab motion —	
SURFACE DAMAGE	KOCH chosen because of	
MAINTENANCE (EASE/NEED)	compliant nosing to take	
RIDING SURFACE	the slab movement.	
VIBRATION	5yr warranty promised	
WATER TIGHTNESS		

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it. 244

_____ Yes, I recommend it.

_____ No, I do not recommend it. Why not? _____

BRIDGE EXPANSION JOINT SURVEY

District: 4 Suncom Number: 436 4154

Person completing survey: R LEEVER, Title _____

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): EVAZOTE 380ESP Seal.

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)?

B. Name of the Manufacturer? EPOXY IND.

C. What is the **approximate number** of joints (units)? 1

D. What is the **average age** of the units? 1 yr

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the **approximate age of the oldest** unit? _____

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	One installation only — used	
GENERAL APPEARANCE	PCI Rod w/ II missing in this	
ANCHORAGE	layer to replace armor angle	
DEBRIS ACCUMULATION		
SURFACE DAMAGE		
MAINTENANCE (EASE/NEED)		
RIDING SURFACE		
VIBRATION		
WATER TIGHTNESS		

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it. 245

_____ Yes, I recommend it.

_____ No, I do not recommend it. Why not?

BRIDGE EXPANSION JOINT SURVEY

District: 4 Suncom Number: 436 4154

Person completing survey: R LEEVER, Title _____

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): PCI REGUARD II WITH .

All information on this sheet pertains to the above named joint system (or seal). Compression seal

A. Joint System Type (compression seal, strip seal, seal only, etc.)?

B. Name of the Manufacturer? PCI Inc., D S Brown Seal

C. What is the **approximate number** of joints (units)? 15

D. What is the **average age** of the units? 2-5 yrs

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the **approximate age of the oldest** unit? 5 yrs

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	POOR	Please see Part III
GENERAL APPEARANCE	G	
ANCHORAGE		
DEBRIS ACCUMULATION		
SURFACE DAMAGE		
MAINTENANCE (EASE/NEED)		
RIDING SURFACE		
VIBRATION		
WATER TIGHTNESS	POOR	

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it.

_____ Yes, I recommend it.

_____ No, I do not recommend it. Why not?

BRIDGE EXPANSION JOINT SURVEY

District: 4 Suncom Number: 436 4154

Person completing survey: R LEEVER, Title _____

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): XJS.

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? Please see part III

B. Name of the Manufacturer? _____

C. What is the **approximate number** of joints (units)? _____

D. What is the **average age** of the units? _____

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the **approximate age of the oldest** unit? _____

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE		
GENERAL APPEARANCE		
ANCHORAGE		
DEBRIS ACCUMULATION		
SURFACE DAMAGE		
MAINTENANCE (EASE/NEED)		
RIDING SURFACE		
VIBRATION		
WATER TIGHTNESS		

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it.

_____ Yes, I recommend it.

_____ No, I do not recommend it. Why not? _____

BRIDGE EXPANSION JOINT SURVEY

District: 4 Suncom Number: 436 4154

Person completing survey: R LEEVER, Title _____

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): GEN TIRE "TRANSFLEX"

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#:	BRIDGE NAME:	BRIDGE LOCATION:
BRIDGE LENGTH:		BRIDGE SKEW:
JOINT LOCATION:		JOINT OPEN RANGE:
ADT:	% TRUCK TRAFFIC:	# OF TRAFFIC LANES:

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE			
DEBRIS ACCUMULATION	Please see part II		
SURFACE DAMAGE			
WATER TIGHTNESS			
VIBRATION			

BRIDGE EXPANSION JOINT SURVEY

District: 4 Suncom Number: 436 4154

Person completing survey: R LEEVER, Title _____

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): GEN TIRE "TRANSFLEX" WABO FLEX
All information on this sheet pertains to the above named joint system (or seal). SR6.5

A. Joint System Type (compression seal, strip seal, seal only, etc.)? RUBBER, STEEL INSIDE
B. Name of the Manufacturer? _____
C. What is the **approximate number** of joints (units)? ? A FEW
D. What is the **average age** of the units? _____
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
E. What is the **approximate age of the oldest** unit? _____
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
F. **In general**, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	ONE FAILURE: THE JOINT BROKE UP & A PIECE OF	
GENERAL APPEARANCE	BENT STEEL PLATE WAS STANDING	
ANCHORAGE	UP IN THE ROADWAY — FHP	
DEBRIS ACCUMULATION	CALLED — WE TORCHED OFF THE PLATE & LATER REPLACED THE	
SURFACE DAMAGE	ASSEMBLY	
MAINTENANCE (EASE/NEED)		
RIDING SURFACE		
VIBRATION		
WATER TIGHTNESS		

H. Do you recommend this joint system (or seal) for use in other Districts?
_____ Yes, I highly recommend it. 241
_____ Yes, I recommend it.
_____ No, I do not recommend it. Why not?_____

BRIDGE EXPANSION JOINT SURVEY

District: 4 Suncom Number: 436 4154

Person completing survey: R Leever, Title _____

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): Jeene PC 92 ~~E~~.

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)?

B. Name of the Manufacturer? _____

C. What is the **approximate number** of joints (units)? _____

D. What is the **average age** of the units? _____

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the **approximate age of the oldest** unit? _____

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	a dozen bridges in Martin Co	
GENERAL APPEARANCE	failed in first year — moving	
ANCHORAGE	broke up. Jeene ~~reported~~ replaced	
DEBRIS ACCUMULATION	using PC 35 at their expense	
SURFACE DAMAGE	under warranty	
MAINTENANCE (EASE/NEED)		
RIDING SURFACE		
VIBRATION		
WATER TIGHTNESS		

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it.

_____ Yes, I recommend it.

_____ No, I do not recommend it. Why not?

BRIDGE EXPANSION JOINT SURVEY

District: 4 Suncom Number: 436 411-4

Person completing survey: R LEEVER, Title _____

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): CIDNB PC 92

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#:	BRIDGE NAME:	BRIDGE LOCATION:
BRIDGE LENGTH:		BRIDGE SKEW:
JOINT LOCATION:		JOINT OPEN RANGE:
ADT:	% TRUCK TRAFFIC:	# OF TRAFFIC LANES:

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	Please see part II		
DEBRIS ACCUMULATION			
SURFACE DAMAGE			
WATER TIGHTNESS			
VIBRATION			

BRIDGE EXPANSION JOINT SURVEY

District: 4 Suncom Number: 436 4154

Person completing survey: R LEEVER, Title _____

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): OEEN2 PC35

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#:	BRIDGE NAME:	BRIDGE LOCATION:
BRIDGE LENGTH:		BRIDGE SKEW:
JOINT LOCATION:		JOINT OPEN RANGE:
ADT:	% TRUCK TRAFFIC:	# OF TRAFFIC LANES:

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	Please see Part II		
DEBRIS ACCUMULATION			
SURFACE DAMAGE			
WATER TIGHTNESS			
VIBRATION			

BRIDGE EXPANSION JOINT SURVEY

District: 4 Suncom Number: 436 4154

Person completing survey: R LEEUER, Title _____

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): EVAZOTE seal.

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#:	BRIDGE NAME:	BRIDGE LOCATION:
BRIDGE LENGTH:		BRIDGE SKEW:
JOINT LOCATION:		JOINT OPEN RANGE:
ADT:	% TRUCK TRAFFIC:	# OF TRAFFIC LANES:

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	One installation only — condition not known	11-94	
DEBRIS ACCUMULATION			
SURFACE DAMAGE			
WATER TIGHTNESS			
VIBRATION			

BRIDGE EXPANSION JOINT SURVEY

District: 4 Suncom Number: 436 4154

Person completing survey: R Leever, Title _____

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): PCI Reseal II mosing with DS Brown Compression seal.

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#:	BRIDGE NAME:	BRIDGE LOCATION:
BRIDGE LENGTH:		BRIDGE SKEW:
JOINT LOCATION:		JOINT OPEN RANGE:
ADT:	% TRUCK TRAFFIC:	# OF TRAFFIC LANES:

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	Various installations (est 15 joints) installed by Heavy		
DEBRIS ACCUMULATION	Bridge Crew. When installed in their layers (eg. The space formerly occupied		
SURFACE DAMAGE	by armor angle plus void), mosing has survived 3 to 5 years with slight damage.		
WATER TIGHTNESS	We have had early (1yr) failures, thought due to poor surface preparation (by insufficient sand blast)		
VIBRATION	When installed in thick sections (6"+6" to match asphalt) (est 30 joints 1-5 yrs old)		
	have experienced bond loss and transverse cracking, thought due to shrinkage, plus questionable installation technique.		
	Sensitivity to installation technique makes it hard to contract.		

BRIDGE EXPANSION JOINT SURVEY

District: 4 Suncom Number: 436 4154

Person completing survey: R LEEVER, Title _____

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): XJS (SSI, INC).

One joint, installed as a free demo by Fred R Hillen Co 2-22-94

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#: 860357	BRIDGE NAME:	BRIDGE LOCATION: I595 / PINE ISLAND
BRIDGE LENGTH:		BRIDGE SKEW: No
JOINT LOCATION: E. END BENT WB		JOINT OPEN RANGE: 1"
ADT: 50 000	% TRUCK TRAFFIC:	# OF TRAFFIC LANES: 3

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE			
DEBRIS ACCUMULATION			
SURFACE DAMAGE	Nosing damage in wheel paths	9 mo	
WATER TIGHTNESS	Seal looks good - (DOW Chemical Co 902RCS)		
VIBRATION	Nosing was installed as Thin section replacing the armor angle space plus void.		

BRIDGE EXPANSION JOINT SURVEY

District: 5 Suncom Number: 383-5426
Person completing survey: ALAN E. HYMAN, Title DS & FE

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): DOW 902 RCS JOINT SEALANT.
All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, (seal only) etc.)?
B. Name of the Manufacturer? DOW-CORNING
C. What is the **approximate number** of joints (units)? 5
D. What is the **average age** of the units? <1 YEAR
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
E. What is the **approximate age of the oldest** unit? ½ YEAR (6 Mos.)
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	E	Recently installed in Brevard Co. No problems so far.
GENERAL APPEARANCE	E	
ANCHORAGE	E	
DEBRIS ACCUMULATION	G	
SURFACE DAMAGE	G	
MAINTENANCE (EASE/NEED)	G	
RIDING SURFACE	G	
VIBRATION	G	
WATER TIGHTNESS	G	

H. Do you recommend this joint system (or seal) for use in other Districts?
____ Yes, I highly recommend it. 254
__X__ Yes, I recommend it.
____ No, I do not recommend it. Why not?

BRIDGE EXPANSION JOINT SURVEY

District: 5 Suncom Number: 383-5426

Person completing survey: ALAN E. HYMAN, Title DS&FE

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): CHEMCRETE 1000 EXPANSION JOINT

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)?

B. Name of the Manufacturer? CHEMPLEX PRODUCTS, INC.

C. What is the **approximate number** of joints (units)? 6

D. What is the **average age** of the units? 1-2 YEARS

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the **approximate age of the oldest** unit? 1½ YEARS

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	P	WINGS SEPERATED FROM SEAL. HEADER MATERIAL DAMAGED @WHEEL LINE.
GENERAL APPEARANCE	F	
ANCHORAGE	F	Header mat'l seperated.
DEBRIS ACCUMULATION	A	
SURFACE DAMAGE	F	
MAINTENANCE (EASE/NEED)	P	
RIDING SURFACE	P	
VIBRATION	P	
WATER TIGHTNESS	P	

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it.

_____ Yes, I recommend it.

__X__ No, I do not recommend it. Why not? NOT SUITABLE FOR HIGH TRUCK VOLUMES OR SEVERE IMPACT.

BRIDGE EXPANSION JOINT SURVEY

District: 5 Suncom Number: 323-5426

Person completing survey: ALAN E. HYMAN, Title DS&FE

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): CHEMCRETE 1000 EXPANSION JOINT.

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#: 700058/132	BRIDGE NAME: I-95 OVER S.R.50	BRIDGE LOCATION: BREVARD CO.
BRIDGE LENGTH: 204'		BRIDGE SKEW: 0
JOINT LOCATION: AT END BENTS		JOINT OPEN RANGE: 2" +/-
ADT: 12600	% TRUCK TRAFFIC: 15% +/-	# OF TRAFFIC LANES: 2 + SHOULDERS

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	WINGS SEPERATED FROM SEAL. HEADER MATERIAL DAMAGED	6 Mos. +/-	ALL 4 @ END BENTS
DEBRIS ACCUMULATION			
SURFACE DAMAGE	SPALLS @ HEADER MATERIAL. Loss of HEADER MATERIAL	6 Mos. +/-	ALL 4 @ END BENTS
WATER TIGHTNESS	LEAKS	6 Mos. +/-	"
VIBRATION			

BRIDGE EXPANSION JOINT SURVEY

District: 5 Suncom Number: 383-5426
Person completing survey: ALAN E. HYMAN, Title DS&FE

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): WABOCRETE ACM EXPANSION JOINT.
All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? WABOCRETE ONLY (HEADER MAT'L)
B. Name of the Manufacturer? WATSON BOWMAN
C. What is the **approximate number** of joints (units)? 10
D. What is the **average age** of the units? 5-10 YEARS
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
E. What is the **approximate age of the oldest** unit? 6 YEARS?
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
F. **In general**, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	G	Header mat'l only has performed well.
GENERAL APPEARANCE	G	
ANCHORAGE	E	
DEBRIS ACCUMULATION	G	
SURFACE DAMAGE	G	
MAINTENANCE (EASE/NEED)	G	
RIDING SURFACE	G	
VIBRATION	G	
WATER TIGHTNESS	G	

H. Do you recommend this joint system (or seal) for use in other Districts?
____ Yes, I highly recommend it.
__X__ Yes, I recommend it.
____ No, I do not recommend it. Why not?_____

BRIDGE EXPANSION JOINT SURVEY

District: 5 Suncom Number: 383-5426
Person completing survey: ALAN E. HYMAN, Title DSTFE

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): KOCH BJS JOINT SYSTEM.
All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)?
B. Name of the Manufacturer? KOCH
C. What is the **approximate number** of joints (units)? 1
D. What is the **average age** of the units? 2-5 YEARS
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
E. What is the **approximate age of the oldest** unit? 2½ YEARS
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
F. **In general**, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	G	Nice looking joint. Excellent For asphalt w.s. application.
GENERAL APPEARANCE	E	
ANCHORAGE	E	
DEBRIS ACCUMULATION	G	
SURFACE DAMAGE	G	
MAINTENANCE (EASE/NEED)	E	
RIDING SURFACE	E	
VIBRATION	G	
WATER TIGHTNESS	G	

H. Do you recommend this joint system (or seal) for use in other Districts?
X Yes, I highly recommend it.
___ Yes, I recommend it.
___ No, I do not recommend it. Why not?

BRIDGE EXPANSION JOINT SURVEY

District: 5 Suncom Number: 383-5426
Person completing survey: ALAN E. HYMAN, Title DS&FE

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): FLEXCON 2000 JOINT SEAL.
All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, (strip seal) seal only, etc.)?
B. Name of the Manufacturer? P.J. WATSON, INC.
C. What is the **approximate number** of joints (units)? 4
D. What is the **average age** of the units? 3 Mos.
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
E. What is the **approximate age of the oldest** unit? 3 Mos.
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
F. **In general**, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	E	Just installed on I-4
GENERAL APPEARANCE	E	
ANCHORAGE	E	
DEBRIS ACCUMULATION	G	
SURFACE DAMAGE	G	
MAINTENANCE (EASE/NEED)	G	
RIDING SURFACE	E	
VIBRATION	G	
WATER TIGHTNESS	G	

H. Do you recommend this joint system (or seal) for use in other Districts?
_____ Yes, I highly recommend it. 259
__X__ Yes, I recommend it.
_____ No, I do not recommend it. Why not?_____

BRIDGE EXPANSION JOINT SURVEY

District: 5 Suncom Number: 383-5426

Person completing survey: ALAN E. HYMAN, Title DS&FE

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): JEENE PC35.

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)?

B. Name of the Manufacturer? HYDROZO / JEENE, INC.

C. What is the **approximate number** of joints (units)? 5

D. What is the **average age** of the units? 1-2 YEARS

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the **approximate age of the oldest** unit? 1 YEAR

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	G	Previously had PC92M but joints failed, replaced by manufacturer.
GENERAL APPEARANCE	E	
ANCHORAGE	E	
DEBRIS ACCUMULATION	A	
SURFACE DAMAGE	G	
MAINTENANCE (EASE/NEED)	G	
RIDING SURFACE	E	
VIBRATION	G	
WATER TIGHTNESS	G	

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it.

_X_ Yes, I recommend it.

_____ No, I do not recommend it. Why not?_____

260

BRIDGE EXPANSION JOINT SURVEY

District: 5 Suncom Number: 383-5426
Person completing survey: ALAN E. HYMAN, Title DSFFE

Part III: PERFORMANCE PROBLEMS TABLE
Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): JEENE PC92M

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS			
BRIDGE#: 770024	BRIDGE NAME: I-4 Over Orange Av.	BRIDGE LOCATION: Seminole Co.	
BRIDGE LENGTH: 319 FT.		BRIDGE SKEW: 0	
JOINT LOCATION: INT. PIERS		JOINT OPEN RANGE: 2" +/-	
ADT: 55600	% TRUCK TRAFFIC: 15% +/-	# OF TRAFFIC LANES: 4 (2 EA. DIR.)	

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	Severe spalling.	2 yrs. +/-	ALL.
DEBRIS ACCUMULATION			
SURFACE DAMAGE	Header mat'l had severe deterioration.	2 yrs. +/-	ALL
WATER TIGHTNESS	Seals seperated from header mat'l.	2 yrs. +/-	ALL
VIBRATION			
	NOTE: This joints have been replaced with		
	H/J PC35 by manufacturer.		

BRIDGE EXPANSION JOINT SURVEY

District: 7 Suncom Number: 542-6050

Person completing survey: Leo Burgert, Title Structural Engineer

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): Armor Joints with Compression Seal

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? Steel Angles with Compression seal

B. Name of the Manufacturer? not proprietary

C. What is the **approximate number** of joints (units)? 600

D. What is the **average age** of the units? 20
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the **approximate age of the oldest** unit? 30
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. **In general**, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	Fair	
GENERAL APPEARANCE	Good	
ANCHORAGE	Poor	Voids in the concrete created during construction prevent adequate bond to the anchorage provided.
DEBRIS ACCUMULATION	Average	
SURFACE DAMAGE	Average	
MAINTENANCE (EASE/NEED)	Poor	When the steel angles loosen they must be removed from the concrete and reinstalled
RIDING SURFACE	Good	
VIBRATION	Average	
WATER TIGHTNESS	Poor	It appears that poor installation is the prime contributor to this problem.

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it. 262

__X__ Yes, I recommend it.

_____ No, I do not recommend it. Why not?_____

BRIDGE EXPANSION JOINT SURVEY

District: 1 & 7 Suncom Number: 542-6050
Person completing survey: Leo Burgert, Title Structural Engineer

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): Armor system with compression seal (E)

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#: 100300	BRIDGE NAME: Gandy	BRIDGE LOCATION: 21 Mi. West SR 618 (Tampa)
BRIDGE LENGTH: 14,779		BRIDGE SKEW: None
JOINT LOCATION: Abutments & Bents		JOINT OPEN RANGE: 1 1/2"-2 1/2"
ADT: 12,960	% TRUCK TRAFFIC: 20%	# OF TRAFFIC LANES: 2

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	Many problems originate from poor vibration of concrete. Voids exist after pour is completed.	6 months to 1 year	35
DEBRIS ACCUMULATION	If compression seal is installed too low, then debris accumulates.	6 months	90
SURFACE DAMAGE	When compression seal is installed too high, the seal surface is worn off by traffic.	3 years	60
WATER TIGHTNESS	Frequently either due to spalls adjacent to the angles, improper fit, or poor adhesion, there will be leakage.	Approx. 2 years	150
VIBRATION	This is usually a problem where the steel anchorage is inadequately bonded to the concrete.	1 year	35
The above descriptions are typical for this type of joint, and do not necessarily pertain to the Gandy Bridge.			

BRIDGE EXPANSION JOINT SURVEY

District: 7 Suncom Number: 542-6050

Person completing survey: Leo Burgert, Title Structural Engineer

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): Premolded backup - poured in place sealant.

All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)? Sealant

B. Name of the Manufacturer? Not proprietary

C. What is the **approximate number** of joints (units)? 800

D. What is the **average age** of the units? 5 - 10

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

E. What is the **approximate age of the oldest** unit? _____

(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)

F. **In general**, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	Good	Generally used where maximum opening is less than 1 1/2 inches.
GENERAL APPEARANCE	Good	
ANCHORAGE	Good	
DEBRIS ACCUMULATION	Average	If top of sealant is too low, then this becomes a problem.
SURFACE DAMAGE	Excellent	
MAINTENANCE (EASE/NEED)	Good	Easily restored by maintenance forces
RIDING SURFACE	Good	
VIBRATION	Excellent	
WATER TIGHTNESS	Average	When properly installed, problems are minor.

H. Do you recommend this joint system (or seal) for use in other Districts?

_____ Yes, I highly recommend it.

__X__ Yes, I recommend it.

_____ No, I do not recommend it. Why not? _____

BRIDGE EXPANSION JOINT SURVEY

District: 7 Suncom Number: 542-6050

Person completing survey: Leo Burgert, Title Structural Engineer

Part III: PERFORMANCE PROBLEMS TABLE

Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): Premolded backup - Poured in place sealant.

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#: 150109	**BRIDGE NAME:** Structure "B" Ramp "B"	**BRIDGE LOCATION:** Gandy Blvd. @ I-275
BRIDGE LENGTH: 302		**BRIDGE SKEW:** 7°
JOINT LOCATION: Abutments		**JOINT OPEN RANGE:** 1.5" thru 13.0"
ADT: 8,000	**% TRUCK TRAFFIC:** 10%	**# OF TRAFFIC LANES:** 2

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE	Poor adhesion to concrete surface.		
DEBRIS ACCUMULATION	Usually minor.		
SURFACE DAMAGE	None		
WATER TIGHTNESS	Varies		
VIBRATION	None		
Loose or Missing Sealant	Sealant has become dislodged due to age or poor installation.	2 years	150

BRIDGE EXPANSION JOINT SURVEY

District: 8 Suncom Number: 422-1210
Person completing survey: PAUL WAI, Title _____

Part II: DISTRICT PERFORMANCE HISTORY AND EVALUATION

NAME OF JOINT SYSTEM (OR SEAL): JEENE STRUCTURAL JOINT SEALING SYSTEM (P235)
All information on this sheet pertains to the above named joint system (or seal).

A. Joint System Type (compression seal, strip seal, seal only, etc.)?
B. Name of the Manufacturer? HYDROZO
C. What is the **approximate number** of joints (units)? 50
D. What is the **average age** of the units? 1-2 YEARS
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
E. What is the **approximate age of the oldest** unit? 2-5
(<1 year, 1-2 years, 2-5 years, 5-10 years, 10-15 years, >15 years, or more specific age?)
F. In general, considering the bridge expansion joint performance rating criteria described in Table 1 (on the attached sheet), how do you rate the joint system (or seal)? (At the least, please rate the system (or seal) for **OVERALL PERFORMANCE**)

PERFORMANCE CRITERIA	RATING (EXCELLENT/GOOD/ AVERAGE/POOR/FAILURE)	COMMENTS (PLEASE USE ADDITIONAL SHEETS IF NEEDED.)
OVERALL PERFORMANCE	GOOD	
GENERAL APPEARANCE	GOOD	
ANCHORAGE	EXCELLENT	
DEBRIS ACCUMULATION	AVERAGE	
SURFACE DAMAGE	GOOD	
MAINTENANCE (EASE/NEED)	GOOD	
RIDING SURFACE	EXCELLENT	
VIBRATION	GOOD	
WATER TIGHTNESS	GOOD	

H. Do you recommend this joint system (or seal) for use in other Districts?
___ Yes, I highly recommend it.

_✓_ Yes, I recommend it.
___ No, I do not recommend it. Why not? _____

BRIDGE EXPANSION JOINT SURVEY

District: Turnpike Suncom Number: 922-1210
Person completing survey: T Reynolds, Title DSME

Part III: PERFORMANCE PROBLEMS TABLE
Please complete this table for each joint system or seal with performance problems. If there are many individual units of the same joint system or seal with performance problems, you may complete the form for a representative sample (i.e. a typical problem or the worst problem).

NAME OF JOINT SYSTEM (OR SEAL): Jeene Structural Joint Sealing System (PC35)

JOINT/ BRIDGE INFORMATION FOR SPECIFIC PROBLEM JOINTS		
BRIDGE#: 920074 920140	BRIDGE NAME: Turnpike over C-31 Canal	BRIDGE LOCATION: Turnpike MP 241; Osceola Co.
BRIDGE LENGTH: 251'		BRIDGE SKEW:
JOINT LOCATION: All Joints (5 spans)		JOINT OPEN RANGE:
ADT:	% TRUCK TRAFFIC:	# OF TRAFFIC LANES: 2 NB 2 SB

NATURE OF PROBLEM	DESCRIPTION OF PROBLEM	JOINT AGE AT PROBLEM START	NUMBER OF JOINT UNITS WITH SIMILAR PROBLEM
ANCHORAGE			
DEBRIS ACCUMULATION			
SURFACE DAMAGE			
WATER TIGHTNESS			
VIBRATION			
PC-35 Concrete Header failure (Debonding)	Random areas of concrete header failure at most joints	4 years	8-10

APPENDIX D PRODUCT EVALUATION PRELIMINARY APPLICATION

FLORIDA DEPARTMENT OF TRANSPORTATION

LAWTON CHILES
GOVERNOR

605 Suwannee Street, Tallahassee, Florida 32399-0450

BEN G. WATTS
SECRETARY

DATE _____

PRODUCT EVALUATION
PRELIMINARY APPLICATION

1. Trade Name_____Patented: Yes No

* Each product or material submitted shall have a unique and identifiable name.

2. Manufacturer_____Phone (___) _____

3. Address _____

Mailing City State Zip Code

4. Representative_____Phone (___)_____

5. Address_____

Mailing City State Zip Code

6. Product Identification (Do Not Include More Than One Product)

_____

_____

7. Recommended Use - Primary _____

_____

_____

8. Recommended Use - Alternate _____

_____

_____

9. Material Composition_____

_____

10. Outstanding Features or Advantages Claimed (Be Specific) _____

_____

_____

_____

(1)

11. Which Florida Department of Transportation Specification (Identify Specification Section) applies to this product?

Specification Section_____

*Specifications may be obtained from the Department's Engineer of Specifications (904)488-7661.

12. Material Specifications furnished by manufacturer? Yes____ No____

Copy Attached: Yes ____ No _____To Be Mailed ____

13. Plan Drawing, Picture or Sketch Furnished By Manufacturer? Yes ____ No ____ To Be Mailed ____

14. Meets Requirements of: AASHTO, Specification_____ASTM _____

Others _____

15. Approved For Use By The Following Agencies : Use Additional Sheet If Necessary.

Agency_____Contact_____Phone _____

Agency_____Contact_____Phone _____

16. Are those Agencies Using It? Yes____No ____

17. Are Instructions Or Directions For Installing, Application Or Use Available?

Yes ____ No ____ Attached ____ To Be Mailed

18. Will Demonstration Be Provided? Yes ____ No ____

19. Are Educational Videos Or Courses To Be Provided? Yes ____ No ____

20. Availability: Seasonal ____ Non-Seasonal

Are Quantities Limited? Yes ____ No ____

21. Will Free Samples Be Furnished If Requested? Yes _____ No ____

22. Approximate Unit Cost To State. (What Quantity Base?) _____

_____

23. If Proprietary, What Are Royalty Costs and What Basis Are They Collect

_____

24. New -Market? Yes ____ No ____ Introduced In _____.

Alternate For What Existing Product?_____

_____

(2)

25. Background Description Of Company And Its Product _____

_____

26. Who Recommended That The :Department Of Transportation Be Contacted? _____

_____

27. Who Directed You To The Product Evaluation Section? _____

28. Has Another Office Within The Department Of Transportation Been Contacted?

Yes ____ No ____ Which? _____

29. Additional Information _____

_____

30. If Available, Provide Any Applicable Engineering Studies And/Or Cost Analysis.

31. How Will The Department. Benefit From The Use Of This Product/Material?

_____

_____

32. MATERIAL SAFETY DATA SHEET MUST ACCOMPANY THIS APPLICATION.

33. NO MATERIAL OR SAMPLES WILL BE ACCEPTED BY THE STATE MATERIALS OFFICE UNLESS'REQUESTED. MATERIALS NOT REQUESTED WILL BE RETURNED COLLECT FREIGHT.

This Application Will Not Be Accepted Unless Signed.

Person Furnishing Information _____

Title _____

Signature _____

This Application Is For Informational Purposes Only And In No Way Obligates The Department In Any Way Regarding Your Product.

For Consideration By The Department Of Transportation, Submit The Original and Two Copies Of This Application And All Applicable Documentation To:

PRODUCT EVALUATION SECTION
FLORIDA DEPARTMENT of TRANSPORTATION
605 SUWANNEE STREET, MS/31 ROOM 110
TALLAHASSEE, FLORIDA 32399-0450

(3)

APPENDIX E STRUCTURE INVENTORY AND APPRAISAL SHEETS I-95 BRIDGES

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 124
(8) STRUCTURE NUMBER # 940111
(5) INVENTORY ROUTE (ON/UNDER) - ON = 111000950
(2) STATE HIGHWAY DEPARTMENT DISTRICT 04
(3) COUNTY CODE 111 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED - MIDWAY RD(CR 712) *
(7) FACILITY CARRIED - I-95 (SR-9)
(9) LOCATION - 12
(11) MILEPOINT 012.113
(16) LATITUDE 27 D 22.4' (17) LONGITUDE 080 D 24.6'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1982
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 03 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 015169
(30) YEAR OF ADT 1991 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0082 FT
(49) STRUCTURE LENGTH 000242 FT
(50) CURB OR SIDEWALK: LEFT 00.0 FT RIGHT 00.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 056.0 FT
(52) DECK WIDTH OUT TO OUT 058.7 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 056 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 23 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 14 FT 00 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 56.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 16 FT 01 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 32.1 FT
(56) MIN LAT UNDERCLEAR LT 16.7 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 096.9
STATUS = NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH YES
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - RURAL INTERSTATE 01
(100) DEFENSE HIGHWAY - DEFENSE HIGHWAY 1
(101) PARALLEL STRUCTURE - RIGHT STRUCTURE R
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 1
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET 1
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 8
(59) SUPERSTRUCTURE 8
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ******** CODE

(31) DESIGN LOAD - HS 20+MOD 6
(64) OPERATING RATING - HS-20 TRU 250
(66) INVENTORY RATING - HS-20 TRU 243
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 8
(68) DECK GEOMETRY 7
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 7
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 9
(36) TRAFFIC SAFETY FEATURES 1111
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - NO IMPROVEMENT PLANNED CODE 000
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $,000
(95) ROADWAY IMPROVEMENT COST $,000
(96) TOTAL PROJECT COST $,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 030000
(115) YEAR OF FUTURE ADT 2010

********** INSPECTIONS **********

(90) INSPECTION DATE 92/05 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - NO __ MO B)
C) OTHER SPECIAL INSP - NO __ MO C)

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 124
(8) STRUCTURE NUMBER # 940112
(5) INVENTORY ROUTE (ON/UNDER) - ON = 111000950
(2) STATE HIGHWAY DEPARTMENT DISTRICT 04
(3) COUNTY CODE 111 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED - MIDWAY RD (CR-712) *
(7) FACILITY CARRIED - I-95 (SR-9)
(9) LOCATION - WEST OF FT PIERCE
(11) MILEPOINT 012.105
(16) LATITUDE 27 D 22.4' (17) LONGITUDE 080 D 24.6'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #0

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1982
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 03 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 015522
(30) YEAR OF ADT 1991 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0082 FT
(49) STRUCTURE LENGTH 000242 FT
(50) CURB OR SIDEWALK: LEFT 00.0 FT RIGHT 00.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 056.0 FT
(52) DECK WIDTH OUT TO OUT 058.7 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 056 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 67 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 56.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 16 FT 07 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 30.5 FT
(56) MIN LAT UNDERCLEAR LT 17.5 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 096.8
STATUS = NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH YES
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - RURAL INTERSTATE 01
(100) DEFENSE HIGHWAY - DEFENSE HIGHWAY 1
(101) PARALLEL STRUCTURE - LEFT STRUCTURE L
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 1
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET 1
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 7
(59) SUPERSTRUCTURE 8
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ********* CODE

(31) DESIGN LOAD - HS 20+MOD 6
(64) OPERATING RATING - HS-20 TRU 250
(66) INVENTORY RATING - HS-20 TRU 243
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 8
(68) DECK GEOMETRY 7
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 9
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 9
(36) TRAFFIC SAFETY FEATURES 1111
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - OTHER STRUCTURAL WORK CODE 381
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $ 17,000
(95) ROADWAY IMPROVEMENT COST $ 1,000
(96) TOTAL PROJECT COST $ 21,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 029600
(115) YEAR OF FUTURE ADT 2010

********** INSPECTIONS **********

(90) INSPECTION DATE 92/05 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - NO __ MO B)
C) OTHER SPECIAL INSP - NO __ MO C)

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 124
(8) STRUCTURE NUMBER # 940115
(5) INVENTORY ROUTE (ON/UNDER) - ON = 111000950
(2) STATE HIGHWAY DEPARTMENT DISTRICT 04
(3) COUNTY CODE 111 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED - GLADES RD C-709-FECRR *
(7) FACILITY CARRIED - I-95 (SR-9)
(9) LOCATION - WEST OF FT PIERCE
(11) MILEPOINT 010.722
(16) LATITUDE 27 D 21.4' (17) LONGITUDE 080 D 24.8'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 006
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1982
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY-RAILROAD CODE 14
(28) LANES: ON STRUCTURE 03 UNDER STRUCTURE 02
(29) AVERAGE DAILY TRAFFIC 014277
(30) YEAR OF ADT 1991 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0125 FT
(49) STRUCTURE LENGTH 000477 FT
(50) CURB OR SIDEWALK: LEFT 00.0 FT RIGHT 00.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 056.0 FT
(52) DECK WIDTH OUT TO OUT 058.7 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 056 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 44 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 56.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - RAILROAD 21 FT 03 IN
(55) MIN LAT UNDERCLEAR RT REF - RAILROAD 20.0 FT
(56) MIN LAT UNDERCLEAR LT 40.0 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 095.9
STATUS = NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH YES
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - RURAL INTERSTATE 01
(100) DEFENSE HIGHWAY - DEFENSE HIGHWAY 1
(101) PARALLEL STRUCTURE - LEFT STRUCTURE L
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 1
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET 1
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 8
(59) SUPERSTRUCTURE 8
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ******** CODE

(31) DESIGN LOAD - HS 20-MOD 6
(64) OPERATING RATING - HS-20 TRU 252
(66) INVENTORY RATING - HS-20 TRU 240
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 8
(68) DECK GEOMETRY 7
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 5
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 9
(36) TRAFFIC SAFETY FEATURES 1111
(113) SCOUR CRITICAL BRIDGES 6

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - OTHER STRUCTURAL WORK CODE 381
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $ 17,000
(95) ROADWAY IMPROVEMENT COST $ 1,000
(96) TOTAL PROJECT COST $ 21,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 019865
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********

(90) INSPECTION DATE 92/05 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - NO __ MO B)
C) OTHER SPECIAL INSP - NO __ MO C)

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 124
(8) STRUCTURE NUMBER # 940116
(5) INVENTORY ROUTE (ON/UNDER) - ON = 111000950
(2) STATE HIGHWAY DEPARTMENT DISTRICT 04
(3) COUNTY CODE 111 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED - GLADES RD C-709-FECRR *
(7) FACILITY CARRIED - I-95 (SR-9)
(9) LOCATION - WEST OF FT PIERCE
(11) MILEPOINT 010.722
(16) LATITUDE 27 D 21.4' (17) LONGITUDE 080 D 24.8'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #0000000000000000

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 006
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1982
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY-RAILROAD CODE 14
(28) LANES: ON STRUCTURE 03 UNDER STRUCTURE 02
(29) AVERAGE DAILY TRAFFIC 015169
(30) YEAR OF ADT 1991 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0125 FT
(49) STRUCTURE LENGTH 000477 FT
(50) CURB OR SIDEWALK: LEFT 00.0 FT RIGHT 00.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 056.0 FT
(52) DECK WIDTH OUT TO OUT 058.7 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 056 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 44 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 56.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - RAILROAD 20 FT 05 IN
(55) MIN LAT UNDERCLEAR RT REF - RAILROAD 20.0 FT
(56) MIN LAT UNDERCLEAR LT 40.0 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 096.8
STATUS = NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH YES
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - RURAL INTERSTATE 01
(100) DEFENSE HIGHWAY - NOT A DEFENSE HIGHWAY 0
(101) PARALLEL STRUCTURE - RIGHT STRUCTURE R
(102) DIRECTION OF TRAFFIC - TWO WAY TRAFFIC 2
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK -
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 7
(59) SUPERSTRUCTURE 8
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ******** CODE

(31) DESIGN LOAD - HS 20+MOD 6
(64) OPERATING RATING - HS-20 TRU 252
(66) INVENTORY RATING - HS-20 TRU 240
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 8
(68) DECK GEOMETRY 7
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 4
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 9
(36) TRAFFIC SAFETY FEATURES 1111
(113) SCOUR CRITICAL BRIDGES 6

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - OTHER STRUCTURAL WORK CODE 381
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $ 17,000
(95) ROADWAY IMPROVEMENT COST $ 1,000
(96) TOTAL PROJECT COST $ 21,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 006000
(115) YEAR OF FUTURE ADT 2010

********** INSPECTIONS **********

(90) INSPECTION DATE 92/05 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - YES 24 MO B) 90 09
C) OTHER SPECIAL INSP - NO __ MO C)

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 124
(8) STRUCTURE NUMBER # 940122
(5) INVENTORY ROUTE (ON/UNDER) - ON = 111000950
(2) STATE HIGHWAY DEPARTMENT DISTRICT 04
(3) COUNTY CODE 111 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED - TENMILE CREEK *
(7) FACILITY CARRIED - I-95 (SR-9)
(9) LOCATION - WEST OF FT PIERCE
(11) MILEPOINT 014.169
(16) LATITUDE 27 D 24.2' (17) LONGITUDE 080 D 23.6'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 013
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1982
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - WATERWAY CODE 15
(28) LANES: ON STRUCTURE 03 UNDER STRUCTURE 00
(29) AVERAGE DAILY TRAFFIC 015169
(30) YEAR OF ADT 1991 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0083 FT
(49) STRUCTURE LENGTH 000927 FT
(50) CURB OR SIDEWALK: LEFT 00.0 FT RIGHT 00.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 056.0 FT
(52) DECK WIDTH OUT TO OUT 058.7 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 056 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 22 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 56.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - NOT A HI 00 FT 00 IN
(55) MIN LAT UNDERCLEAR RT REF - NOT A HI 00.0 FT
(56) MIN LAT UNDERCLEAR LT 00.0 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - BRIDGE HAS NO NA CODE 0
(111) PIER PROTECTION - NAVIGATION PROTECTI CODE 1
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 096.9
STATUS = NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH YES
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - RURAL INTERSTATE 01
(100) DEFENSE HIGHWAY - DEFENSE HIGHWAY 1
(101) PARALLEL STRUCTURE - LEFT STRUCTURE L
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 1
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK -
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 7
(59) SUPERSTRUCTURE 8
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION 8
(62) CULVERTS N

********** LOAD RATING AND POSTING ******** CODE

(31) DESIGN LOAD - HS 20-MOD 6
(64) OPERATING RATING - HS-20 TRU 250
(66) INVENTORY RATING - HS-20 TRU 243
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 8
(68) DECK GEOMETRY 7
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATERWAY ADEQUACY 8
(72) APPROACH ROADWAY ALIGNMENT 9
(36) TRAFFIC SAFETY FEATURES 1111
(113) SCOUR CRITICAL BRIDGES 6

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - OTHER STRUCTURAL WORK CODE 381
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $ 17,000
(95) ROADWAY IMPROVEMENT COST $ 1,000
(96) TOTAL PROJECT COST $ 21,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 019865
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********

(90) INSPECTION DATE 92/05 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - YES 24 MO B) 92 05
C) OTHER SPECIAL INSP - NO __ MO C)

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 124
(8) STRUCTURE NUMBER # 940123
(5) INVENTORY ROUTE (ON/UNDER) - ON = 111000950
(2) STATE HIGHWAY DEPARTMENT DISTRICT 04
(3) COUNTY CODE 111 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED - TEN MILE CREEK *
(7) FACILITY CARRIED - I-95 (SR-9)
(9) LOCATION - WEST OF FT PIERCE
(11) MILEPOINT 014.387
(16) LATITUDE 27 D 24.2' (17) LONGITUDE 080 D 23.6'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 009
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1982
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - WATERWAY CODE 15
(28) LANES: ON STRUCTURE 03 UNDER STRUCTURE 00
(29) AVERAGE DAILY TRAFFIC 015169
(30) YEAR OF ADT 1991 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0096 FT
(49) STRUCTURE LENGTH 000653 FT
(50) CURB OR SIDEWALK: LEFT 00.0 FT RIGHT 00.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 056.0 FT
(52) DECK WIDTH OUT TO OUT 058.7 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 056 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 15 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 56.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - NOT A HI 00 FT 00 IN
(55) MIN LAT UNDERCLEAR RT REF - NOT A HI 00.0 FT
(56) MIN LAT UNDERCLEAR LT 00.0 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - BRIDGE HAS NO NA CODE 0
(111) PIER PROTECTION - NAVIGATION PROTECTI CODE 1
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 096.9
STATUS = NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH YES
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - RURAL INTERSTATE 01
(100) DEFENSE HIGHWAY - DEFENSE HIGHWAY 1
(101) PARALLEL STRUCTURE - RIGHT STRUCTURE R
(102) DIRECTION OF TRAFFIC - TWO WAY TRAFFIC 2
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET 1
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 7
(59) SUPERSTRUCTURE 8
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION 8
(62) CULVERTS N

********** LOAD RATING AND POSTING ********* CODE

(31) DESIGN LOAD - HS 20+MOD 6
(64) OPERATING RATING - HS-20 TRU 252
(66) INVENTORY RATING - HS-20 TRU 244
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 8
(68) DECK GEOMETRY 7
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATERWAY ADEQUACY 8
(72) APPROACH ROADWAY ALIGNMENT 9
(36) TRAFFIC SAFETY FEATURES 1111
(113) SCOUR CRITICAL BRIDGES 6

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - NO IMPROVEMENT PLANNED CODE 000
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $,000
(95) ROADWAY IMPROVEMENT COST $,000
(96) TOTAL PROJECT COST $,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 021265
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********

(90) INSPECTION DATE 92/05 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - YES 24 MO B) 92 05
C) OTHER SPECIAL INSP - NO __ MO C)

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 124
(8) STRUCTURE NUMBER # 940126
(5) INVENTORY ROUTE (ON/UNDER) - ON = 111000950
(2) STATE HIGHWAY DEPARTMENT DISTRICT 04
(3) COUNTY CODE 111 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED - SR 91 FLA TURNPIKE *
(7) FACILITY CARRIED - I-95 (SR-9)
(9) LOCATION - WEST OF FT PIERCE
(11) MILEPOINT 013.823
(16) LATITUDE 27 D 23.9' (17) LONGITUDE 080 D 22.8'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 002
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1982
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 03 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 015522
(30) YEAR OF ADT 1991 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0104 FT
(49) STRUCTURE LENGTH 000208 FT
(50) CURB OR SIDEWALK: LEFT 00.0 FT RIGHT 00.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 056.0 FT
(52) DECK WIDTH OUT TO OUT 058.7 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 056 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 25 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 56.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 16 FT 11 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 30.0 FT
(56) MIN LAT UNDERCLEAR LT 07.8 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 096.8
STATUS = NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH YES
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - RURAL INTERSTATE 01
(100) DEFENSE HIGHWAY - DEFENSE HIGHWAY 1
(101) PARALLEL STRUCTURE - LEFT STRUCTURE L
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 1
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET 1
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 6
(59) SUPERSTRUCTURE 8
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ********* CODE

(31) DESIGN LOAD - HS 20+MOD 6
(64) OPERATING RATING - HS-20 TRU 257
(66) INVENTORY RATING - HS-20 TRU 248
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 8
(68) DECK GEOMETRY 7
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 6
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 9
(36) TRAFFIC SAFETY FEATURES 1111
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - NO IMPROVEMENT PLANNED CODE 000
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $,000
(95) ROADWAY IMPROVEMENT COST $,000
(96) TOTAL PROJECT COST $,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 030000
(115) YEAR OF FUTURE ADT 2010

********** INSPECTIONS **********

(90) INSPECTION DATE 92/05 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - NO __ MO B)
C) OTHER SPECIAL INSP - NO __ MO C)

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 124
(8) STRUCTURE NUMBER # 940093
(5) INVENTORY ROUTE (ON/UNDER) - ON = 111000950
(2) STATE HIGHWAY DEPARTMENT DISTRICT 04
(3) COUNTY CODE 111 (4) PLACE CODE 24350
(6) FEATURES INTERSECTED - ANDLE RD. BELCHER CANAL
(7) FACILITY CARRIED - SR-9 I-95 S.B.
(9) LOCATION - 3 MI. N. SR-68 INTERCH.
(11) MILEPOINT 020.218
(16) LATITUDE 27 D 28.2' (17) LONGITUDE 080 D 25.3'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR CODE 5
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 02
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 006
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NOT APPLICABLE CODE N
C) TYPE OF DECK PROTECTION - NOT APPLICABLE CODE N

********** AGE AND SERVICE **********

(27) YEAR BUILT 1977
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY-WATERWAY CODE 16
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 02
(29) AVERAGE DAILY TRAFFIC 012302
(30) YEAR OF ADT 1991 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0098 FT
(49) STRUCTURE LENGTH 000522 FT
(50) CURB OR SIDEWALK: LEFT 00.0 FT RIGHT 00.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 040.0 FT
(52) DECK WIDTH OUT TO OUT 042.8 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 040 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 45 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 40.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 16 FT 01 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 15.0 FT
(56) MIN LAT UNDERCLEAR LT 00.0 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - BRIDGE HAS NO NA CODE 0
(111) PIER PROTECTION - NAVIGATION PROTECTI CODE 1
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 097.1
STATUS = NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH YES
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - RURAL INTERSTATE 01
(100) DEFENSE HIGHWAY - DEFENSE HIGHWAY 1
(101) PARALLEL STRUCTURE - LEFT STRUCTURE L
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 1
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET 1
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 8
(59) SUPERSTRUCTURE 8
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION 8
(62) CULVERTS N

********** LOAD RATING AND POSTING ********* CODE

(31) DESIGN LOAD - MS 20+MOD 6
(64) OPERATING RATING - MS-20 TRU 252
(66) INVENTORY RATING - MS-20 TRU 245
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 8
(68) DECK GEOMETRY 7
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 6
(71) WATERWAY ADEQUACY 9
(72) APPROACH ROADWAY ALIGNMENT 7
(36) TRAFFIC SAFETY FEATURES 1111
(113) SCOUR CRITICAL BRIDGES 6

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - NO IMPROVEMENT PLANNED CODE 000
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $,000
(95) ROADWAY IMPROVEMENT COST $,000
(96) TOTAL PROJECT COST $,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 018090
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********

(90) INSPECTION DATE 93/01 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - YES 24 MO B) 93 05
C) OTHER SPECIAL INSP - NO __ MO C)

APPENDIX F

STATE MATERIALS OFFICE LETTER

FLORIDA DEPARTMENT OF TRANSPORTATION
LAWTON CHILES
GOVERNOR
BEN G. WATTS
SECRETARY

State Materials Office
2006 Northeast Waldo Road,
(352) 337-3205 Gainesville, Florida 32609

MEMORANDUM

DATE: January 23, 1996

TO: Moussa Issa, Senior Structural Analyst

FROM: R. J. Kessler, State Corrosion Engineer

COPIES: C. D. Peeples

SUBJECT: Testing of Joint Materials

Testing was not completed on the subject materials due to the existence of hazardous nature of materials used to mix the concrete type materials. No directions or input from manufactures were received, to my knowledge, to assist in preparing these materials.

The joint materials will be retained for another six months. Should your office still wish to test some materials later, please contact me and we will work with manufacturers directly. After six months, we will discard the materials.

RJK:kc