Bridge No. 5/332

Pacific Avenue O'xing Evazote 50 Expansion Joint Seal

WA-RD 149.1

Post Construction Report
May 1990

Washington State Department of Transportation
Planning, Research and Public Transportation Division

in cooperation with the
United States Department of Transportation
Federal Highway Administration

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

TECHNICAL REPORT STANDARD TITLE PAGE

1. REPORT NO.	2. GOVERNMENT ACCESSION NO.	3. RECIPIENT'S CATALOG NO.
WA-RD 149.1		

4. TITLE AND SUBTITLE	5. REPORT DATE
Pacific Ave. O'Xing Evazote 50 Expansion Joint Seal Bridge No. 5/332	May 1990 6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.
Tom H. Roper and Edward H. Henley Jr.	
9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. WORK UNIT NO.
Washington State Department of Transportation Transportation Building Olympia, WA 98504	11. CONTRACT OR GRANT NO. WA 86-03B
12. SPONSORING AGENCY NAME AND ADDRESS	13. TYPE OF REPORT AN PERIOD COVERED
Same	Post Construction May 1990
	14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

The study was conducted in cooperation with the U.S. Department of Transportation Federal Highway Administration.

16. ABSTRACT

Bridge expansion joints pose a special problem in the Washington State Department of Transportation (WSDOT) bridge deck management system. These devices are subject to repeated heavy dynamic loading, and premature failure has occurred in many cases.

It is WSDOT policy, as part of the Bridge Deck Management System, to make expansion joints watertight in order to reduce the potential of substructure corrosion induced by roadway deicing salts and other contaminants.

Expansion joint seals play an important role in keeping expansion joints watertight. A relatively new material, Evazote 50, looks promising in its performance characteristics as an expansion joint seal. It is able to accommodate considerable joint movement, its durability and corrosion resistant properties are excellent, and it is resistant to absorption of oils and greases. The purpose of this experimental project is to gain knowledge about the material's effectiveness over time and to gain knowledge about field installation techniques.

It was very beneficial to have the manufacturer's representative on the job during installation. This was required by special provision and is a practice that should be continued on future projects.

In-place performance will determine acceptance of Evazote 50 for general use.

17. KEY WORDS	18. DISTRIBUTION STATEMENT
Expansion joints, Bridge deck rehabilitation	

19. SECURITY CLASSIF. (of this report)	20. SECURITY CLASSIF. (of this page)	21. NO. OF PAGES	22. PRICE
Unclassified	Unclassified	26	

DOT FORM 3310-022 (11/86) -1216-

PACIFIC AVENUE O'XING
EVAZOTE 50 EXPANSION
JOINT SEAL

Bridge No. 5/332

by

Tom H. Roper
and
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Bridge and Structures Office
Washington State Department of Transportation
Olympia, WA 98504-5201

POST CONSTRUCTION REPORT

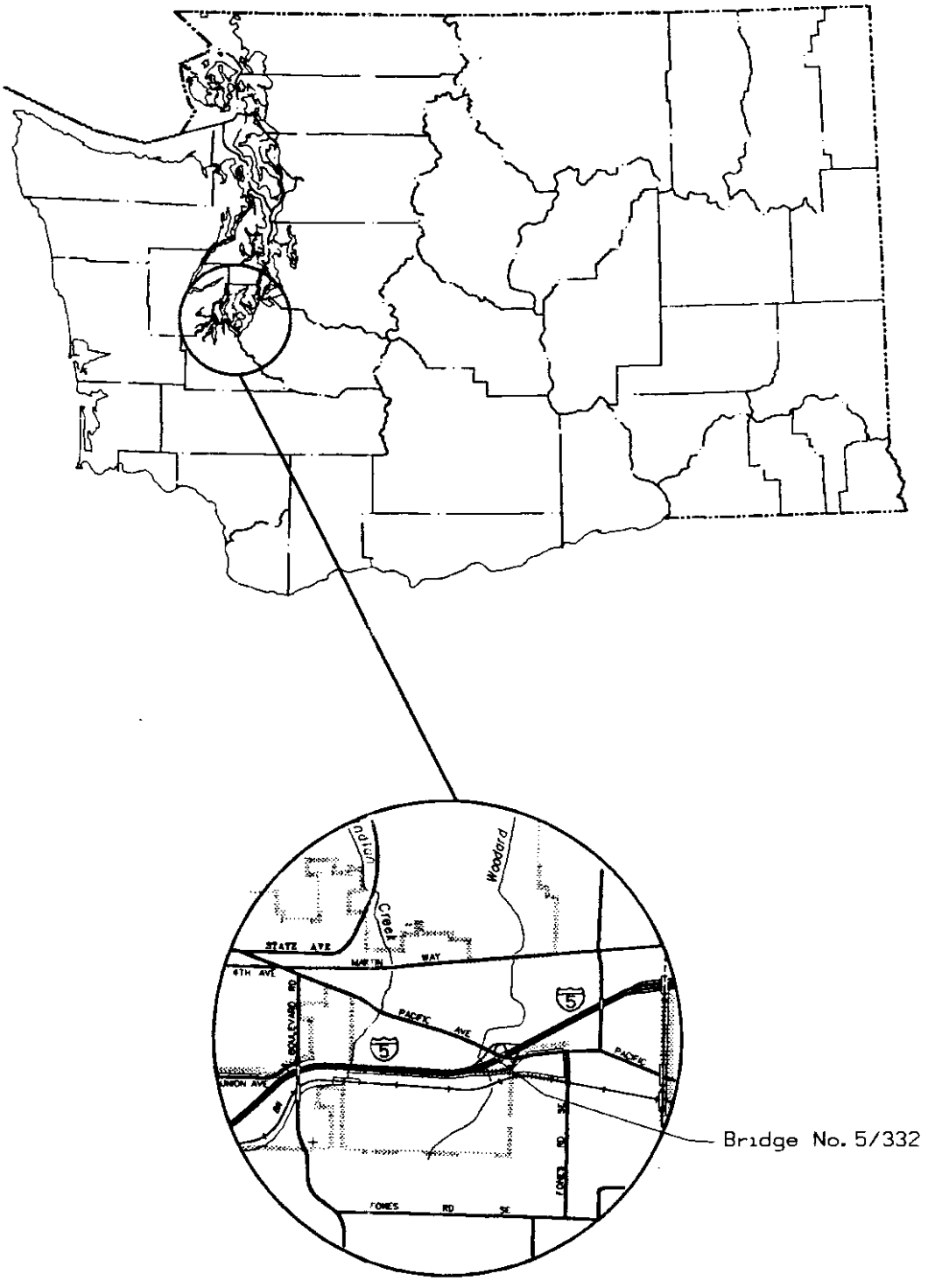
Experimental Project WA 86-03B

May 1990

Prepared for Washington State Department of Transportation
in cooperation with the United States Department of
Transportation and Federal Highway Administration.

CONTENTS

VICINITY MAP



PROJECT SITE

Introduction

Bridge expansion joints pose a special problem in the Washington State Department of Transportation (WSDOT) Bridge Deck Management System. These devices are subject to repeated heavy dynamic loading, and premature failure has occurred in many cases.

It is WSDOT policy, as part of the Bridge Deck Management System, to make expansion joints watertight, allowing surface water to run off the deck to the bridge drains. This is to prevent water and contaminants from leaking onto the substructure and causing corrosion and appearance problems.

Durable, effective joint seals are essential to providing watertight joints. A relatively new material, Evazote 50, looks promising in its performance characteristics as an expansion joint seal. It is able to accommodate considerable joint movement, its durability and corrosion resistant properties appear to be excellent, and it is resistant to absorption of oils and greases. In-service joints are observed to be relatively debris free, indicating a self cleaning quality associated with the elastic properties of the Evazote 50. The purpose of this experimental project is to gain knowledge about the material's long-term durability and watertightness and to gain knowledge about field installation techniques.

Study Site

Pacific Avenue Overcrossing 5/332, in the Olympia area, was selected as the site for an experimental installation of the Evazote 50 expansion joint seal material. This bridge was widened on both sides, which necessitated the placement of a longitudinal expansion joint between the existing bridge and the new widened parts. A seal was needed that would provide a watertight joint and allow 1 inch longitudinal movement with a 1 inch joint. Evazote 50 was the only material that would satisfy this performance criteria. This longitudinal expansion joint had steel nosing on each side to preserve the integrity of the joint in service. The project included 700 lineal feet of longitudinal expansion joint.

In addition to the longitudinal joint, 70 lineal feet of transverse expansion joint was constructed between the bridge end and the approach slabs. The Evazote 50 seal was designed for the transverse joint with no steel nosing. The seal was initially installed within the top one inch of the 1-1/2 inch thick latex modified concrete overlay. This overlay was used on both the existing bridge and the new widened portion.

Construction Summary

General Description

A three-man crew installed the Evazote 50 joint material. One man painted epoxy on both of the bonding surfaces. A second man painted both sides of the Evazote 50 and

pushed it into the joint. The third man followed and cleaned excess epoxy off the Evazote 50 and bridge deck by troweling with a margin trowel and wiping with clean rags. Directional changes and extensions of the joint material were made by heat welding. This was done by placing both joint surfaces against a Teflon covered heating iron at 350° for 10 to 12 seconds and then pressing the joint surfaces together firmly.

It was extremely important to thoroughly clean the deck surface next to the open joint of any sand, rocks, or other debris before laying out the Evazote 50. Any debris that might be picked up on the Evazote 50, or get into the open joint after the epoxy is painted, could cause debonding of the joint seal.

The manufacturer's representative stressed the importance of ensuring that the Evazote 50 was recessed 1/16 inch to 1/8 inch from the top surface of the joint on both the longitudinal and transverse joints. Traffic abrasion would be detrimental to the Evazote 50 if it extended above the road surface. The joint is self cleaning of rocks and dirt if the recess does not exceed 1/8 inch.

During installation of the Evazote 50, it was necessary to go back over the length of the joint repeatedly and make sure the Evazote 50 was staying down to the specified recess. The Evazote 50 had a tendency to work its way up after it was initially pushed down. It was necessary to push it back down until the epoxy had set enough to hold it down.

Installation of Evazote 50 is an untidy process. It was important to promptly wipe off any excess epoxy that could interfere with the movement of the Evazote 50 after the epoxy hardened. The manufacturer's representative recommended that this be done by troweling with a margin trowel, then wiping up any excess with dry rags. He advised against using solvent to clean the epoxy, because it may cause debonding.

Any directional changes or extensions of the Evazote 50 had to be made by heat welding. Using epoxy to weld a joint will not work, according to the manufacturer. Each end of the Evazote 50 to be welded was cut square so that when the ends are pushed together, their entire surface areas come into contact. The heating iron must be at least 350° in order to get a good weld. If it is not 350°, the Evazote 50 does not melt sufficiently to get a good bond. The Pacific Avenue Overcrossing transverse joints had to be installed at night, to eliminate lane closures during the higher daytime traffic volume periods. At the lower nighttime temperatures, it was necessary to cover the heating iron with a cardboard box in order to get it hot enough. The manufacturer also supplied a quick setting epoxy, Eva-Pox No. 41, which is specifically formulated for use at low temperatures.

Longitudinal Joint

Prior to installation of the Evazote 50 for the longitudinal joint, it was necessary to sandblast the joint steel. Due to the nine-month delay between installation of the

joint steel and the Evazote 50, a considerable amount of oxidation had built up on the steel. At the recommendation of the manufacturer's representative, the contractor also gave the joint steel a light sandblast immediately before painting it with epoxy.

It was discovered that the profile of the longitudinal joint steel had changed after post-tensioning of the structures. This deflection was as much as 3/8 inch in places, while the profile of the half of the joint steel set in the existing structure did not change. This caused an uneven surface across the expansion joint. In these areas, the top of the Evazote 50 was placed level with the lower half of the joint steel.

It was also discovered that the width of the longitudinal open joint steel had changed from the original 1 inch width set during installation. The joint varied in width from 1 inch to 1-5/16 inch. The Evazote 50 must be installed under 25 percent compression in order to function properly. The actual joint width presented a problem, as the contractor had 700 L.F. of 1-1/4 inch wide Evazote 50 on site. Installation was delayed while additional 1-3/4 inch wide Evazote 50 was ordered and shipped. The longitudinal joint was installed in October 1987.

Transverse Joint

After the Latex Modified Concrete (LMC) overlay was placed, the bonding surfaces of the transverse expansion joint were prepared by sawcutting a 1 inch wide joint directly over the 1/2 inch preformed joint filler between the bridge deck and approach slab. For better bond, the overlay bonding surfaces were acid etched with a solution of muriatic acid.

The transverse expansion joints presented some unique problems. A 1 inch wide joint was sawcut in the LMC approximately 24 hours after placement of the overlay. It was necessary to form the proper width opening and patch back the spalled areas with Sika Pronto 11. Also, the sawcut was made to a depth of only 1 inch, as specified in the plans, while the LMC overlay depth was up to 2 inches. Extensive chipping was necessary to form the expansion joint opening. Chipping extended down to the existing preformed joint filler between the bridge deck and the approach slab. After a cure time of 2 to 3 hours, the Evazote 50 was installed by the standard procedure with the Eva-Pox epoxy. After another 2 hours, the joint was opened to traffic.

Approximately nine months after installation of the Evazote 50 Expansion Joint System, the transverse joints began to fail. The latex around the Evazote began cracking and popping out. An extensive review of the situation revealed (as the plans show, Appendix B, Transverse Joint) that there is no provision for the existing joint material to be extended through the latex to come in contact with the new Evazote. The Evazote is detailed at 1 inch deep and the latex is 1-1/2 inches deep per the plans. The joint failure was due to improper detailing; the Evazote joint seal was not judged to have contributed to the problems.

Change Order Number 66 (Appendix C) outlines the transverse joint repair procedure. Work was begun on August 29, 1988, and took 675 man-hours and materials at a cost of $38,000 to repair.

As of this date, the repair appears to be functioning properly, without any failures.

Construction Time

10-13-87 to 10-21-87	Sandblast/prep. longitudinal steel, sawcut transverse joints NB & SB. 88 man-hours.
10-22-87 & 10-23-87	Install Evazote 50 NB & SB longitudinal joints. 48 man-hours.
11-02-87 & 11/03/87	Prepare transverse joints, install Evazote 50, NB & SB. 64 man-hours.

Quality Control Performance

A representative of the Evazote 50 manufacturer was on site prior to and during installation of the Evazote 50, and the contractor complied with his directions.

As required in the contract special provisions, the joint was water tested after installation. The joint was flooded with water and inspected from below for leakage. No leakage was observed.

Conclusions and Recommendations

Installation of the Evazote 50 was successful, except for the necessary repair to the transverse joints. It was very beneficial to have the manufacturer's representative on the job during installation. This was required by the special provisions and is a practice that should be continued on future projects.

Periodic visual observation of the performance of the material over time, followed by written reporting, will be used to evaluate the material. Some testing by the WSDOT Materials Lab may be performed if required. A final report will be issued at the end of the fifth year.

Based on constructability and performance on this project and others dating from 1986, Evazote 50 is now used by WSDOT for expansion joint rehabilitation in special cases. Its acceptance for use in new construction will depend on the in-place performance on this project and on Br. No. 5/337 E & W Martin Way O'xing.

At the present time, the joint is showing no wear and is very smooth to ride over.

5:m:PD1

Appendix A

Manufacturer's Material Properties and Installation Details

E-POXY INDUSTRIES INC.

GUIDE SPECIFICATION FOR EVAZOTE 50 JOINT SYSTEM

"Tech Data"

Contents

1.0 General Information

1.1 This Guide Specification is intended to aid in specifying the EVAZOTE 50 Joint System, which will be called the "Joint Material" hereafter. The Joint Material is a resilient, non-extrudable material. It is designed for the construction and maintenance of concrete structures, pavements and bridges, and may be adapted to any waterstop design. Produced as an impermeable closed-cell, cross-linked, ethylene vinyl acetate, low density polyethylene copolymer, nitrogen blown material which is weather and wear resistant. Being both closed cellular and elastic, it has the capabilities of operating within the range of 50% compression and 25% 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.

1.2 The physical and chemical properties of the Joint Material do not alter significantly within the recommended temperature range (-94°F to 160°F). When used as a preformed strip, it enables joints to be cast in place and sealed in position, remaining impervious through the expansion/contraction of the structure.

1.3 The Joint Material should be installed under a compression of 25%. The manufacturer's recommended bonding agent is specially formulated to provide excellent adhesion in dry, moist and cold weather conditions. Tests indicate the bond strength is greater than the Joint Material's tensile strength, which is 50 lbs./sq. in. (345 Kn/m^3).

1.4 All directional changes in joint material must be done using the heatwelding method. This is done by placing the joint material ends against a teflon heating iron @ 350°F for 7-10 seconds. Then place the ends together tightly. DO NOT test the weld until material has completely cooled.

2.0 Physical Requirements

2.1 **Compression**: set on 1" thick samples. Average figures. Set is dependent on time under compression, degree of temperature and recovery time. 20% compression for 48 hours at 68°F; ½ hour recovery; 13%. 40% compression for 70 hours at 68°F, ½ hour recovery; 16%.

2.2 **Extrusion**: When a test specimen is compressed to 50% of its original thickness with three restrained edges, the amount of extrusion on the free edge does not exceed 0.25 inches (6.4 mm).

2.3 **Expansion**: When installed according to manufacturer's recommendations for the bonding agent, the joint material is capable of expanding 25% beyond its original dimension.

2.4 **Elongation**: The material is capable of a minimum of 200% elongation before breaking.

2.5 **Density**: The density of the air-dry material is not less than 2.8 lbs. nor greater than 3.4 lbs. per cu. ft.

2.6 **Water Absorption**: Total immersion for three months 3% vol./vol.

2.7 **Weather test**: When conducted in accordance with procedures specified in Federal Specification HH-F-341a, Type 1, Standard, Class A, test specimens show no degradation.

3.0 Dimensions and Permissible Variations

3.1 The preformed Joint Material shall be of the thickness and width described in the contract or on the plans within a tolerance of thickness up to 0.1181 inch (3 mm), + 20%-10%; Thickness 0.1181 to 0.2362 inch (3 mm to 6 mm), + 15%-5%; Thickness over 0.2652 inch (6 mm), + 10% - 2%.

4.0 Sampling

4.1 Size of Samples: Each sample shall consist of sufficient material to provide at least five test specimens measuring 4½ by 4½ inches (114 by 114 mm).

4.2 Number of Test Specimen Samples: One representative sample shall be selected from each shipment as required for each specified test.

5.0 Manufacturer's Certification

5.1 Manufacturer's Certification must be made on all material as to its authenticity by the manufacturer, E-Poxy Industries, Inc.

Distributed by:

BULLETIN NO. 028
Revised 02/84

14 West Shore Street
Ravena, New York 12143

518-756-6193
Outside NY: 1-800-833-3400
Telex #: 646525 EPOXY RVEN

JOINT MATERIAL INSTALLATION PROCEDURES

"Tech Data"

Presentation

The Joint Material should be installed under a compression of 25%. The Manufacturers' recommended bonding agent is specially formulated to provide excellent adhesion in dry, moist, and cold weather conditions. Tests indicate the bond strength is greater than the Joint Material's tensile strength, which is 50 lbs./sq. in. (345 Kn/m³).

All directional changes in the Joint Material must be done using the heatwelding method. This is done by placing the Joint Material ends against a teflon heating iron @ 350° F for 7-10 seconds. Then place the ends together tightly. DO NOT test the weld until material has completely cooled. MANUFACTURERS HEATWELD MUST BE PARALLEL TO THE WEARING SURFACE AT ALL TIMES.

Surface Preparation

Service life is primarily dependent upon good surface preparation. It is extremely important to follow these procedures:

Concrete Surfaces: Clean areas in contact with the specified bonding agent of all oils, greases, dirt, wax solutions, existing coatings, curing compounds, heavy laitance, sharp objects, or protrusions. New concrete should cure 80% of the design strength. Concrete surfaces must be checked for their neutrality. Over 10 pH must be acid etched with a 10% solution of muriatic acid, rinsed thoroughly and dried. Repeat if necessary. Below 4 pH, wash with bi-carbonate of soda, rinse thoroughly and dry. Repeat if necessary.

Steel Surfaces: Areas in contact with the specified bonding agent must be sandblasted to SSPC-10 near white metal finish immediately before the application of the bonding agent, and installation of the joint material. S.M.A.E. PRIMER must be used only on prepared, galvanized steel, bronze, aluminum, stainless steel and zinc. S.M.A.E. No. 7 PRIMER is designed to increase the adhesion of the EVA-POX Bonding Agents designed for use in conjunction with the CEVA JOINT SYSTEMS. Primer must be coated with Eva-Pox bonders within 24 hours and joint material installed. If these procedures are not followed, Primer must be sandblasted off and **re-applied.**

Ceva-Crete-Patch Surfaces: If Ceva-Crete-Patch nosing or rehabilitation is required, the concrete and steel surface preparation must be followed. All forms to maintain the joint opening should be set as specified by the contract. When form work is complete, all concrete or steel substrates must be primed, utilizing the neat resin (without aggregate) of the Ceva-Crete-Patch primer specified for use by the manufacturer. The Joint Material's recommendations for the type of application procedure will apply. Placement of the prepared Ceva-Crete-Patch mortar will than follow.

When all Ceva-Crete-Patch has cured and forms are removed (DO NOT USE GASOLINE), the joint walls must be lightly sandblasted or ground to expose the aggregate. Installation of the specified bonding agent and the Joint Material will then follow:

Mixing Procedure

BONDING AGENT

The Joint Material should be bonded to the substrates utilizing the bonding agent specified by the manufacturer of the Joint Material. The bonding agents are a two-component epoxy resin, which meets the requirements for bonding cured concrete to cured concrete, to fresh concrete, steel, wood, or other construction materials specified by the contract. Bonding agents for cold weather or moist conditions must be made by the Manufacturer of the Joint Material.

Preparation

Before starting, make sure you have the following tools:

—Electric Drill, Portable available with power packs.
—Generator with extension cord. (Optional)
—Paint mixing paddle for use with drill (about $2.00)
—4 or 5 mixing buckets, 1 gallon, cardboard or plastic.
—2 or 3 paint stirring rods, metal (wooden stirrers may break).
—6 pair rubber gloves as used for dishwashing or heavier.
—3 gallons of EVA-POX SOLVENT #31.
—Cloth Rags—enough to fill 1- 5 gallon pail.
—8 paint brushes—2 inch
—Heat welding iron—in event it is needed.
—Broom handle or hammer handle, used to push the EVAZOTE 50, EVA-SEAL, or PLASTAZOTE into joint.

Installation

Start out with a 4 man crew and reduce to 3 if possible. 2 Men will be painting the EVAZOTE 50, EVA-SEAL or PLASTAZOTE with epoxy, and 2 men will be inserting and cleaning with solvent.

First, lay the EVAZOTE 50, EVA-SEAL or PLASTAZOTE out next to the joint and double check the width.

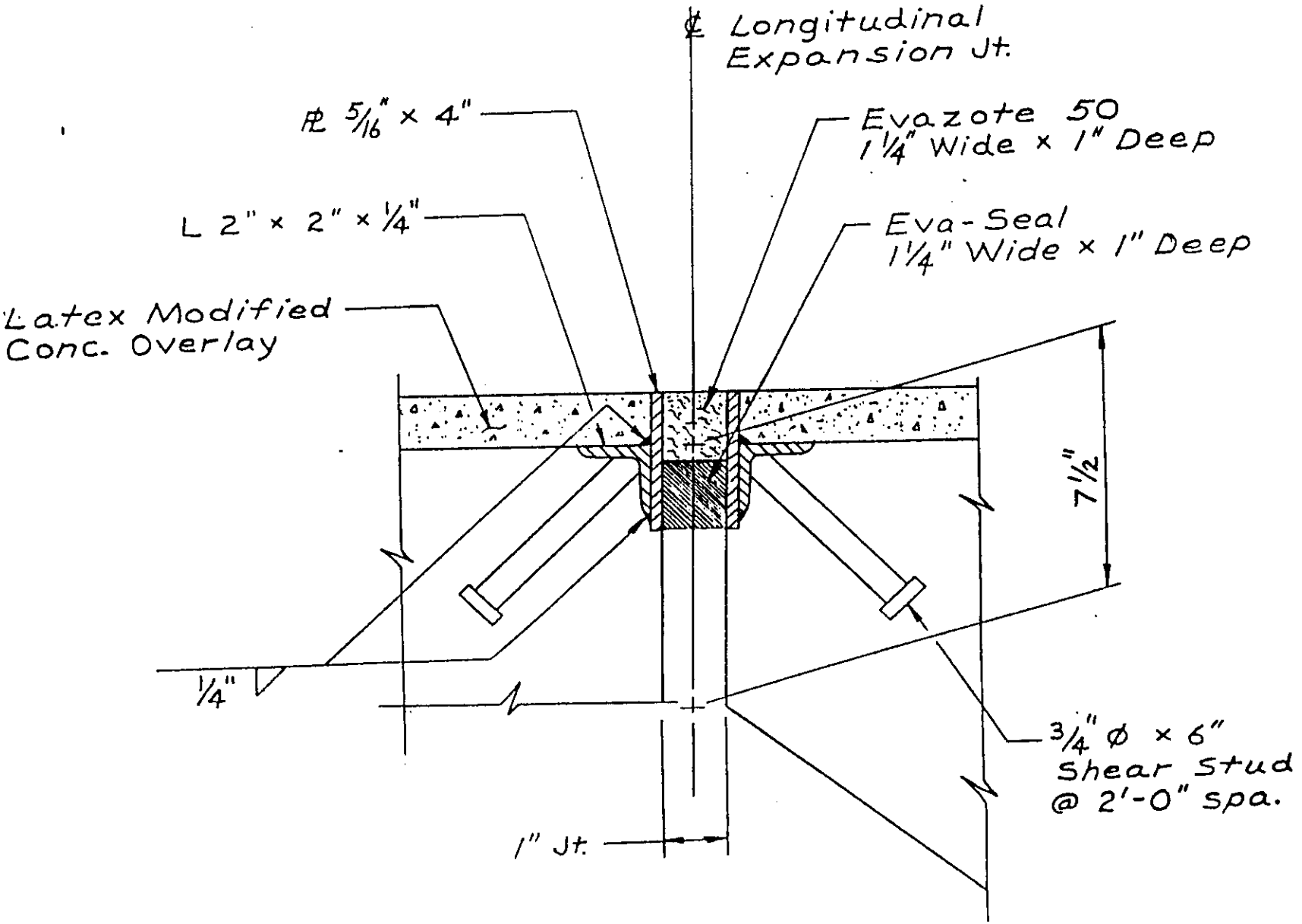
The gray or black side of the EVAZOTE 50, EVA-SEAL, or PLASTAZOTE must face up, with the heat weld that runs the full-length of the joint material being parallel. If the joint material must be narrower, use a band saw, since circular saws will not work.

Next, open the cans of Bonding Agent, #1, #2, #41. Stir the contents of the cans separately to disperse any settlement, being careful to use one metal stirring rod for the white component and another for the black one. Then pour the two components at the specified mixing ratio into the mixing bucket, mix with the drill until a uniform gray texture is achieved, then mix 30 seconds more. Start off mixing just a quart, since anymore than this may set up before you can use it. If the weather is cool, you might try slowly increasing to as much as a gallon at a time.

Start installing at one end of the joint by painting a generous amount of epoxy to the sides of both the joint material and the joint. A gallon of epoxy should cover about 60' @ 2" depth or 40' @ 3" depth, approximately 6 to 12 mils depending on the surface conditions. With gloved hands, compress the joint material and with the help of the broom handle, push it down into the joint until it is recessed approximately 1/16" below the surface. It will be slopppy at first, but that improves with experience. In pushing down on the joint material, be careful that you are not pushing at an angle that would tend to stretch it. Once started on a joint, DO NOT STOP, and be sure to CLEAN THE EPOXY OFF THE SURFACE OF THE JOINT MATERIAL QUICKLY and thoroughly using rags and solvent. The rigids epoxy would otherwise tend to cause problems as the joint material flexed underneath it.

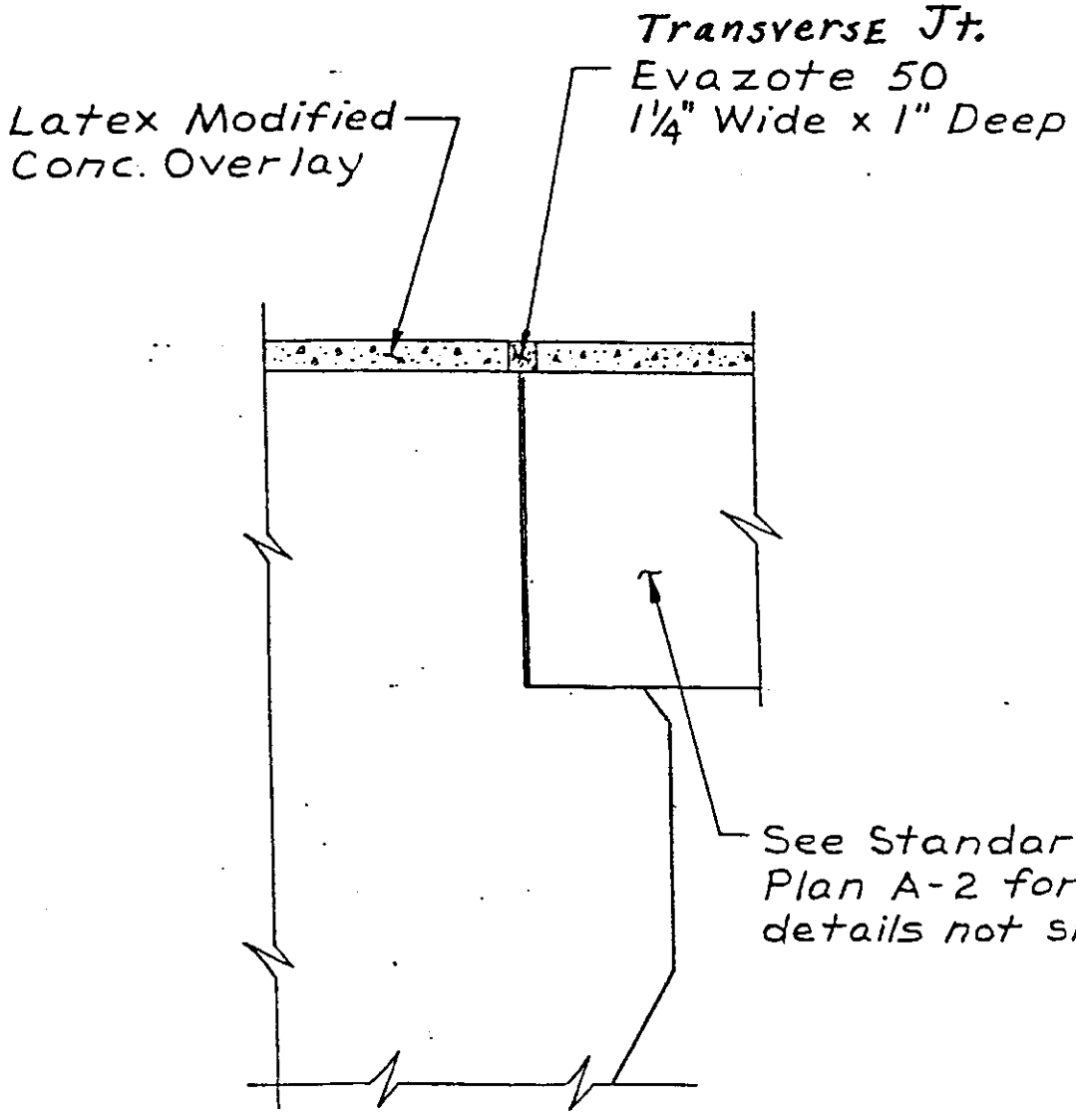
Appendix B

As Designed Plan Details


℄ Longitudinal
Expansion Jt.
PL 5/16" x 4"
Evazote 50
1 1/4" Wide x 1" Deep
L 2" x 2" x 1/4"
Eva-Seal
1 1/4" Wide x 1" Deep
Latex Modified
Conc. Overlay
7 1/2"
1/4"
3/4" ø x 6"
Shear Stud
@ 2'-0" spa.
1" Jt.

4'-0"

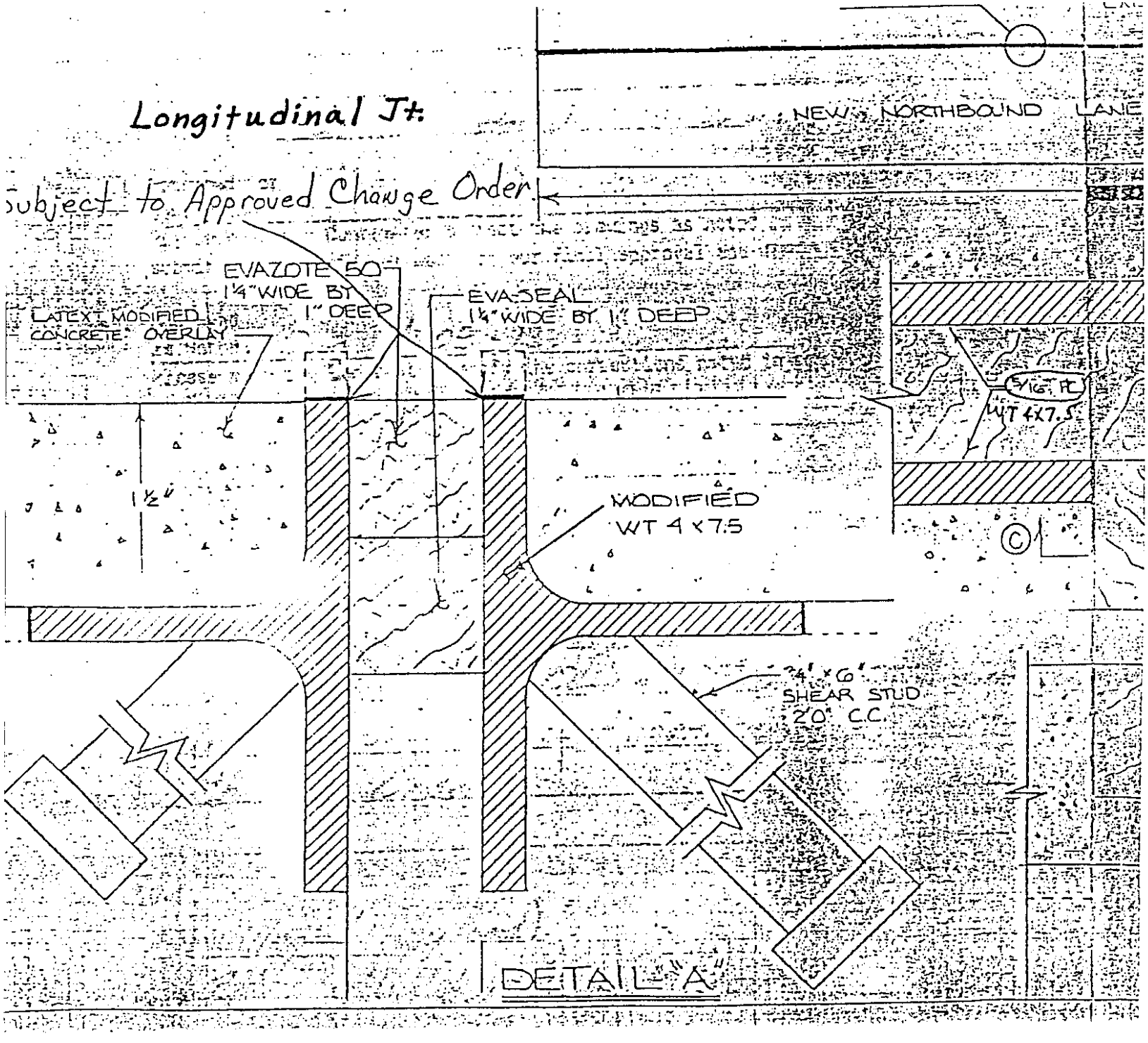
te 50



SECTION D
15

Appendix C

As Installed Construction Details


Longitudinal Jt.
Subject to Approved Change Order
NEW NORTHBOUND LANE
EVAZOTE 50
1¼" WIDE BY 1" DEEP
EVA-SEAL
1¼" WIDE BY 1" DEEP
LATEX MODIFIED CONCRETE OVERLAY
5/16" PL
WT 4X7.5
1½"
MODIFIED
WT 4 X 7.5
Ⓒ
4" x 6"
SHEAR STUD
20" C.C.
DETAIL "A"

ORIGINAL

ATTACHMENT NO. 4

Washington State Department of Transportation

Sheet 1 of 4

Date 8/23/88

CHANGE ORDER

OCT 11 1988

Change Order Number 66

☒ ORDERED BY ENGINEER UNDER TERMS OF SECTION 1.04.4 OF THE STANDARD SPECIFICATIONS

☐ CHANGE PROPOSED BY CONTRACTOR

ENDORSED BY: Quigg Bros./Tri State JV (Contractor Firm Name)

(Signature) 8/24/88 (Date)

TITLE PRESIDENT

Consent given by Surety: (When required)

BY: _____ (Attorney-in-fact) _____ (Date)

CONTRACT NO. 3087

TO: Quigg Bros./Tri State JV
P.O. Box 2405
Olympia, WA 98507

SIGN ROUTE SR 5

FEDERAL AID NO. I-5-2(148)

PROJECT TITLE Pacific Avenue Interchange

DESCRIPTION OF WORK

YOU ARE ORDERED TO PERFORM THE FOLLOWING DESCRIBED WORK UPON RECEIPT OF AN APPROVED COPY OF THIS CHANGE ORDER:

he Contractor shall repair the transverse joints on Bridge 5/332 (see sketch n sheet 4 of 4 of this change order). The following procedure shall be sed:

1. Six to twenty four inch (6" - 24") wide strips of the existing latex modified concrete overlay shall be removed on both sides of the joints. Removal shall be made by sawcutting the overlay to a neat, smooth, and straight edge line. Additionally, all latex modified concrete overlay shall be cleaned from the joint above the existing premolded joint filler. This includes removal of any latex on spalled deck or approach slab surfaces.

2. The Contractor is required to demonstrate that his equipment is capable of producing a saw cut as described above. This shall be demonstrated by the Contractor by saw cutting a narrower strip(s) within the removal zones defined above. Saw cutting of the six inch strips shall not be allowed until the demonstration and equipment proposed for this work are approved by the Engineer.

L WORK, MATERIALS AND MEASUREMENTS TO BE IN ACCORDANCE WITH THE PROVISIONS OF THE STANDARD SPECIFICATIONS AND ECIAL PROVISIONS FOR THE TYPE OF CONSTRUCTION INVOLVED.

☐ DISTRICT APPROVAL REQUIRED ☒ HEADQUARTERS APPROVAL REQUIRED	ORIGINAL CONTRACT AMOUNT	CURRENT CONTRACT AMOUNT	ESTIMATED NET CHANGE THIS ORDER	ESTIMATED CONTRACT TOTAL AFTER CHANGE
	$ 11,271,812.45	$ 11,420,951.11	+41,700.00 ~~+31,000.00~~	$ 11,451,951.11

DISTRICT USE

APPROVAL RECOMMENDED

Project Engineer 9/2/88 (Date)

☒ APPROVAL RECOMMENDED ☐ APPROVED:

STRICT DMINISTRATOR A.T. Smelser

DATE: 9.23.88

HEADQUARTER'S USE

APPROVED: MH

Highway Construction Engineer 10/19/88 (Date)

XC: Program Manager
Documentation
PE: Shenafelt

sent 10-26-88

FORM 421-003 REVISED 8/86 -1190-

3. After removing the debris and the existing "Evazote 50" glands, the surface area shall be sandblasted, air blown and cleaned to the satisfaction of the Engineer.

4. The pre-existing spalled areas next to the 1/2" opening shall be formed, and filled with Pronto 11 mix according to the manufacturer's recommendations. The air temperature shall not be less than 40 degrees F.

5. After allowing the Pronto 11 to set, the forms shall be removed. The area around the "Evazote 50" gland shall be formed and filled with Pronto 11 mix according to the manufacturer's recommendations. The air temperature shall not be less than 40 degrees F.

6. After allowing the Pronto 11 to set, the forms shall be removed and voids or gouges in the existing 1/2 inch premolded joint filler shall be air blown and cleaned of all loose debris. The surface shall be free of moisture.

7. Backer Rods (Open cell sponge type) shall be placed into the space above the existing premolded joint filler. A sufficient number and size shall be installed to fill the space to the bottom of the "Evazote 50" gland.

8. A new "Evazote 50" gland 1 1/2" wide by 1 1/2" deep shall be installed.

9. The Contractor shall submit his method of installation to the Engineer for approval prior to the installation of the Pronto 11 mix or Evazote 50 gland.

Payment for the new item, "Transverse Joint Repair-F.A.," shall be full compensation for all tools, labor, materials and equipment necessary to perform the work described above. Payment shall be per the methods given in Change Order No. 12.

In accordance with Section 1-04.4 of the Standard Specifications, the increased quantity for Sequential Arrow shall be paid at unit contract prices. Labor for Traffic Control shall be paid in accordance with Change Order 12.

There is no time adjustment associated with this change.

There will be No charge for Direct Engineering COST/INSPECTIC IN ASSOCIATION WITH THIS WORK. JG

* coated with Pronto 19

Washington State Department of Transportation

Washington State Department of Transportation

CHANGE ORDER ESTIMATE

Sheet 3 of 4

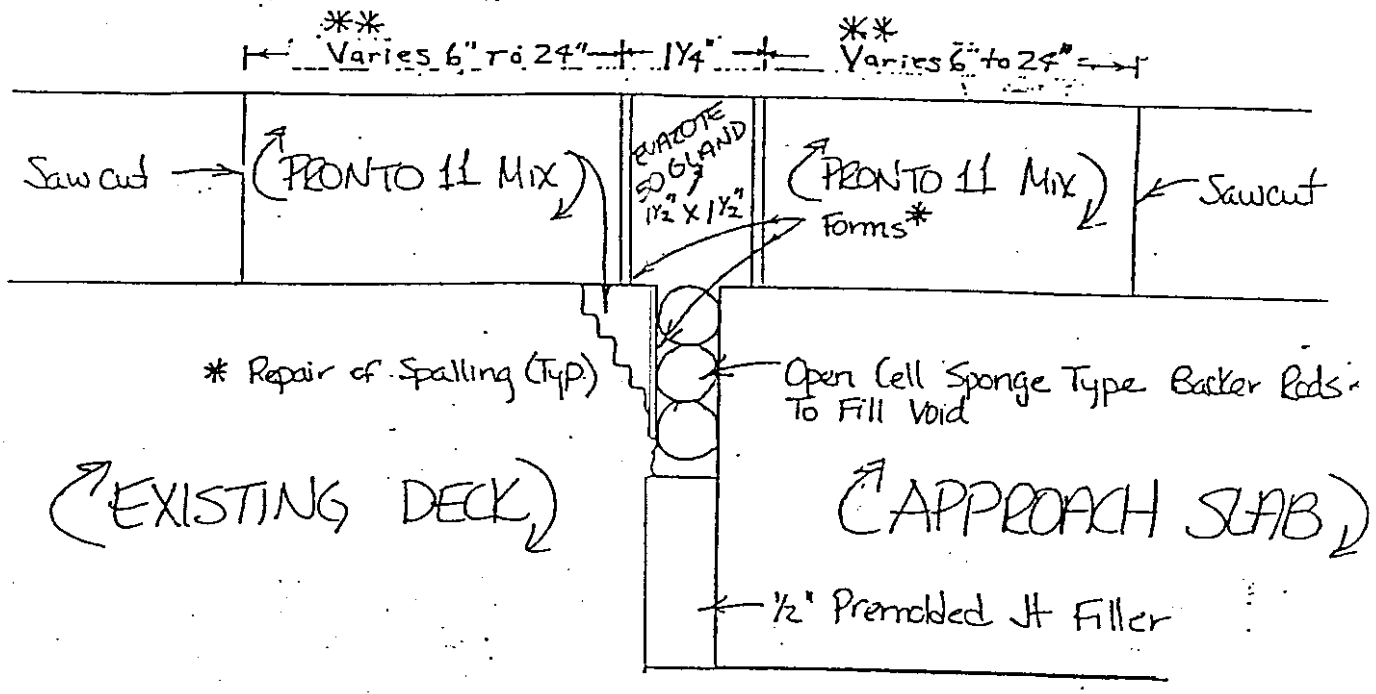
Date 8/23/88

Contract Number 3087

Change Order Number 66

ITEM NO.	GROUP NO.	STD. ITEM NO.	DESCRIPTION	UNIT MEASURE	UNIT PRICE	ESTIMATED QUANTITY CHANGE	ESTIMATED AMOUNT CHANGE
			Increase The Following Items:				
193	4	6956	Sequential Arrow Sign	hour	$10.00	70	$ 700.00
196	1	6981	Labor For Traffic Control	Est.	Estimate	Estimate	$4,000.00
			Add the Following Item:				
	1	7715	Transverse Joint Repair-F.A.	Est.	Estimate	Estimate	$37,000.00
			Est. Change Order Total:				$41,700.00

Contract 3057
Change Order No. 6
Sheet 4 of 4



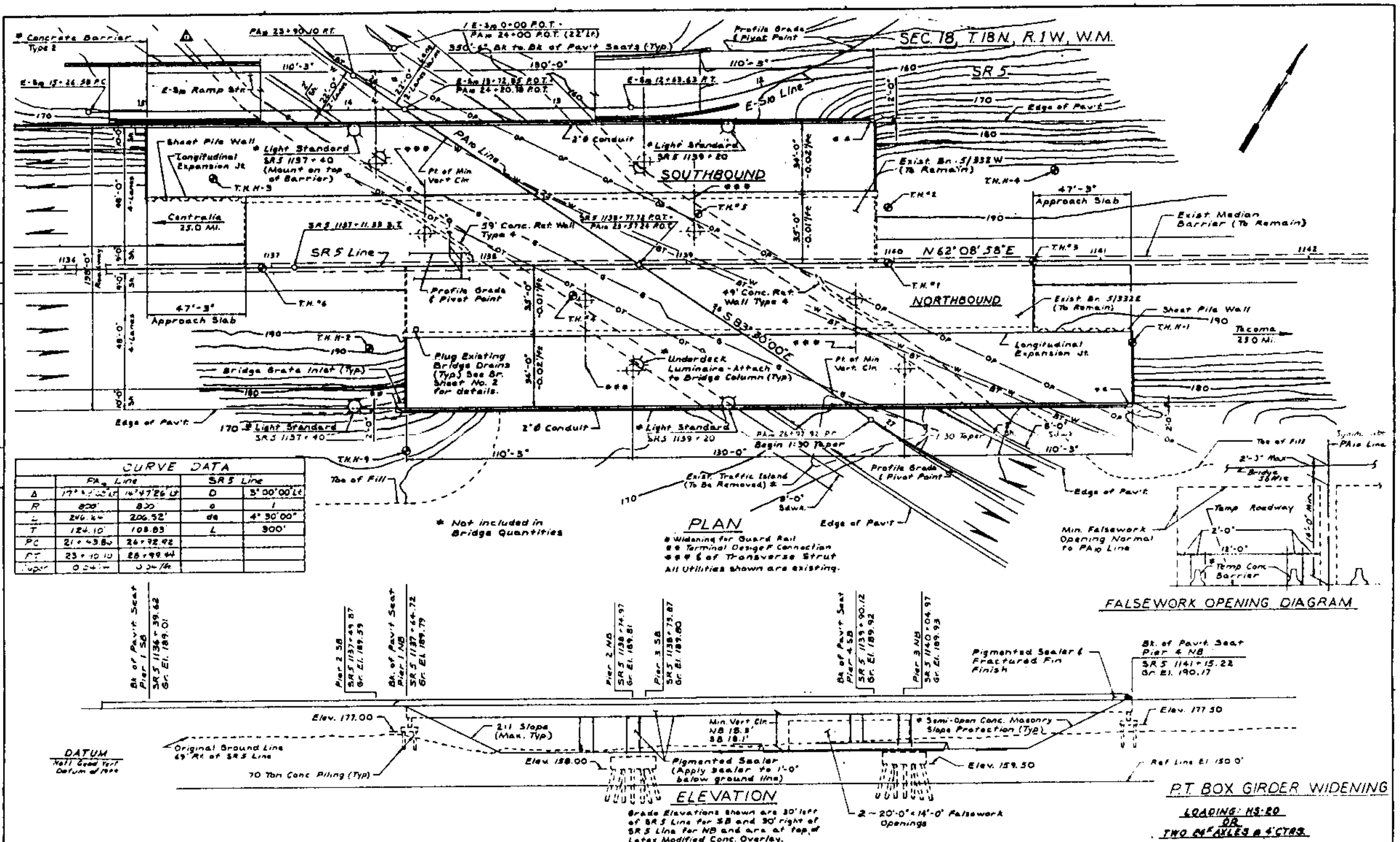
* Forms are to be removed prior to placing backer rods and Evazote 50 gland

TRANSVERSE EXPANSION JT

** Sawcut areas to be marked by engineer prior to work.

Appendix D

General Layout



CURVE DATA

	PA10 Line		SR 5 Line	
Δ	17°47'20" Lt [unclear]	14°47'26" Lt	D	5°00'00" Lt
R	800'	800'	a	1
L	246.44	206.52'	de	4°30'00"
T	124.10'	103.83'	L	300'
PC	21+43.80	26+72.92		
PT	23+10.10	28+99.44		
Super	0.04'/ft [unclear]	0.04'/ft [unclear]		

Pt. of Min. Vert. Clearance
Northbound:
PA10 26+69.92 - SR 5 1139+70.75 63.7' Rt.
Southbound:
PA10 24+44.55 - SR 5 1137+84.68 63.7' Lt.

Date	Revised	By	Appr'd
10-85	Added "** "	SDD	[illegible]

Bridge with Approach Fills
3-6 P.T. Box Girder Widening
Deck Protection System: Latex Modified Concrete Overlay
w/ Epoxy coated rebar

Bridge Design Engineer	[illegible] 5-85
Supervisor	Chas. C. Ru 5-85
Approved by	[illegible] 5-85
Designed by	J. E. Dodson 2/85
Checked by	H. Sterbet 3/85
Detailed by	John Andersen 2/85
Architect	
Preliminary Plan by	

Date	Revision	By	Appr'd
1985	Δ Removed Retaining Wall	KS	[illegible]

Region No.	State	Fed. Aid Proj. No.	Sheet No.	Total Sheets
10	WASH	I-IR-5-2(148)		

Job Number 85W146
Contract No. 3087

BRIDGES AND STRUCTURES

Sept. 20, 1985 APPROVED

Washington State Department of Transportation

SR 5
PACIFIC AVENUE INTERCHANGE
PACIFIC AVE. O'XING 5/332

LAYOUT

Bridge Sheet No. 1
Sheet 135 of 167 Sheets

DOT FORM 221-013 Revised 6-83

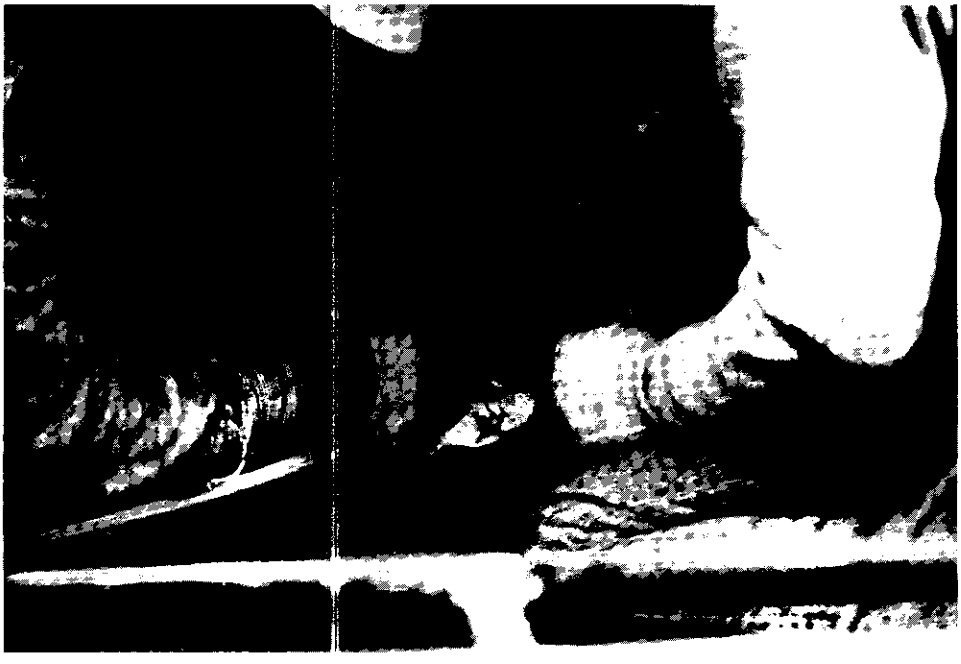
Appendix E

Project Photographs

Installation of longitudinal Evazote 50 seal.

Applying epoxy bonding agent by stick to Evazote 50 seal.

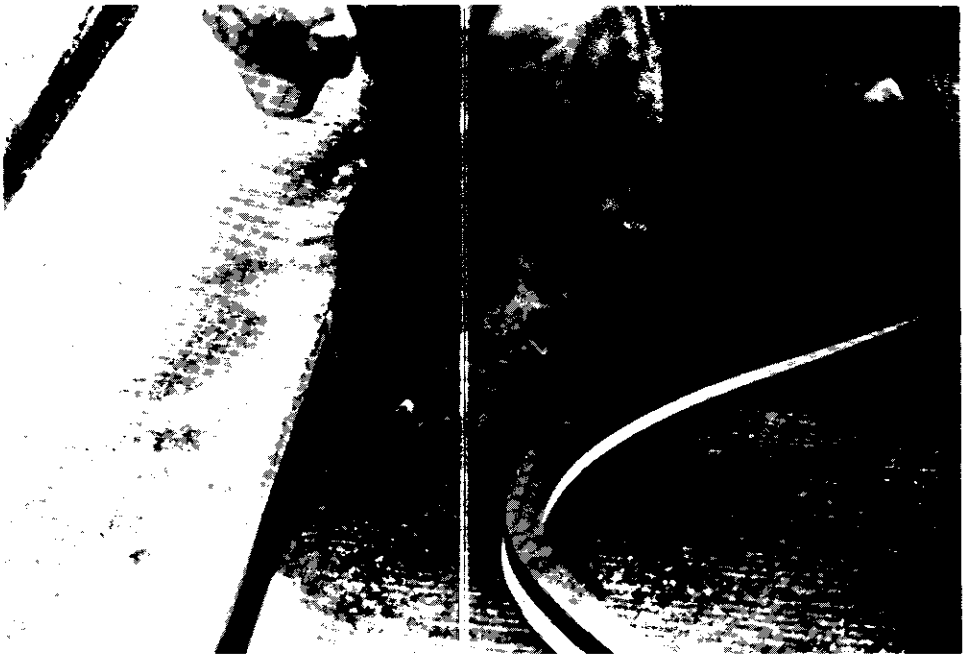
Applying epoxy bonding agent to joint.



Preparing splice by heat welding with heating iron.

Pushing seal into joint.

Another view of installing seal.



Preparing joint to receive seal.

Material, equipment, and crew.