OK SPS-6

FINAL REPORT

SPS-6 PROJECT 4006: REHABILITATION OF A JOINTED PORTLAND CEMENT CONCRETE PAVEMENT IH-35, SOUTHBOUND KAY COUNTY, OKLAHOMA

FHWA/LTPP

SOUTHERN REGION COORDINATION OFFICE

June 1993

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FINAL REPORT - SPS-6 PROJECT 4006

REHABILITATION OF A JOINTED PORTLAND CEMENT CONCRETE PAVEMENT IH-35, SOUTHBOUND KAY COUNTY, OKLAHOMA

INTRODUCTION

As part of the Strategic Highway Research Program's (SHRP) Long Term Pavement Performance (LTPP) Studies, sections of highway are being selected to apply very specific treatments to study various facets of construction (both new and rehabilitation) These projects are referred to as Specific Pavement Studies (SPS). This particular project, on IH-35 in Kay County, Oklahoma, was identified as a potential candidate for inclusion in the evaluations of concrete pavement rehabilitation (SPS-6)

SPS-6 General Experiment Design

The specific products of the SPS-6 experiment are included in Table 1 In general, the experiment is intended to evaluate some of the more common concrete rehabilitation techniques currently utilized by State Highway Agencies (SHAs) Included in this evaluation are the condition of the pavement prior to overlay (both structurally and functionally), the loading conditions the section is exposed to (including both environment and traffic), and finally the various treatment applications The standard SPS-6 experiment design consists of eight test sections, as shown in Figure 1 The test sections include two 1,000'-long concrete pavement restoration sections, one with drainage and one without; two break and seat test sections, one receiving a 4" (0 1 m) asphalt overlay and the other an 8" (0 2 m) asphalt overlay, three sections had a 4" (0 1 m) asphalt overlay placed on the existing jointed concrete pavement (one in the edge drained portion of the project, one for which joints were sawed in the asphalt overlay directly above the existing concrete joints and then resealed with hot-poured rubber asphalt, and one conventional overlay) A control section was also established at which no treatments were to be applied, to provide for comparisons with the other test sections Three of the eight joints in this test section did, however, receive some patch work to eliminate existing safety hazards.

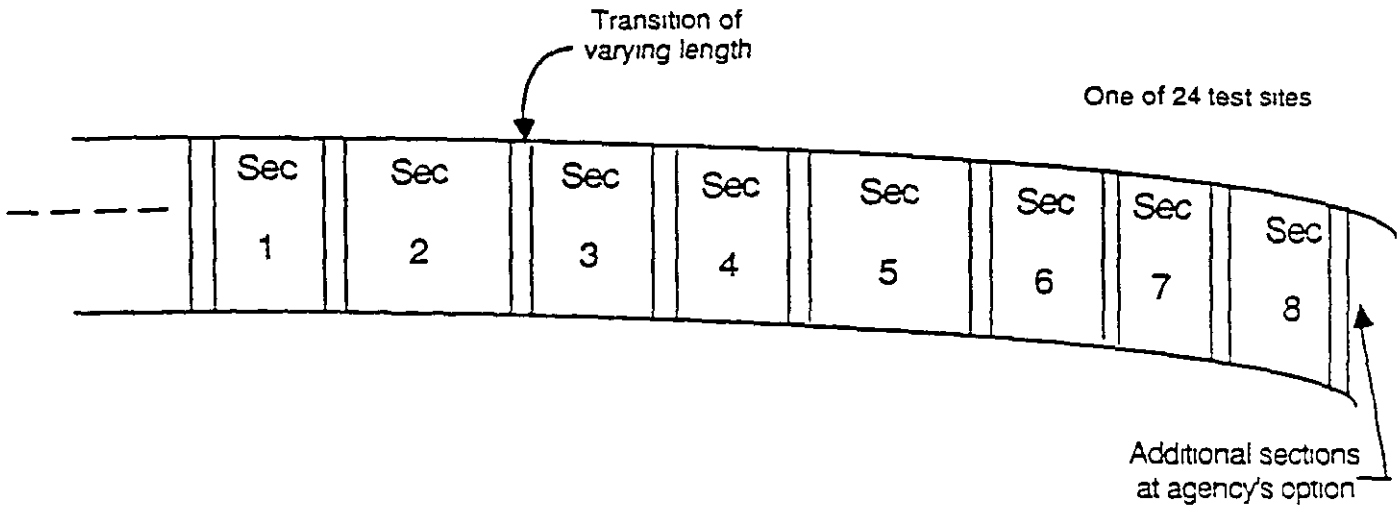
For additional information on general experiment design for SPS-6, please refer to "Specific Pavement Studies Experimental Design and Research Plan for Experiment SPS-6, Rehabilitation of Jointed Portland Cement Concrete Pavement, April 1989"

Selection/Nomination of IH-35

This project was first offered for consideration by the State of Oklahoma in January 1991. After reviewing the details provided by the state on this project and preparation of a tentative layout of the test sections (to ensure that adequate space was available for such

TABLE 1. KEY PRODUCTS OF SPS-6

Product Nº.	Description
1	Comparisons and development of empirical prediction models for performance of rehabilitated JPC and JRC pavements with different methods of surface preparation, with and without AC overlays, with sawed and sealed joints, with crack/break and seat preparation and different AC overlay thicknesses, and with and without retrofitted drainage
2	Evaluation and field verification of AASHTO Guide design procedures for rehabilitation of existing JPC and JRC pavements with and without AC overlay, and other analytical overlay design procedures for JPC and JRC pavements
3	Determination of appropriate timing to rehabilitate JPC and JRC pavements in relation to existing conditions and type of rehabilitation procedures
4	Development of procedures to verify and update the pavement management and life-cycle cost concepts in the AASHTO Guide using the performance prediction models developed for rehabilitated JPC and JRC pavements
5	Development of a comprehensive data base on the performance of rehabilitated jointed concrete pavements for use by state and provincial engineers and other researchers.



SPS-6 SECTION	JC PAVEMENT PREPARATION	OTHER TREATMENTS	OVERLAY THICKNESS
1	Routine Maintenance		0
2	Minimum Restoration		0
3	Minimum Restoration		4-inch
4	Minimum Restoration	Saw and seal joints in AC	4-inch
5	Maximum Restoration (CPR)		0
6	Maximum Restoration (CPR)		4-inch
7	Crack/Break and Seat		4-inch
8	Crack/Break and Seat		8-inch

FIGURE 1 SPS-6 EXPERIMENT DESIGN FOR REHABILITATION OF JOINTED PORTLAND CEMENT CONCRETE PAVEMENTS

a project), the project was officially nominated on February 19, 1991 Included in the nomination "packet" are details regarding traffic, project layout, candidate project nomination and information forms, along with the original typical section and plan profile sheets for this project (see Appendix A) The section was officially approved for use by SHRP-DC by their memo of March 28, 1991

Specific Experiment Design for IH-35

Plans for this project were prepared by Faria Emamian of the Oklahoma Department of Transportation (Oklahoma DOT) Design Section The title sheet, typical sections, and layout from the plans for this particular project are included as Figures 2, 3, and 4, respectively. It should be noted that the concrete pavement restoration test sections were intended to include full-depth patching, partial-depth patching, pressure grouting, load transfer restoration, diamond grinding and joint resealing Evaluations of this project during the plan preparation phase, however, established that partial-depth patching, load transfer restoration and pressure grouting were not needed Fault measurements were typically less than 0 1" (3 mm), and pavement deflection readings indicated load transfer efficiency at the joints in excess of 90% Similarly, condition surveys, delamination evaluations at the joints, and coring performed during material sampling and field testing, did not identify any areas where partial depth patches would be necessary Hence, the concrete pavement restoration for the test sections on IH-35 was limited to full-depth patching, diamond grinding and joint resealing with low modulus silicone

The cracking and seating was to be performed in accordance with the state's "crack and seat" specifications Appropriate concern was expressed by both the state and SHRP Regional Coordination Office (SRCO) during the preconstruction meeting (January 28, 1992) regarding the capabilities of the contractor's equipment for obtaining an appropriate 18" to 24" (0 5 m to 0.6 m) diamond-shaped pattern during the crack and seat operations The subcontractor scheduled to perform that work provided brochures on his equipment and reassured all parties involved that a reasonable cracking pattern would be obtained Some time between the date of the preconstruction meeting and the date this work was to be performed, however, a new subcontractor was selected for this work When this new subcontractor arrived on the job with his equipment, all parties involved expressed concerns over the capabilities of his equipment for providing the desired crack pattern. This subcontractor specialized in rubblization and his equipment was designed to fracture the concrete slab into pieces 2" to 3" (0 05 m to 0 08 m) in size After considerable review, discussion, and evaluation of this rubblization equipment by all parties concerned, it was established that the State's "crack and seat" specifications did allow for this type of equipment. With the specifications allowing for this type of equipment, and considering that it was already on the job, no one had any strong arguments or objections to justify delaying this project and risking a claim over this equipment

With this explanation then the "crack and seat" test sections on IH-35 had a much "finer" crack pattern than that incorporated in the general SPS-6 design guidelines (see letter of justification provided to FHWA in Appendix A dated August 14, 1992)

STATE OF OKLAHOMA
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED
STATE HIGHWAY
FEDERAL AID PROJECT NO IR-35-4(148)214
RECONSTRUCTION PLANS
INTERSTATE 35

KAY COUNTY

CONTROL SECTION NO
STATE JOB NO 11392(04)

INDEX OF SHEETS

INDEX OF SHEETS

TITLE SHEET	1
TYPICAL SECTIONS	2
TYPICAL SECTION & SUMMARY SHEET	3
SUMMARY OF QUANTITIES & DETAIL SHEET	4
SHRP TEST SECTION SUMMARY SHEET (SOUTH BOUND)	5
SUMMARY OF PAY QUANTITIES	6
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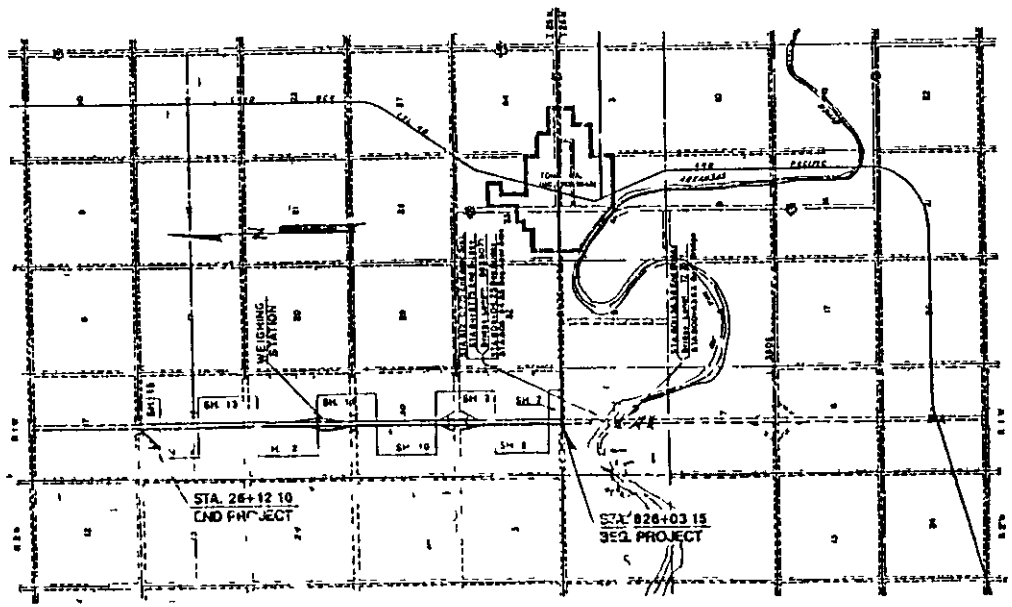
DESIGN DATA

ADT 1989	= 8400
ADT 2010	= 16,800
DHV	16%
D	= 60%
T (% ADT)	33%
V	= 65 MPH

SCALES

PLAN 1" = 100'
PROFILE HOR 1" = 100
VER. 1" = 10'
LAYOUT MAP 1" = 3 000



EQUATION
STA. 0+00 ℄ SURVEY S.W.O. # 21-4(1) FAP I-456
= STA 1011+07.90 ℄ SURVEY F.A. PROJ. NO. IR-35-4(148)214

ROADWAY LENGTH - - - - - - 211.165 FT. 4.000 MI.
BRIDGE LENGTH - - - - - - - 00.00 FT. 00.000 MI
PROJECT LENGTH - - - - - - - - - - - - 4.000 MI

1989 OKLAHOMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION COVERED APPROVED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION, JANUARY 3 1983 SUPPLEMENTAL SPECIFICATIONS TO THE 1989 STANDARD SPECIFICATIONS TO GOVERN OVER THE STANDARD SPECIFICATIONS.

EXCEPTIONS BRIDGE & LENGTH = 181.8

OKLAHOMA DEPARTMENT OF TRANSPORTATION	DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION
DATE APPROVED	DATE APPROVED
BY CHIEF ENGINEER	BY DIVISION ADMINISTRATOR

S.W.O. NONE F.A. PROJECT NO. IR 35 4(148)214 SHEET NO. 1

FIGURE 2 4006XX TITLE SHEET

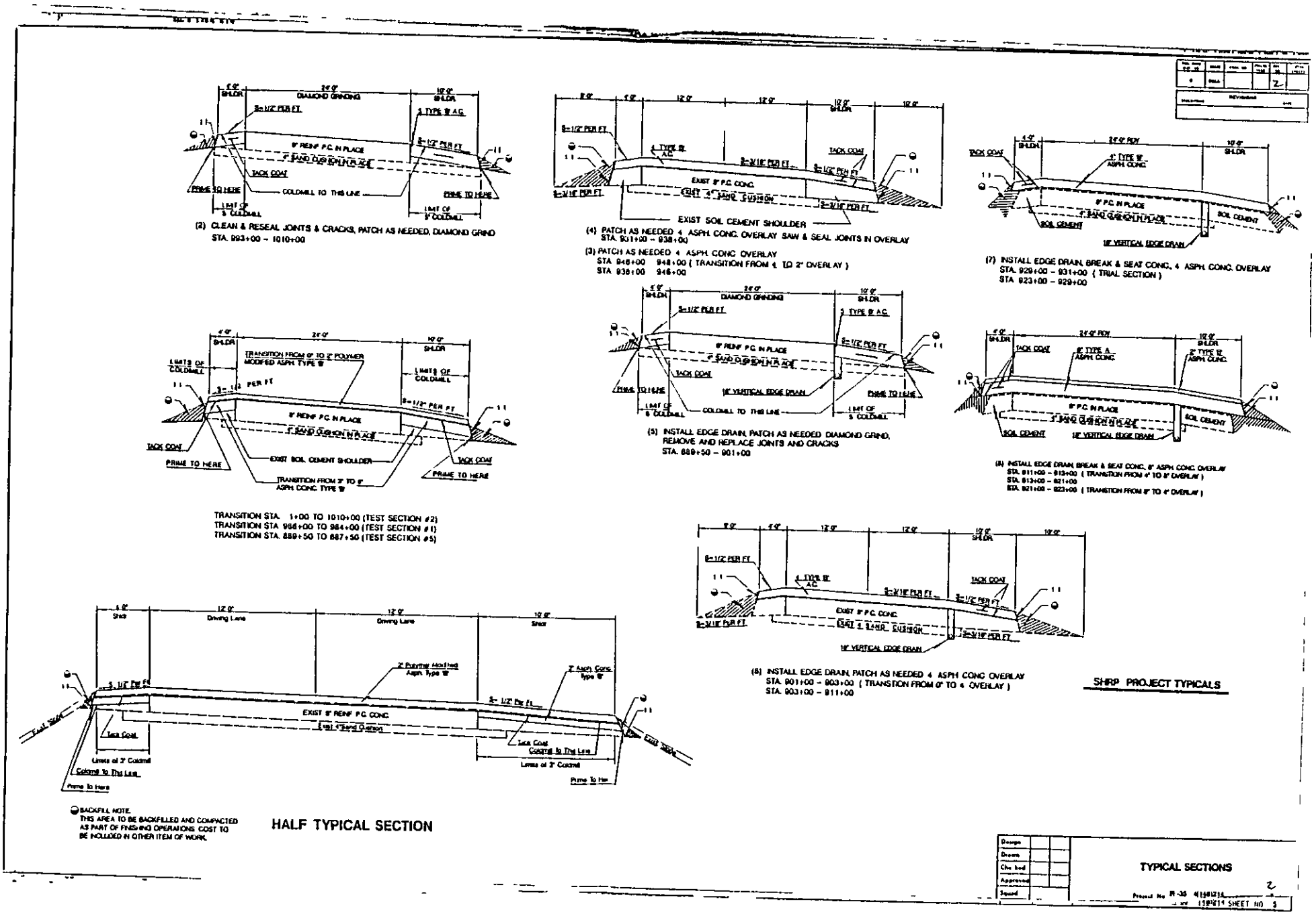


FIGURE 3 4006XX TYPICAL SECTIONS

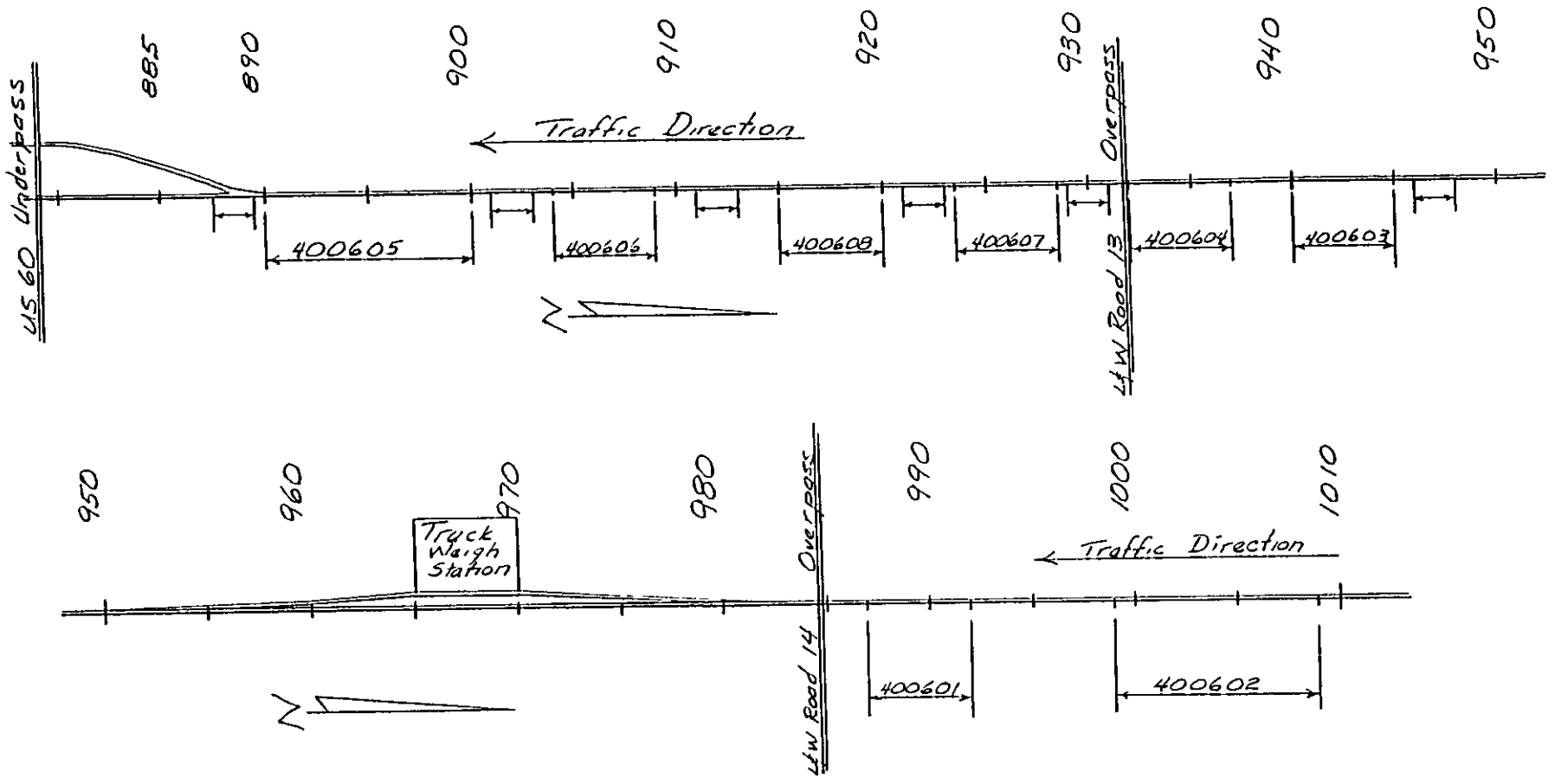


FIGURE 4 4006XX SITE LAYOUT
(MP 214 - MP 218, SOUTHBOUND LANES)

PRECONSTRUCTION MONITORING

Numerous monitoring measurements and evaluations were made of this particular stretch of IH-35 to establish its condition prior to the application of these rehabilitation treatments Each of these will be discussed separately below

Pavement Surface Distress

This particular stretch of IH-35 was filmed October 28, 1991 by the PASCO ROADRECON unit Reduced distress data from this filming is not yet available, however Details of the distresses present prior to construction are available from manual distress surveys conducted October 11, 1991 and July 28, 1992 The pavement surface does appear to have some map cracking Coring and delamination tests, however, did not identify any problems with potential delamination Faulting at the joints was fairly minimal (less than 0.1" (3 mm) on average). A few joint spalls and corner breaks were noted, however, in general deterioration of the joints was considered minimal

Surface Profile

In addition to the numerous rod and level measurements made immediately prior to construction (see Appendix B), this section was also profiled using SHRP's high-speed profilometer on January 14, 1992 The high-speed profilometer produces a longitudinal profile of the travel lane for each section at 6" (0.15 m) increments Results of this work are included in Table 2 As this pavement profile can, to some extent, be considered a reflection of the joint faulting present, a summary of the fault measurements at each of the joints throughout the project for each section are included in Table 3.

Structural Capacity

Deflection measurements were taken January 28 - February 6, 1992, using the SHRP Falling Weight Deflectometer (FWD), to evaluate the structural capacity of each of these test sections. The FWD drops a series of varying weights in a set pattern at the corners and mid-span of each slab edge, joint/load transfer tests in the outside wheelpath and mid-slab basin tests throughout each test section. Results of this deflection testing are included as Appendix C.

Materials Sampling and Testing

As specified for all SHRP test sections, a thorough materials sampling and testing program was established for these sections on IH-35 in Kay County, Oklahoma (see Appendix D) Sampling included extractions of 4" (0.1 m) and 6" (0 15 m) diameter cores, 6" (0.15 m) auger probes, and three 6' × 4' (1 8 m × 1 2 m) test pits to a depth of 12" (0 3 m) just below the top of the untreated subgrade All sampling was conducted by the Oklahoma DOT with the actual testing work being contracted out. Preconstruction sampling was conducted June 3, 1992, and coordinated with the SHRP SRCO A representative of the SRCO was present for all preconstruction materials sampling and field testing.

TABLE 2
PROFILE READINGS
International Roughness Index (IRI) in inches/mile

	Preconstruction Date Surveyed 1/14/92			Postconstruction Date Surveyed 3/16/93		
SECTION	LEFT	RIGHT	BOTH	LEFT	RIGHT	BOTH
400602	137	130	134	71	68	69
400601	126	114	120	122	114	118
400603	103	98	101	47	47	47
400604	113	119	116	54	54	54
400607	122	97	110	69	68	68
400608	113	90	102	81	80	81
400606	104	100	102	60	57	58
400605	98	88	93	45	49	47
Average	115	105	110	69	67	68

TABLE 3
JOINT FAULTING MEASUREMENTS (mm)

SECTION	JOINT LOCATION	0.3 m PRE	0.3 m POST	0.75 m PRE	0.75 m POST
400602	12.4	1	0	1	0
	32	6	0	2	0
	50.6	5	0	3	0
	68.4	1	0	0	0
	88.5	5	1	5	0
	106.6	4	1	4	1
	115.4	8	8	8	6
	124.6	2	−1	1	1
	144	5	1	6	1
	162.2	4	1	1	1
	180.9	2	0	2	−1
	200.8	2	0	1	0
	219	7	3	3	1
	238	2	0	2	0
	255.9	1	0	0	1
	274.6	0	0	0	0
	294	2	3	3	2
	Average:	3	1	2	1
400601	0.5	0	0	0	1
	19.5	0	0	1	1
	38	1	2	1	1
	56.5	1	1	1	1
	70.3	8	7	1	1
	87.3	2	2	2	2
	106.1	1	2	2	2
	125.5	7	16	7	9
	144.5	6	7	4	5
	Average:	3	4	2	3
400603	18.8	4		2	
	37.2	0		0	
	56.1	1		2	
	74.7	2		3	
	93.5	1		0	
	113	3		1	
	132	5		−1	
	150.7	2		2	
	Average:	2		1	
400604	12	3		2	
	30.6	2		1	
	50	1		2	
	69.6	4		3	
	87.6	3		3	
	107.1	5		8	
	127	5		5	
	143.5	0		0	
	Average:	3		3	

SECTION	JOINT LOCATION	0.3 m PRE	0.3 m POST	0.75 m PRE	0.75 m POST
400607	15.6	2		1	
	34.6	0		3	
	53.3	4		6	
	71.7	1		2	
	90.5	2		5	
	127.8	0		0	
	146.6	3		0	
	Average:	2		2	
400608	0.1	2		2	
	9.3	1		2	
	18.7	4		2	
	37.5	1		2	
	56.3	1		1	
	75.3	1		0	
	93.7	2		7	
	112.7	0		3	
	131.5	0		0	
	150.3	2		1	
	Average:	1		2	
400606	16.3	0		2	
	35	0		2	
	45.5	6		8	
	54.5	6		7	
	73.3	6		8	
	91.5	7		7	
	109.8	2		2	
	128.3	2		2	
	147.5	5		3	
	Average:	4		5	
400605	4.3	6	1	5	1
	23	6	1	6	1
	42	8	2	3	0
	60	2	0	3	0
	79	2	0	1	0
	98	6	0	3	1
	112.3	1	−1	2	0
	116.3	2	3	2	2
	130.8	3	1	2	0
	150	5	1	2	1
	167.5	1	1	2	1
	187	2	0	1	0
	205.3	1	0	1	1
	215	2	0	5	2
	224.4	1	1	1	2
	237	6	1	3	1
	254.8	1	1	1	1
	273.8	0	0	1	0
	292.8	4	0	4	0
	Average:	3	1	3	1

CONSTRUCTION

The following text details any and all unusual features relating to the construction and completion of the concrete rehabilitation on IH-35 in Kay County, Oklahoma, for inclusion in SHRP's SPS-6 study as Sections 400601 through 400608 For the purposes of discussion here, "unusual" features will be defined as that information which cannot be, or has not been, recorded elsewhere on the data forms associated with this project, or those features which are considered to be particularly unique to this project The construction data forms themselves are included as Appendix E

The project, Federal Aid Project Number IR-35-4 (148) 214, is in the southbound lanes of IH-35 in Kay County, Oklahoma This project began 16 miles south of the Kansas State Line and extended south four miles. The project was let to Cummins Construction on November 30, 1991 The preconstruction meeting for this project was held January 28, 1992, at the Division Office in Perry, Oklahoma Although there were numerous questions regarding the work to be accomplished as part of this SPS-6 project, there were no significant concerns expressed regarding the accomplishment of the work desired

Monday, July 27, we arrived on the project for what we anticipated to be the beginning of construction for these particular test sections Full-depth patching on this particular project had already been completed, however Details on the patching were made available to us by the Oklahoma DOT through existing construction records

When we arrived on the job Monday morning (July 27, 1992), the pavement breaker had not arrived on the project and therefore we began doing our distress surveys on Sections 5 through 8. After completing our distress surveys at approximately noon, the pavement breaker did arrive and testing of the equipment began on a small section at the beginning of the transition into Section 7 It was quickly noted that this equipment was not a traditional concrete breaker device, but rather a resonant frequency breaker An 8" (0.2 m)-wide foot rides along the surface of the pavement at a relatively high frequency approximately 44 beats/second shattering the concrete as it goes As this work is not consistent with what was anticipated for Sections 7 and 8, coordination ensued with the state personnel to clarify this concern In reviewing the "break and seat" specifications, it was found that in fact they had required/specified that 80% of the broken material would be less than 6" (0.15 m) in size. This work is more commonly referred to as rubblizing. The state personnel on the job were as agreeable as possible and offered to waive the specifications for our test sections However, with this resonant frequency breaker that the contractor had brought on the job, it was not possible to do true breaking and seating Attempts were made to run the equipment through a section faster, space the passes of the equipment further apart, and use different size "shoes" on the breaker, in an attempt to provide a pattern more comparable to break and seat. However, these efforts did not provide desirable results In each case, the area where the breaker had been run over was crushed leaving a longitudinal "trail" Areas between the passes did more closely resemble a break and seat pattern, but it was feared that the pattern of the crushed and uncrushed longitudinal strips through the sections would not perform at desired With this in mind, Sections 7 and 8 were rubblized as specified by the state.

The rubblizing work on the outside lanes began at 1 50 p m on the afternoon of Monday, July 27th, with the work on the outside lane being completed by 6 50 p m. that evening On Tuesday, July 28, the rubblizing on the inside lane was completed and preparations for the overlay itself were initiated

A 39-ton pneumatic roller was used to seat the broken concrete Two passes were made over the section A pass here is defined as one round trip over a given area of the section

On Wednesday morning, July 29th, deflection testing was performed to evaluate the effect of this pavement breaking on the stiffness of the test sections Some trenching was also done in several locations to visually examine the fracture of the slabs with depth Both evaluations indicated that the slab had been broken full-depth It was interesting to note that the pieces at the surfaces were typically 2″ × 2″ (0.05 m × 0 05 m), whereas the pieces below the steel were closer to 6″ × 6″ (0 15 m × 0 15 m)

Prior to initiating the overlay of the break and seat sections, they were watered down in an attempt to wash away some of the dust and fines that might inhibit bonding of the AC to the broken slab. The first 2″ (0.05 m) of Type B mix were placed on Section 7 and completed by 1 00 p m on Wednesday, and the first 3″ (0 08 m) of Type A mix were placed on Section 8 and completed by 5 30 p m that day

The plant was a Caterpillar 2000 drum mixer It was located 7 miles north of our project, just off of IH-35, in Blackwell, Oklahoma The paver was a Cedar Rapids Greyhound CR461 The tackcoat used during paving was an SS-1. A 50/50 dilution rate was used

Three rollers were used in the compaction of the hot mix used The breakdown roller was a 10-ton Hyster steel-wheeled vibratory roller which made two passes over each section. The intermediate roller was a 12-ton Bomag pneumatic roller which made five passes over each section, and the final roller was a 13 5-ton Hyster steel-wheeled static roller which made two passes over each section.

In the afternoon of July 29th, samples of the loose mix and combined aggregate for the "surface course" (Type B mix) were collected, along with samples of the loose mix from the "binder course" (Type A mix) We did not collect the samples of the combined aggregate for the binder course or the oil, on Wednesday, because we did not have sufficient containers. Additional containers were requested later that afternoon (and received on Friday).

On Thursday, July 30, installation of the edge drains began. The Advanedge® pipe system is being used on this project This system consists of a 2″ × 18″ (0 05 m × 0.46 m) rectangular plastic perforated channel which is encapsulated by a filter fabric It is being placed as close to the slab as possible (typically 3″ to 9″ (0.08 m to 0.23 m)) with the top of the channel positioned 1″ (0 03 m) below the top of the slab The system was installed using a Vermeer saw to cut a trench 19" to 20" deep × 4" wide (0 48 m to 0.50 m deep × 0.1 m wide) . The Vermeer saw was equipped with an attachment which laid the pipe immediately behind the saw and pushed the sand subbase material trenched out back into the hole. The sand was then compacted in place. Laterals were cut through the shoulder

at a 300′ (91 m) spacing to drain the system off into the shoulder Installation of the edge drains continued through Friday, July 31st. The installation of the system itself was completed later that afternoon

The lateral drains were completed Monday morning, August 3rd. The lateral drains were initially installed after a heavy rain Saturday The trench was then back- filled with the material that was cut out for installation of the pipe. This material, however, was very wet Monday morning it was decided by the inspector that that material had to be dug back out because under wheel load it was sinking some 8″ to 12″ (0 2 m to 0.3 m) The trenches were re-opened down to the top of the pipe and then shoveled out around the pipe and were then back-filled with screening material from the plant It should be noted that this material is not very similar to the "natural material" that was removed from the trenches (the sand cushion or the clay subgrade) Paving on the second lift of the A-mix on test section 400608 was completed late in the afternoon on August 3rd

During the crack and seat operations and installation of the edge drains, all traffic had been detoured to provide room for completing this work efficiently With the completion of these phases of the project, the detour was shut down and traffic was re-routed through these sections. Work on the final paving of these sections began after the re-routing of traffic was complete

On August 7th, the surface course of Type B mix was placed on Sections 7 and 8. The contractor took August 8th off, but on Sunday, August 9th, they began paving the remaining sections (Sections 3, 4, and 6). The first lift of Type B mix was placed on each of these sections on August 9th On August 10th, the surface course (the second and final lift) of Type B mix was placed on Sections 3 and 4 Rain precluded any work being done on August 11th, but on August 12th the second and final lift of Type B mix was placed on Section 6, completing the asphalt paving within our test sections The next week was spent pulling up the shoulders and completing the work adjacent to our sections

On August 12th, while placing the surface mix on Section 400606, the paver lost auto plane at Station 4 + 60 and began to taper down. The contractor tried to repair this area by tapering in new AC, but the area came out fairly rough. They were instructed to remove this material and put in a transverse joint. During this operation, some dirt and grass were tracked into this area, but no effort was made to sweep the dirt or grass away prior to the placement of the new AC.

On Wednesday, August 19th, upon returning to the SPS-6 project,it was noted that the contractor was in the process of covering the last 40′ to 45′ (12 m to 14 m) of Section 400605 (the section which was supposed to be diamond ground, not overlaid). The next hour was spent attempting to convince the field personnel that this would not be acceptable. They ultimately agreed to remove this asphalt from 400605 and the diamond grinding contractor was asked to remove the asphalt after he completed the other diamond grinding work.

Concerns were also expressed by the local field personnel over the diamond grinding work, noting that the existing steel was quite close to the surface in places, and that this might

ultimately present some performance problems They also noted concerns regarding the visible surface cracking. They were of the opinion that this was delamination which was already beginning (i e , map-cracking about to scale) However, from our preconstruction material sampling, no such surface delamination was encountered at the locations sampled It was noted, however, that their points were well taken and that this is why this project is considered to be research We will not be able to prove or disprove their concerns until after the work has been performed and monitored with time.

We went on to discuss the saw and seal operations for Sections 400604 The state had had their survey crew come out and offset the position of the existing joints in the shoulder and median prior to beginning overlay work on this section The plan was to use these pins to aid in positioning the saw for cutting new joints in asphalt overlay directly above the existing joints Unfortunately, several of the pins were displaced during some shoulder work performed by the contractor Again, the local field personnel expressed some concern that we may not be able to adequately position the saw cuts anymore, and wondered if we still wanted this work to be done They were assured that we definitely wanted the work to be done We discussed several alternatives for aiding us in relocating these joints The pins still existed along the median at each of the joints, but there was some concern that the saw cuts would not match the joints exactly, if we used this one point alone Similarly, simply measuring the distance from a known joint would require the assumption that we knew exactly how far the joints were spaced Construction variability being what it is, this assumption allowed an error of ± 2″ to 3″ (0 05 m to 0 08 m) This was not considered desirable by all parties concerned. The prospect of coring to locate the joints more exactly was considered, but it was feared that this would be a fairly time-consuming, costly, and potentially detrimental process We ultimately settled on taking 6″ (0.15 m) nails and driving them through the 4″ (0 1 m) overlay. When properly positioned, the nail would be driven into the joint When not over the joint, we would hit the concrete slab and the nail could not be driven in any further We were able to find five of the eight joints in this fashion. The remaining three joints were those which had been patched, and the joint openings left after patching were not wide enough for us to drive these 6″ (0 15 m) nails into them The approximate location of these patches were identified (give or take a couple of inches) and the state and their contractor were left to locate them more accurately, if at all possible. One of the patches did have pins on both sides remaining, which meant that only two joints really were of some concern

It was also proposed by the local field personnel that one joint be sawed intentionally out of position (by 3″ or 4″ (0.08 m or 0.10 m)) to see what would happen We all agreed that it would be interesting to see how this would perform, but requested that the joint he picked be in one of the transition areas, not in our section It was speculated that if the joint was sawed within 3″ (0 08 m) of the original we should be okay, but there was some concern that the potential for spalling of the overlay might exist. Again, it was noted that this was why they called this job a "research project".

On Thursday, August 20th, the diamond grinder (Highway Services, Inc , from Rogers, Minnesota) arrived on the job and began setting up for work at Section 400602 At 9.30 a.m., diamond grinding began. At the north end of the project, 1,700′ (518 m) were to be treated with diamond grinding. The work started 200′ (30 m) in advance of Section 2 and

extended to 500′ (152 m) off the end of Section 2 (just 100′ (15 m) short of the control test section). The equipment used was a Cushion Cut diamond grinder This unit had a 37½″ (0.95 m) wide cutting head with 168 blades It cut nine grooves per 2″ (0 05 m) span, leaving roughly 0.1″ (3 mm) peaks and 0 1″ (3 mm) valleys We clocked the unit doing roughly 400′/hour (122 m/hour, or 7′/minute (2 m/minute). The first pass cut along the outside shoulder was completed by 2 15 p m. on August 20th The second pass was started at 3 15 p.m. and completed by 7·30 p m. that same day The state also brought out their profilograph to conduct a preliminary evaluation of the ride before and after grinding. The existing pavement was recorded as having 23 96″ of roughness/mile. After diamond grinding, the profilograph recorded 5 93″ of roughness/mile.

On Friday, August 21st, the third pass of diamond grinding was begun at 8 00 a m and completed at 12:30 p m Traffic was rerouted to the outside lane and the fourth pass along the center lane was initiated at 1.15 p.m At 4 00 p m, Station 10 of Section 400602 (the outside lane) was completed

On Monday, August 24th, the inside lane was completed and by 1·30 p m they were in the process of moving down to the south end of the project and Section 400605 Less grinding was required at this end of the section, as the transitions had been covered by asphalt (as previously noted) Only 1,050′ (320 m) required grinding at the south end of the project At the rate of 400′/hour (122 m/hour), they were able to do a complete pass in approximately 2½ hours Two passes in the outside lane were completed August 25th Unfortunately, shortly after they began work on the morning of August 26th, it began to rain and only a small portion of the third pass was completed Diamond grinding was completed on Section 5 on Thursday, August 27th

While diamond grinding was being completed, joint sealing was initiated in Section 2 This work progressed fairly rapidly, with two saws being used to open the joints. Immediately after sawing was completed, the joints were water-blasted, and sand-blasting was performed just before the low modulus silicone sealant was installed. The two saws were used in series, with one sawing one face of the joint and the following saw trimming the other face of the joint This provided a fairly clean joint to work with when the sawing was completed Sawing of the joints in Section 2 began at 1 00 p m. on August 27th and all sealing in this section was done by 4 00 p m. Although there were few transverse joints (17 at 60′ (18 m) joint spacing), this was an impressively rapid operation On August 28th, sawing and sealing of the joints in the asphalt overlay of Section 4 were completed For these joints only, one pass of the saw (1½″ in depth × 0.3″ in width (0 04 m × 0.08 m)) and no cleaning operations were utilized (i.e., no water- or sand-blasting). These joints were sealed with Krafco Roadsaver 222 Again, even though only 8 joints required sealing in our test section, this operation was completed in less than 1 hour

On August 29th, joint sealing in Section 5 was completed. The joints had previously been sawed on August 27th, so all that remained to be done was to clean the joints and seal them.

With the completion of this sealing work on August 29th, all work within the test sections on this SPS project were completed.

All data forms have been completed, noting the construction details and asphalt mix designs (where asphalt overlays were placed), and are included as Appendix E The only data not available is the nuclear density measurements and profilograph measurements, as noted on Construction Data Sheet 9, and the asphalt concrete overlay mixture properties "as placed", Rehabilitation Data Sheet 8. No in situ testing was conducted by the state other than the testing included in the materials sampling and field testing plan for SHRP. This data is included, however, as part of the lab test results for this project

POSTCONSTRUCTION MONITORING

With the completion of the treatment applications, postconstruction monitoring was initiated. These monitoring activities are identical to those conducted prior to the treatment applications, and are intended to establish how these various treatment applications affect the performance of this highway

Pavement Surface Distress

The test sections were filmed by the PASCO ROADRECON unit on March 10, 1993 Again, this film has not yet been reduced. Manual distress data collected on November 5, 1992 however, indicates that little if any distress is present, as one might expect, having just completed the rehabilitation treatments in August 1992

Surface Profile

In addition to the rod and level measurements included in Appendix B, these sections were again profiled using the SHRP high-speed profilometer on March 16, 1993. The results of this profiling are included in Table 2. The plots of rod and level data before and after rehabilitation are included in Appendix B

Structural Capacity

Deflection measurements were again taken, after completion of the treatment applications in April 1993. These results are also included in Appendix C

Materials Sampling and Testing

The postconstruction sampling and testing was conducted on August 31, 1992 The postconstruction sampling consisted of extracting 20-4" (01 m) diameter asphalt cores from those sections overlaid with HMAC (400604, 400603, 400607, 400608, and 400606) The sampling was again conducted by the Oklahoma DOT. Some problems were encountered with the 2-2" (0.05 m) thick lifts separating during sampling Every effort was made to minimize this splitting of samples and ultimately complete cores were obtained for all but the 8" (0 2 m) thick overlays placed on Section 400608 For this 8" (0.2 m) overlay, only one complete core was obtained. This 8" (0 2 m) overlay was placed with 2-3" (0.08 m) lifts of Type A mix and 1-2" (0.05 m) lift of Type B mix It was noted that the bottom 3" (0.08 m) of this overlay were not well bound together, as aggregate dropped from the cores during sampling

All samples were provided to the testing laboratory, along with those samples collected from preconstruction sampling. All laboratory testing has since been completed Samples have also been provided to the Materials Reference Library (MRL), should these materials be needed in the future for additional testing

SUMMARY

Having completed the construction and initial monitoring of these test sections, it appears that the test sections on IH-35 in Kay County, Oklahoma, will contribute significantly to the evaluation of concrete pavement rehabilitation. This project would not have been possible without the support of the Oklahoma Department of Transportation. In particular, much of the credit is due to the help of David Streb and David Ooten from the Oklahoma DOT Research Division, Truman Gunn and Mike Beier from the Perry Division Office, and Faria Emamian from the Oklahoma DOT Design Division Their willingness to provide the additional work necessary to make this project possible is greatly appreciated

With the construction completed, we will now continue to monitor these sections with time, noting changes in the surface distress, surface profile and structural capacity, and compare those changes against the loadings these sections are exposed to (both environmentally and from traffic), and in combination with other projects like this one around the country, improve on existing concrete pavement rehabilitation design methods

APPENDIX A

SITE NOMINATION INFORMATION AND OTHER PERTINENT PROJECT CORRESPONDENCE

STRATEGIC HIGHWAY RESEARCH PROGRAM

Southern Region 8240 MoPac Expressway Suite 250 Austin TX 78759 Tel (512) 346-7477 Fax (512) 346-8750

HOMER G WHEELER
Regional Engineer

April 1, 1991

Mr. S.C. "Pete" Byers, P.E.
Assistant Director/Operations
Oklahoma Department of Transportation
200 N E. 21st Street
Oklahoma City, Oklahoma 73105

Subject: SPS-6 Project on Interstate 35.

Dear Pete,

We have just received word from SHRP-DC that their review of the subject nomination from the Oklahoma DOT is complete.

The project is approved. This approval stipulates the agreement of the Oklahoma DOT to conform to all of the design and participation requirements for the experiment

One of the other important functions of this SPS-6 project is the installation of traffic data monitoring equipment (Automatic Vehicle Classification and Weigh-In-Motion) My letter of March 28 to Mr Driskill, in the Planning Department, (copy to you), transmitted information that should be helpful in specifying, purchasing and installing the traffic data monitoring equipment. It may prove fruitful if you would begin coordination with that office such that the design plans for the SPS-6 project will include the type of traffic monitoring equipment preferred by the Oklahoma DOT.

Mr. Gary Fitts of this office will continue to work with your staff to furnish any needed information to SHRP-DC, prepare the sampling and testing plan for submittal and approval to SHRP-DC.

Thank you for your continued cooperation and support.

Sincerely,

Homer

Homer G. Wheeler, P.E.
SHRP Regional Engineer, SRCO

cc: Neil Hawks, SHRP-DC
C. Dwight Hixon, OK-DOT
Brent Rauhut, PM-SRCO
Amir Hanna, SHRP-DC
Gary Fitts, PE-SRCO

HGW·dmj

STRATEGIC HIGHWAY RESEARCH PROGRAM

NATIONAL ACADEMY OF SCIENCES / NATIONAL RESEARCH COUNCIL
818 Connecticut Avenue, N.W., 4th Floor, Washington D.C. 20006
SHRP Telecopier: (202) 223-2875 Verification: (202) 334-3774

MEMORANDUM

March 28, 1991

TO: Homer Wheeler, Southern Region

FROM: Amir N. Hanna

SUBJECT: Nomination for an SPS-6 Site in Oklahoma

We have completed the review of the nomination from the Oklahoma Department of Transportation for an SPS-6 site on I-35, South of the Kansas-Oklahoma border (BRE's submission of February 19, 1991).

The proposed pavement is slightly older than that desired for this experiment. Also, information on pavement distress have not been provided to enable a complete evaluation of the nominated site. Otherwise, the proposed site is a viable candidate for the SPS-6 experimental cell for jointed reinforced concrete pavements in the "wet-no freeze" environmental zone. Therefore, the test site is acceptable and will be included in the experiment unless the test sections exhibit significantly different distress patterns or other discrepancies arise during site verification. Also, this approval stipulates the agreement of the Oklahoma DOT to conform to all design and participation requirements of this experiment.

Please inform the Oklahoma Department of Transportation of the acceptance of the proposed test site, and proceed with coordination of related activities. Please develop a sampling and testing plan for this test site and submit it to us for review prior to implementation.

cc: N. F. Hawks
P-001B (S. Tayabji)

Brent Rauhut Engineering Inc.

February 19, 1991

Dr Shiraz Tayabji
PCS/Law Engineering
12240 Indian Creek Court, Suite 120
Beltsville, MD 20705-1242

Subject SPS-6 nomination from Oklahoma.

As expected, the Oklahoma Department of Transportation (ODOT) has nominated a project for SPS-6, which is located on I-35, approximately 18 miles south of the Kansas-Oklahoma border A set of completed nomination forms, maps showing the project location, the typical section for the existing pavement, tables summarizing the proposed test section layout, and reduced plan/profile sheets are enclosed for your review The following paragraphs briefly summarize my review and recommendation for this project.

General Information

The project is located near the convergence of the environmental zones in north-central Oklahoma. The mean annual air temperature is 60 9F, the mean equivalent liquid precipitation is 32.11 inches. Pavements in this area often exhibit types of distress commonly associated with cold environments such as regular transverse cracking in flexible pavements and D-cracking in concrete pavements

The existing pavement was constructed in 1962, with the pavement structure consisting of 9 inches of jointed-reinforced concrete pavement over a 4 inch sand cushion The sand cushion rests on 8 inches of a granular subbase material Joints are spaced at 62 ft intervals, and are dowelled The concrete is reinforced with wire mesh

The subgrade on this project is uniform and deep, according to the agricultural soil survey for Kay County, and is classified as AASHTO A-7-6 which puts it in the "fine" category which is desirable according to the experiment design documentation.

This highway has a ten foot wide, paved outside shoulder, which has a double bituminous surface treatment over 8.25 inches of soil cement.

Within this project, there are no horizontal curves on the mainline horizontal alignment, and the maximum grade is 0 4% in the area being considered for test sections All test sections are essentially at grade or on shallow (less than 5 feet) fills.

• 512) 346-0870 • FAX (512) 346-6750

This pavement is being rehabilitated due to undesirable ride quality resulting from joint deterioration. The paved shoulders are in poor condition, also. The work planned for this project outside the experimental area will consist of joint restoration or replacement, full surface diamond grinding, and shoulder replacement. The plans do not call for retrofitting a PCC shoulder to the existing pavement or for installing edge drains

A permanent weigh station was constructed as part of the original project. This affected the test section schedule (as shown and noted in the enclosed information) by causing us to split the project into two segments, one requiring the installation of edge drains or overlays, the other which does not require either The experiment requirement which calls for two one-thousand foot monitoring sections was also a factor in causing a split between test section segments

I have not visited the project yet, but I have been over the project immediately south There did not appear to be anything remarkable about the conditions on that site which would cause concern about its suitability for use in this experiment.

Summary

ODOT has nominated a project scheduled for the October 1991 letting for inclusion in Experiment SPS-6 Although the project has not been visited since the nomination, it appears to meet all but one of the criteria stated for SPS-6, which is the age of the pavement. Otherwise, it comes close to being a "perfect" project from the standpoint of uniformity, and is located near the convergence of the four environmental zones Therefore, it is recommended that this project be accepted for inclusion in SPS-6, pending the site visit scheduled for mid-March. Although this project is scheduled for an October 1991 letting date, it would be useful to know its status by early March (as indicated on the nomination form) for the benefit of those developing the plans, specifications, and estimates for this project. This would also allow David Ooten to be involved with the project before he leaves for Washington to work as loaned staff with SHRP-DC.

Please call if you have any questions

Sincerely,

Gary L. Fitts

Gary L. Fitts, P E.
Project Engineer, SRCO

Enclosures: As stated.

cc: Dr. Amir Hanna, SHRP-DC
Mr. S.C. Byers, ODOT
Mr. C. Dwight Hixon, ODOT
Mr. Faria Emamian, ODOT

Brent Rauhut Engineering Inc.

February 19, 1991

Mr Faria Emamian
Associate Engineer
Oklahoma Department of Transportation
Rural Design Division
200 N E. 21st Street
Oklahoma City, OK 73105-3204

Subject: Project on I-35, Kay County

Dear Faria,

After reviewing the plans more carefully, I have developed a proposed schedule of test sections to incorporate on I-35 between M P 214 and 218 in the southbound lanes This arrangement is similar to what we discussed during our meetings, and is enclosed with this letter An estimate of quantities and the limits of work for each type of construction is also enclosed.

This arrangement will surely be modified to fit field conditions after we visit the site in mid-March These modifications will likely include slight revisions to the station limits of the various treatments, such as the break and seat operations, in order to begin and end at joints or some other convenient location as determined in the field.

As I mentioned in our telephone conversation of February 14th, I have reviewed a variety of documents pertaining to breaking and seating concrete pavements, and have discussed the construction of the pilot SPS-6 project with Brian McWaters of Iowa DOT (ph 515/239-1510) One of these suggestions which was implemented into the site layout tables enclosed with this letter was to shorten the transition in overlay thickness from one inch in one-hundred feet to one inch in fifty feet.

As we discussed, March 13-15 would be a convenient time for me to return to Oklahoma to visit the site and meet with the Field Division. I think it would be wise to set up a time to visit with the Planning Division to discuss the needs for traffic monitoring and determine what, if anything, can be purchased and installed as part of the construction contract

8240 Mopac South 220 • Austin A.6 • (512) 346-0870 • FAX (512) 346-8750

I look forward to working with you to implement this important study Please call if you have any questions

Sincerely,

Gary L. Fitts, P E
Project Engineer, SRCO

Enclosures. As stated.

cc: Mr C Dwight Hixon, ODOT

SHEET A. SPS-6 CANDIDATE PROJECT NOMINATION AND INFORMATION FORM

STATE OK

PROJECT LOCATION

ROUTE NUMBER 35

ROUTE SIGNING [✓] Interstate [ ] U S [ ] State [ ] County

Other _____

PROJECT LOCATION Start Milepost 214 End Milepost 218

Start Station _____ End Station _____

PROJECT LOCATION DESCRIPTION From interchange with US 60 4 miles N to Section Line EW-18

COUNTY Kay

HIGHWAY AGENCY DISTRICT NUMBER 4

SHRP ENVIRONMENTAL ZONE

[ ] WET FREEZE [✓] WET NO-FREEZE* [ ] DRY FREEZE [ ] DRY NO-FREEZE

SIGNIFICANT DATES

LATEST DATE OF APPROVAL NOTIFICATION FROM SHRP 1 MARCH 91

CONTRACT LETTING DATE Oct, 91

ESTIMATED CONSTRUCTION START DATE MARCH 92

PROJECT DESCRIPTION

YEAR OPENED TO TRAFFIC 1963

NUMBER OF LANES (One Direction) 2

[✓] Divided [ ] Undivided

OUTSIDE LANE WIDTH (Feet) 12

OUTSIDE SHOULDER TYPE

[ ] Turf [ ] Granular [ ] Asphalt Concrete [✓] Surface Treatment over soilcement

[ ] PCC [ ] Tied PCC [ ] Curb and Gutter Other _____

OUTSIDE SHOULDER WIDTH (Feet) 10

SUBSURFACE EDGE DRAINS [ ] Placed at initial construction [✓] Not Used

[ ] Retrofitted Retrofit Date _____

ASSESSMENT OF PRESENT PAVEMENT CONDITION [✓] Fair [ ] Poor

PREDOMINATE DISTRESSES

[ ] D Cracking [ ] Other Cracking [ ] Faulting [ ] Pumping [✓] Joint Failure

Comments _____

* According to the map.

SHEET B. SPS-6 CANDIDATE PROJECT NOMINATION AND INFORMATION FORM

STATE OK

PAVEMENT STRUCTURE DETAILS

PCC PAVEMENT TYPE [] Jointed Plain [✓] Jointed Reinforced

JOINT SPACING (Feet) 62

JOINTS [✓] Perpendicular [] Skewed [] Doweled [] Other Load Transfer

PCC FLEXURAL STRENGTH (Psi) _____

MODULUS OF SUBGRADE REACTION (k) _____

PAVEMENT STRUCTURE LAYER DESCRIPTIONS

LAYER[1] NO	LAYER[2] DESCRIPTION CODE	MATERIAL TYPE[3] CLASS CODE	THICKNESS[4] (INCHES)
1	SUBGRADE (7)	5 3	
2	0 6	2 6	8 0
3	0 5	2 4	4 0
4	0 3	0 5	9 0
5			
6			
7			
8			
9			

NOTES

1 Layer 1 is the natural occurring subgrade soil. The existing surface will have the largest assigned layer number

2. Layer description codes:

Overlay	01	Base Layer	05	Porous Friction Course	09
Seal Coat	02	Subbase Layer	06	Surface Treatment	10
Original Surface	03	Subgrade	07	Embankment (Fill)	11
Subsurface HMAC	04	Interlayer	08		

3 Refer to Tables 1 through 4 for material class codes

4 If subgrade depth to a rigid layer is known, enter this depth for subgrade, otherwise leave blank for subgrade layer

SHEET C. SPS-6 CANDIDATE PROJECT NOMINATION AND INFORMATION FORM

STATE OK

TRAFFIC DATA

ANNUAL AVERAGE DAILY TRAFFIC (TWO DIRECTION)	10,000
% HEAVY TRUCKS AND COMBINATIONS (OF AADT)	33
COUNT YEAR OF AADT ESTIMATE	1990
TRAFFIC GROWTH RATE SINCE PROJECT OPENED TO TRAFFIC (%/YR)	1%
18K ESAL RATE IN PROPOSED STUDY LANE (1,000 ESAL/YR)	540
YEAR OF ESAL RATE ESTIMATE	
ESTIMATED TOTAL 18K ESAL APPLICATIONS IN STUDY LANE[1]	

REHABILITATION INFORMATION[2]

PRIMARY CAUSE FOR REHABILITATION Joint deterioration

OVERLAY	Thickness (Inches)	Material Type Class Code
Surface Course	n/a	
Binder Course	n/a	

Saw and Seal above joints? [] Yes [] No n/a

SURFACE PREPARATION PRIOR TO OVERLAY

[] Joint Sealing [] Crack Sealing [] Undersealing [] Crack & Seat

[] Patching [] Joint Replacement % Joints Replaced

Other

OTHER CONSTRUCTION ACTIVITIES TO BE PERFORMED DURING REHABILITATION

No overlay is planned for the remainder of the project. The rehab. will consist of full depth patching at the joints, joint sealing, diamond grinding, and shoulder repairs.

NOTES

1. Leave blank if estimate is not available

2 This information concerns the planned rehabilitation work to be performed by the agency on the non-experimental portions of the project.

SHEET D SPS-6 CANDIDATE PROJECT NOMINATION AND INFORMATION FORM

STATE OK

TEST SECTION LAYOUT

NUMBER OF TEST SECTIONS ENTIRELY ON. FILL 8 CUT _____

SHORTEST TRANSITION BETWEEN CONSECUTIVE TEST SECTIONS (Feet) _____

COMMENTS ON DEVIATIONS FROM DESIRED SITE LOCATION CRITERIA No deviation - nearly an "ideal" project with respect to the site layout crite...

OTHER SHRP TEST SECTIONS

DOES PROJECT CONFORM TO GPS-3 OR GPS-4 PROJECT CRITERIA?	except for age [✓] YES	[ ] NO
DOES AGENCY APPLIED TREATMENT QUALIFY FOR GPS-7B?	[ ] YES	[✓] NO
IS PROJECT SUITABLE FOR SPS-4 TEST SECTIONS?	[✓] YES	[ ] NO
IS AGENCY INTERESTED IN USE OF PROJECT AS SPS-4 SITE?	[ ] YES	[ ] NO
DISTANCE TO NEAREST GPS TEST SECTION ON SAME ROUTE (Miles)	~70	
NEAREST GPS TEST SECTION NUMBER	404088	

SUPPLEMENTAL TEST SECTIONS

IF SUPPLEMENTAL EXPERIMENTAL TEST SECTIONS ARE PROPOSED, COMPLETE THE FOLLOWING

TOTAL NUMBER OF SUPPLEMENTAL TEST SECTIONS 0

FACTORS TO BE INVESTIGATED _____

TEST SECTION LAYOUT FOR SPS-6
I-35 SB, KAY CO. OKLAHOMA

SECTION ID	DESCRIPTION	BEGIN STA	END STA
400602	Clean and reseal joints and cracks, patch as needed, grind	1010+00	993+00
400601	Clean, reseal joints and cracks	993+00	986+00
	STA 982 to STA 949, Permanent Weigh Station		
---	Patch as needed, transition from 0 to 4 in. asphalt conc overlay	948+00	946+00
400603	Patch as needed, 4 in. asph. conc. overlay	946+00	938+00
400604	Patch as needed, 4 in asph conc overlay, saw and seal joints in overlay	938+00	931+00
	Begin edge drain at STA 931+00.		
---	Install edge drain, break and seat concrete (trial section), 4 in asph conc. overlay.	931+00	929+00
400607	Install edge drain, break and seat concrete, 4 in asph. conc overlay.	929+00	923+00

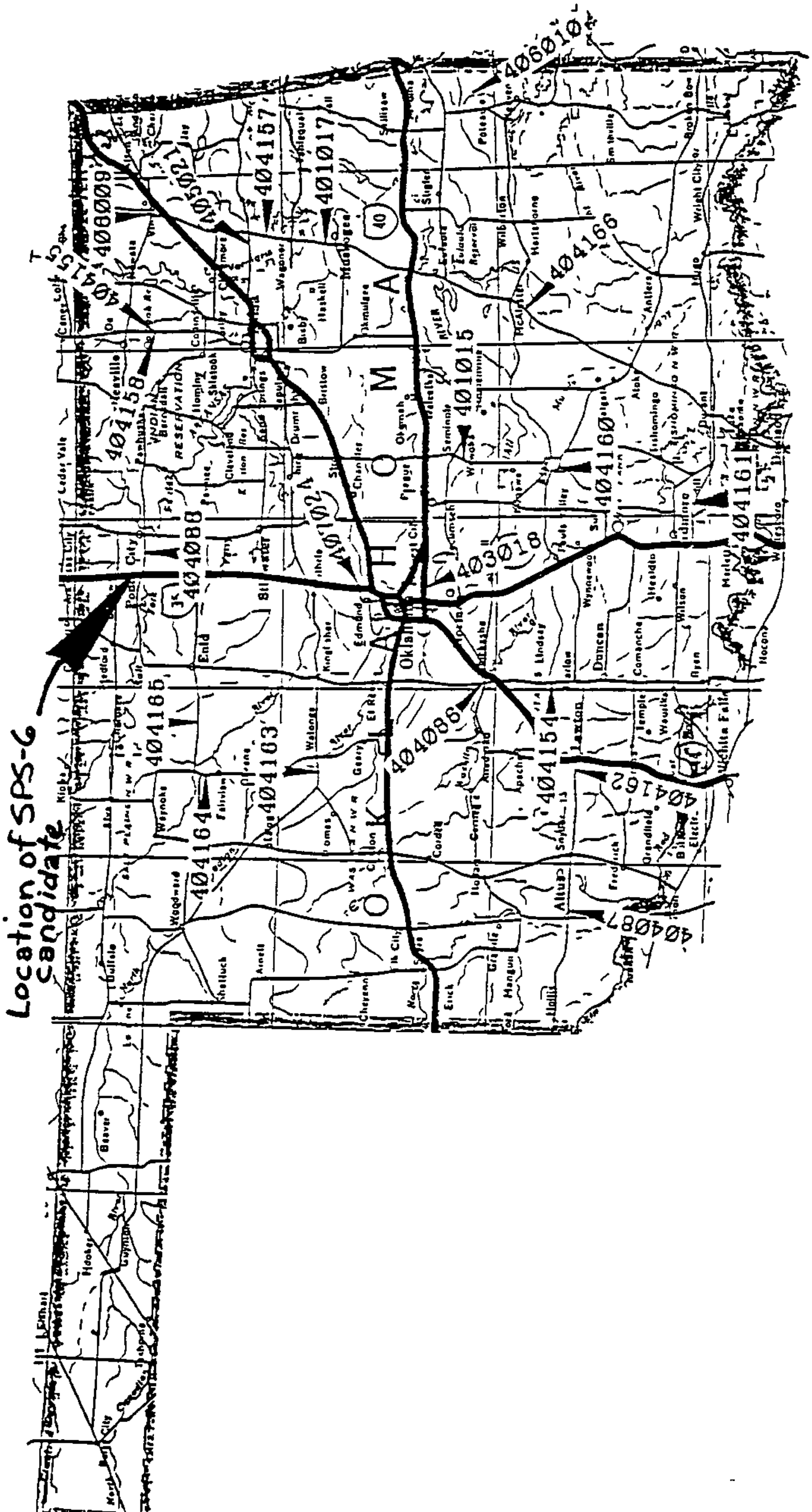
The plans indicate a 6' by 2' RCB at STA 922+35. Breaking and seating may have to be suspended between STA 922+40 and 922+30 to avoid damage to that structure.

---	Install edge drain, break and seat concrete, transition from 4 in. to 8 in. asph. conc overlay.	923+00	921+00
400608	Install edge drain, break and seat concrete, 8 in. asph conc overlay	921+00	913+00

TEST SECTION LAYOUT FOR SPS-6
I-35 SB, KAY CO. OKLAHOMA
(continued)

SECTION ID	DESCRIPTION	BEGIN STA	END STA
---	Install edge drain, end break and seat, transition from 8 in. to 4 in. asph. conc. overlay.	913+00	911+00
400606	Install edge drain, patch as needed, 4 in. asph. conc. overlay.	911+00	903+00
---	Install edge drain, patch as needed, transition from 4 in. to no overlay.	903+00	901+00
400605	Install edge drain, patch as needed, diamond grind, clean and reseal joints and cracks.	901+00	889+50

Begin exit ramp for US 60 at STA 889+50, end edge drain.


Location of SPS-6 candidate
406010
404157
401017
403021
408009
404155
404166
404158
401015
401024
404160
404161
404088
403018
404165
404163
404086
404154
404164
404162
404087

DEPARTMENT OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED

STATE HIGHWAY

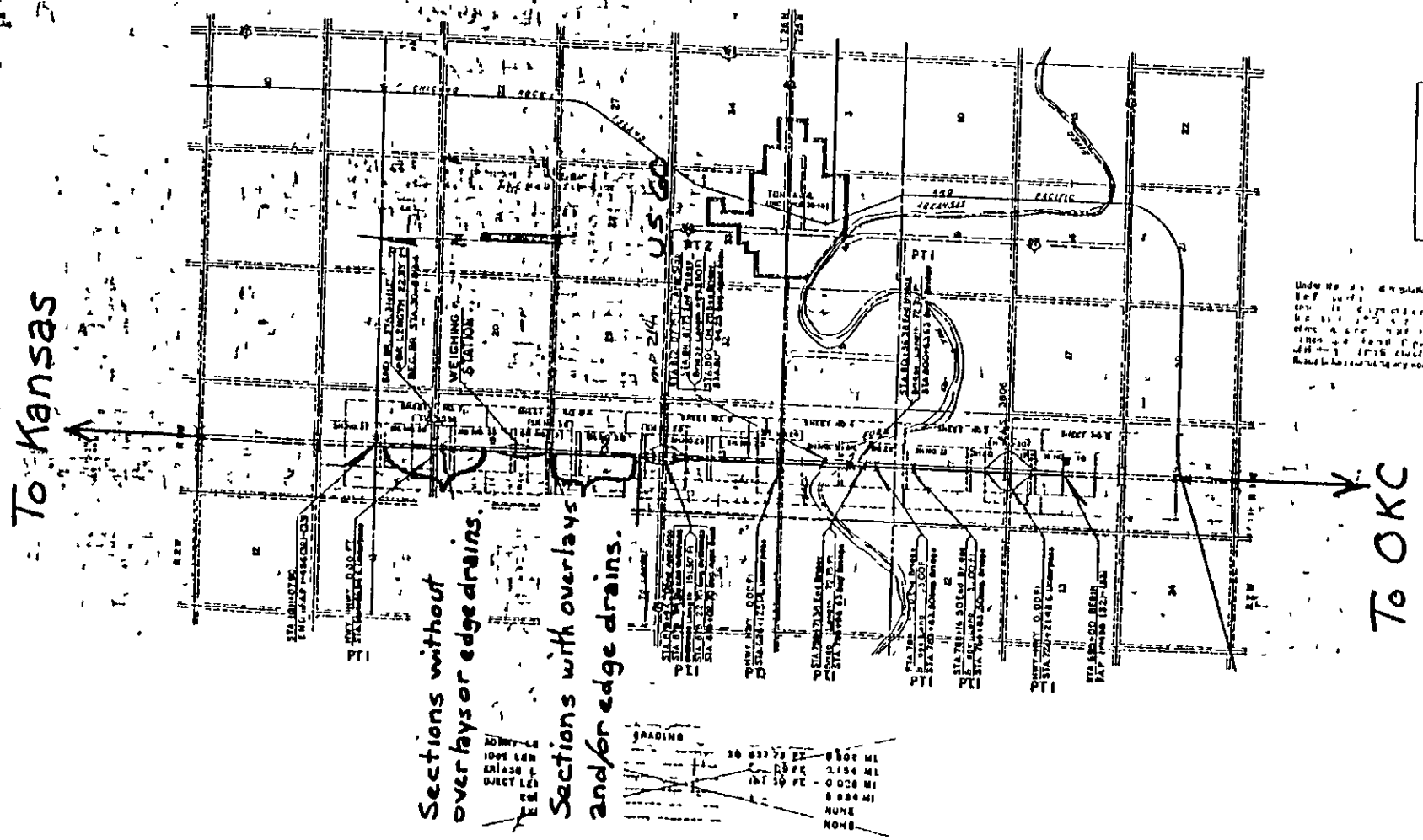
NOTE SEE SHEETS NO. 6-24 OF FA # I 35 4(032)212 FOR PLAN & PROFILE SHEETS, IN IN 20-2729 33 & 35 37 OF THIS JOB.

FEDERAL AID PROJECT NOS I-456 (32) AND I-456 (33) ~ I-35-4 (26)(27) 212

INTERSTATE NO 35

KAY COUNTY

CONTROL SECTION ——— 36-25



A.15

LEVEL DATUM

OBSERVATION ON POLARIS

TIONAL SIGNS

OPOSED ROAD

AILROADS

ANGE & TOWNSHIP LINES

CTION LINES

ARTER SECTION LINES

ATES

E LINE

GHT-OF WAY LINES

OUND LINES

ADE LINE

AVELLED ROADS

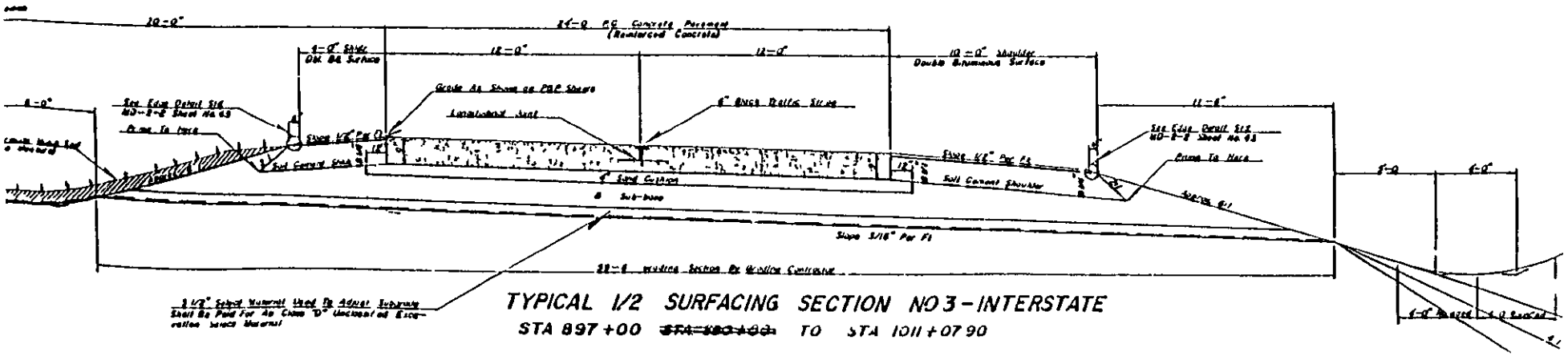
LVERTS & BRIDGES

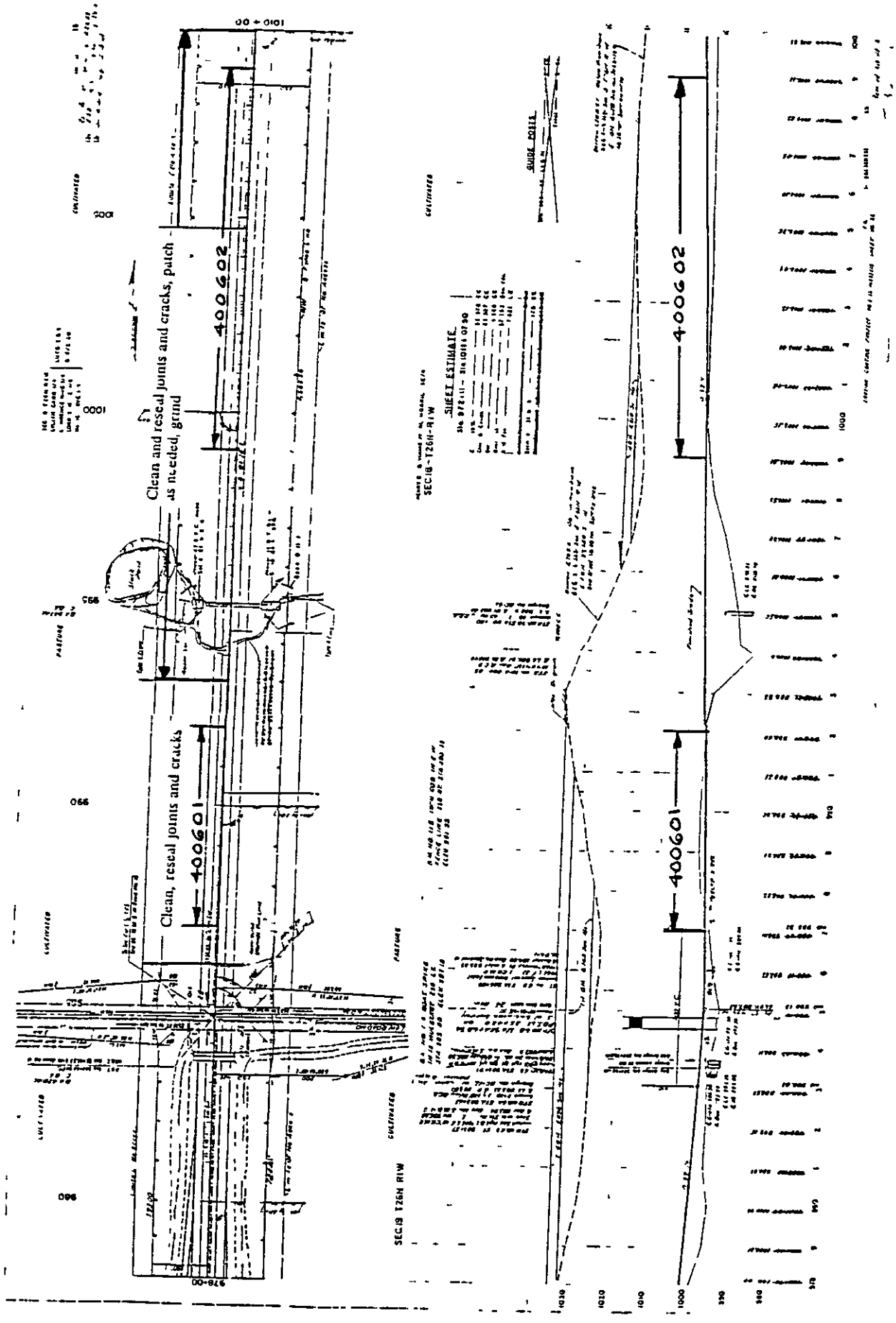
LEPHONE & TELEGRAPH

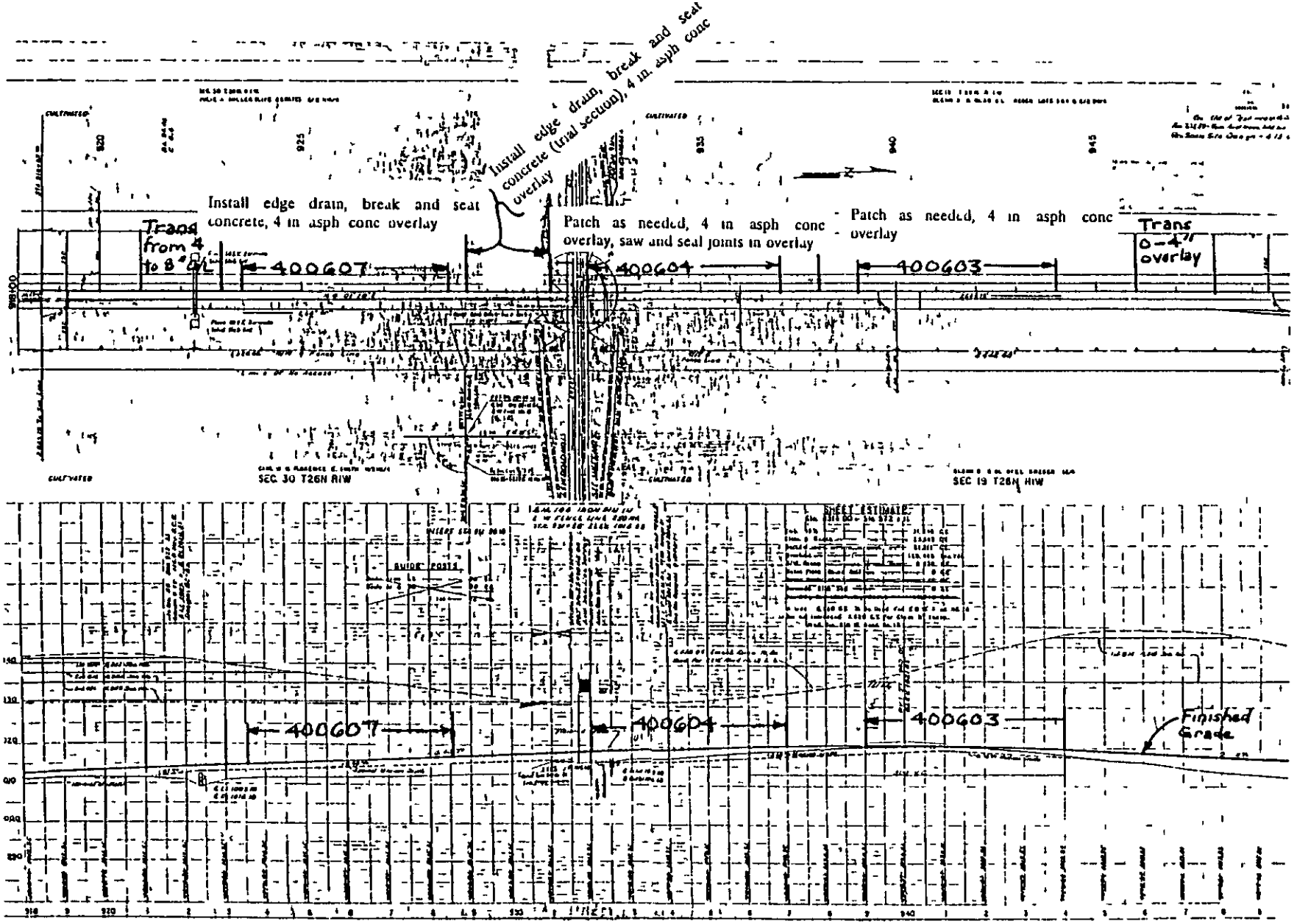
WER LINES

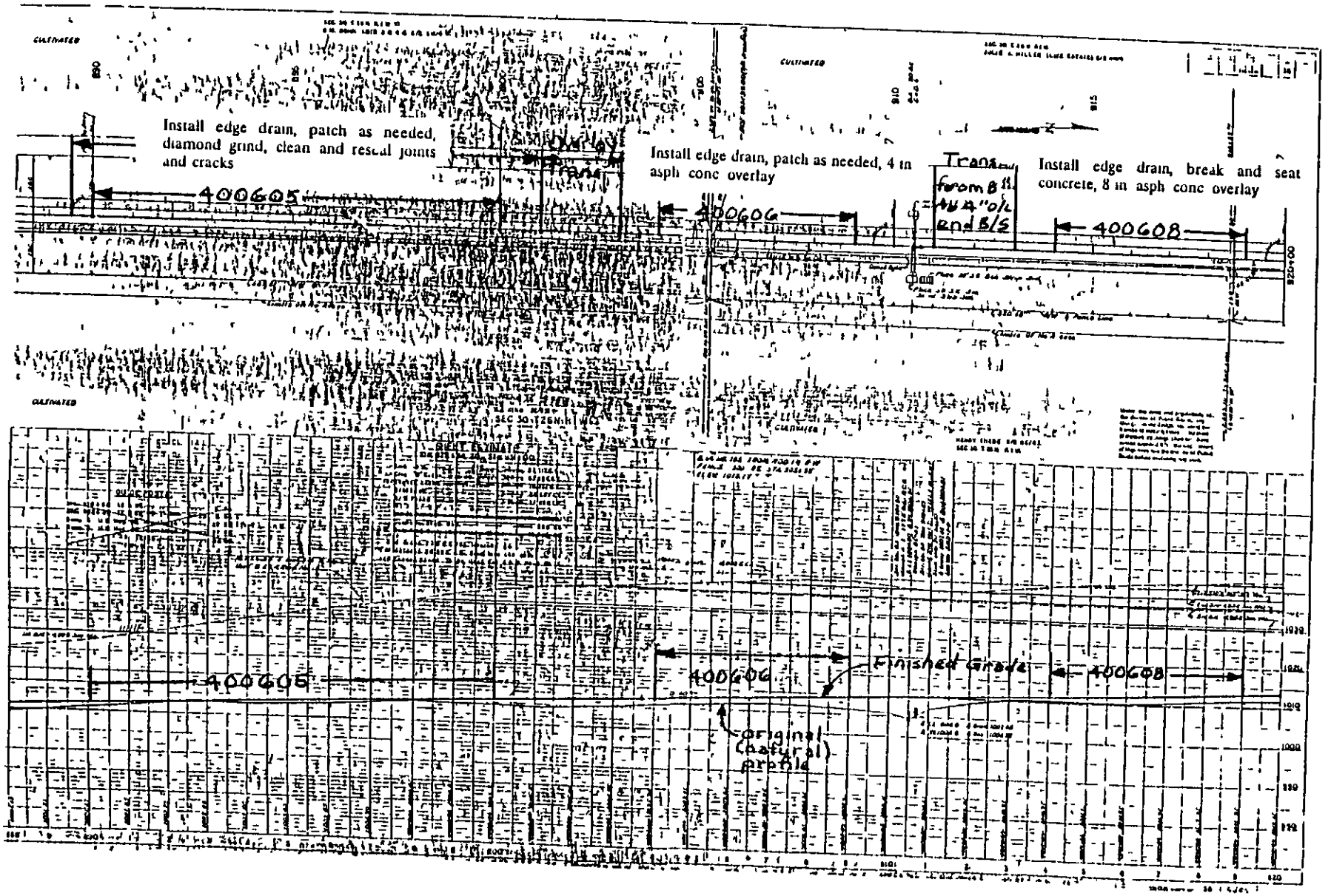
UILDINGS

OADING POINTS


20-0"
24-0 P.C. Concrete Pavement
(Reinforced Concrete)
4-0" Shldr.
Oil Bit. Surface
12-0"
12-0"
10-0" Shoulder
Double Bituminous Surface
Grade As Shown on P&P Sheets
Longitudinal Joint
6" Brick Rolling Strip
See Edge Detail Std.
ND-2-8 Sheet No. 63
Prime To Face
Slope 1/8" Per Ft
Soil Cement Shldr.
4" Sand Cushion
8" Sub-base
Slope 1/8" Per Ft
Soil Cement Shoulder
Slope 1/8" Per Ft
Slope 3/16" Per Ft
22-6 Working Section By Working Contractor
3 1/2" Select Material Used To Adjust Subgrade
Shall Be Paid For At Class "D" Unclassified Excavation Select Material
TYPICAL 1/2 SURFACING SECTION NO 3 - INTERSTATE
STA 897+00 ~~STA 1003+00~~ TO STA 1011+07.90


Clean and reseal joints and cracks, patch as needed, grind
400602
Clean, reseal joints and cracks
400601
SHEET ESTIMATE
SEC 18-T26N-R1W
SEC 19 T26N R1W
400602
400601


Install edge drain, break and seat concrete (trial section), 4 in. asph conc overlay
Install edge drain, break and seat concrete, 4 in asph conc overlay
Trans from 4 to 8" ℄
400607
Patch as needed, 4 in asph conc overlay, saw and seal joints in overlay
400604
Patch as needed, 4 in asph conc overlay
400603
Trans 0-4" overlay
SEC 30 T26N R1W
SEC 19 T26N R1W
400607
400604
400603
Finished Grade


Install edge drain, patch as needed, diamond grind, clean and reseal joints and cracks
Install edge drain, patch as needed, 4 in asph conc overlay
Install edge drain, break and seat concrete, 8 in asph conc overlay
400605
400606
400608
Trans from B 11 4½" o/l and B/S
Finished Grade
Original (Natural) profile

APPENDIX B

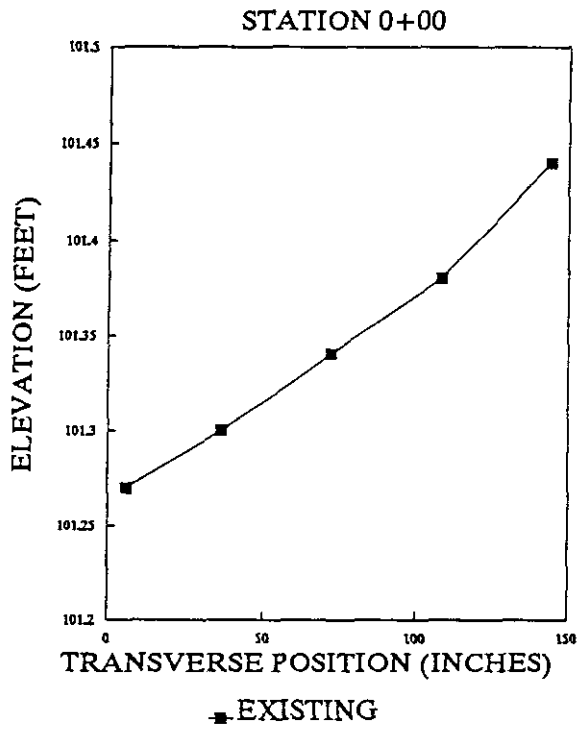
SURFACE PROFILE DATA

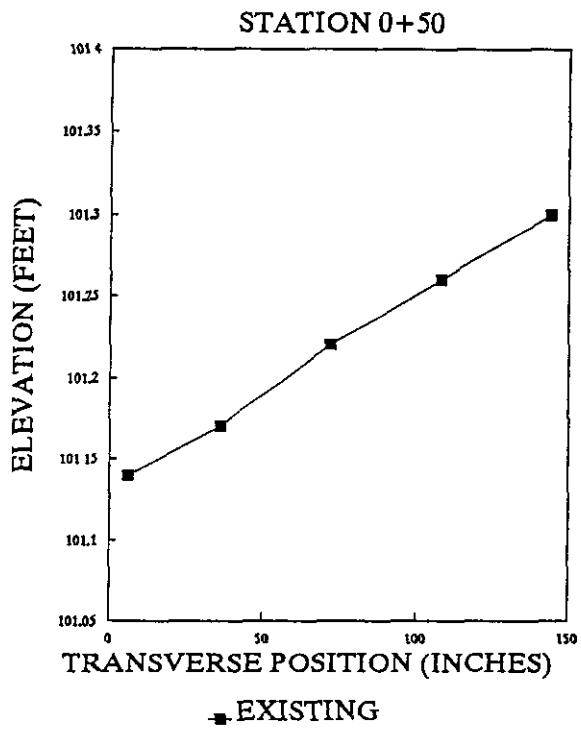
SECTION 400601 OKLAHOMA

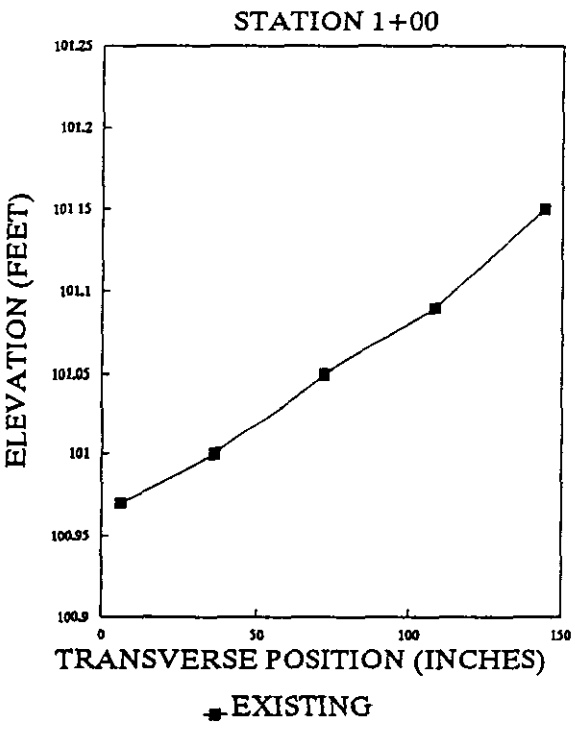
Tans Offset	0'	3'	6'	9'	12'
0+00	101 27	101 3	101 34	101 38	101 44
0+50	101 14	101 27	101 22	101 26	101 30
1+00	100 97	101 00	101 05	101 09	101 15
1+50	100 77	100 81	101 87	100 93	100 99
2+00	100 64	100 66	100 72	100 77	100 84
2+50	100 53	100 55	100 59	100.63	100 67
3+00	100 36	100 38	100 42	100 46	100 50
3+50	100 18	100 20	100 24	100 28	100 33
4+00	100 03	100 06	100 11	100 15	100 04
4+50	99.85	99 90	99 95	99 99	100 04
5+00	99 66	99 70	99 76	99 81	99 86

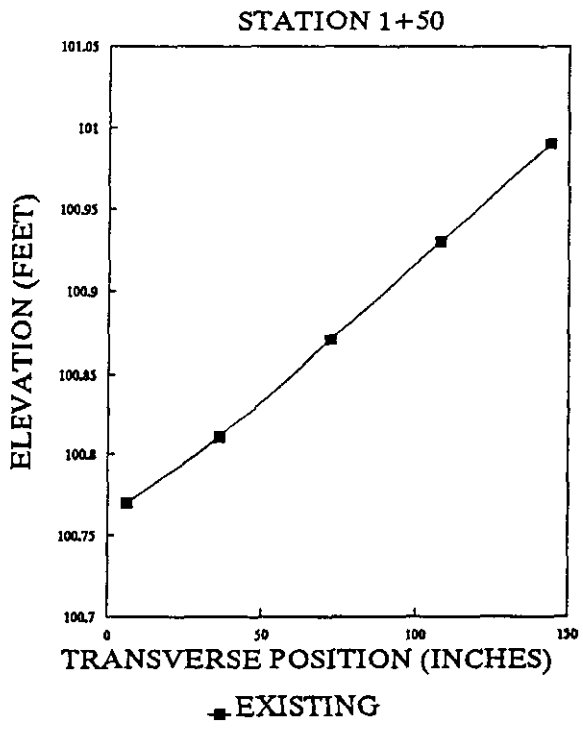
4006\00D

SECTION 400601

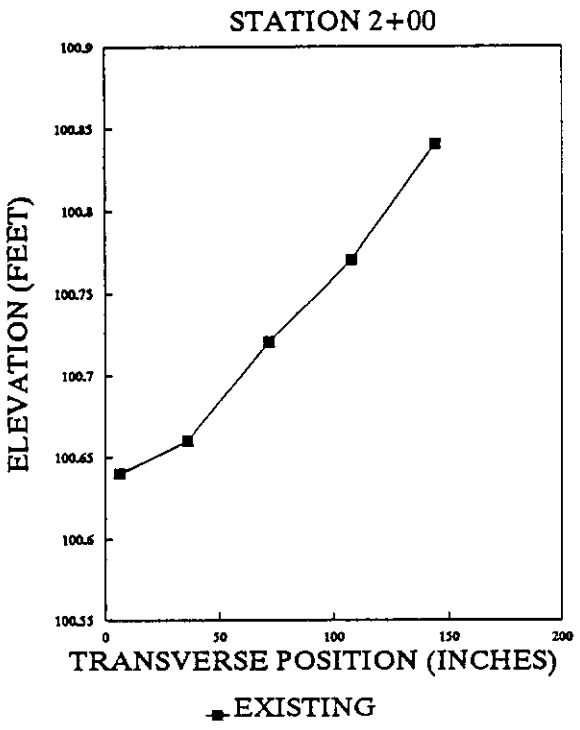


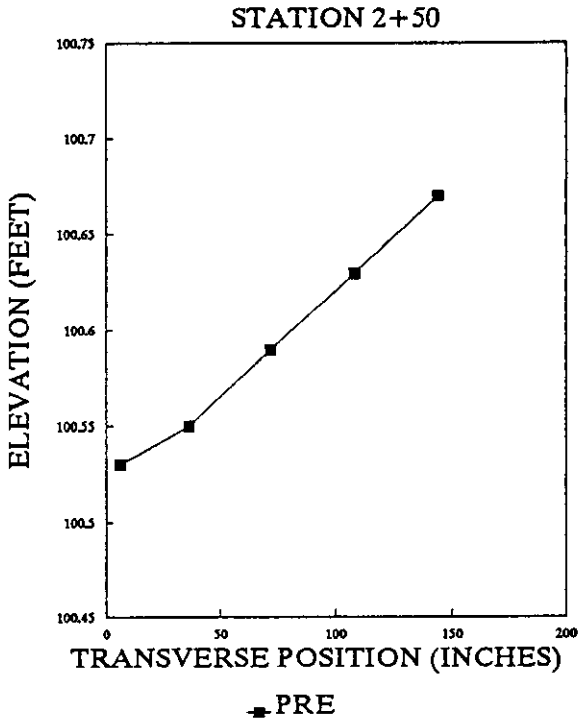


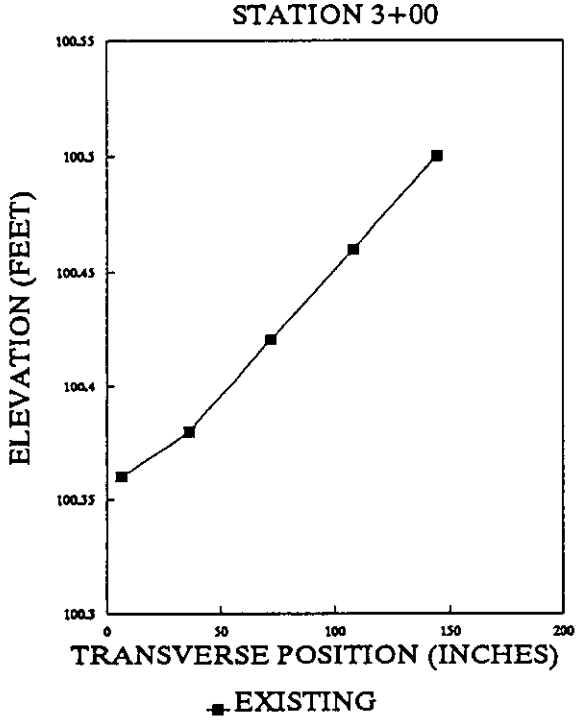


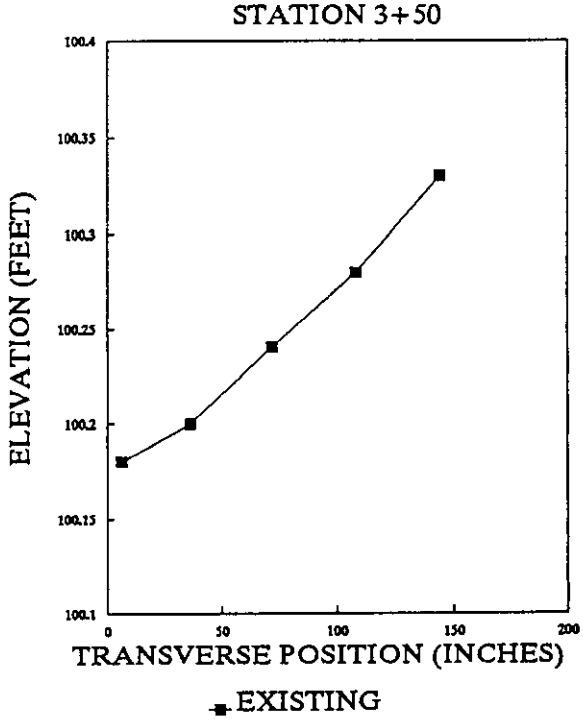


SECTION 400601

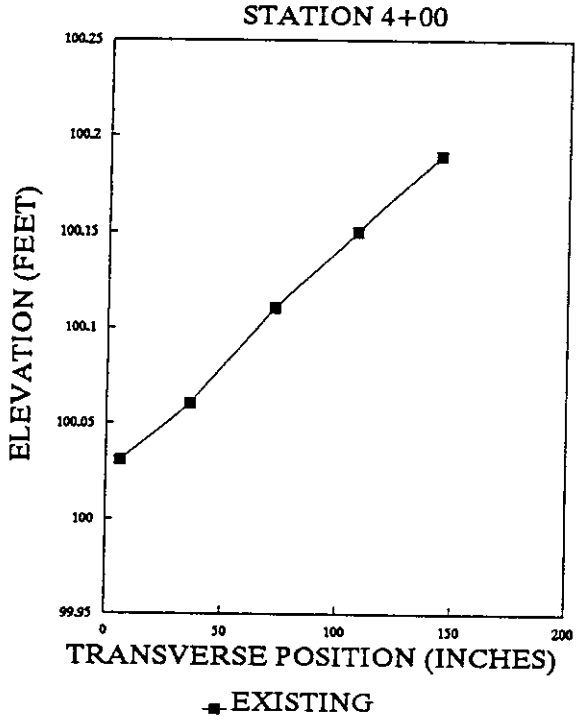


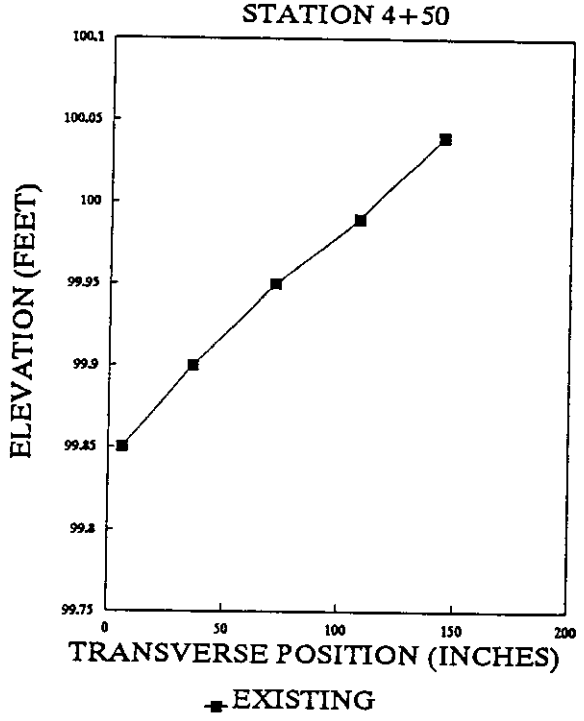


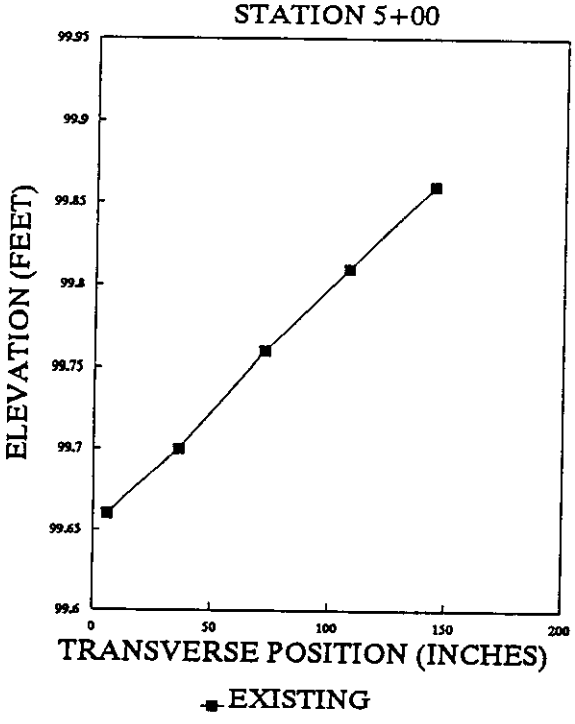




SECTION 400601







SECTION 400602 OKLAHOMA

Trans. Offset		0'	Overlay Depth (IN.)	3'	Overlay Depth (IN.)	6'	Overlay Depth (IN.)	9'	Overlay Depth (IN.)	12'	Overlay Depth (IN)
0+00	PRE	103 39	-0 36	103 42	-0 36	103 45	-0 24	103 49	-0 36	103 54	-0 36
	POST	103 36		103 39		103 43		103 46		103 51	
0+50	PRE	103 15	-0 24	103 20	-0 36	103 25	-0 24	103 30	-0 36	103 35	-0.48
	POST	103 13		103 17		103 23		103 27		103 31	
1+00	PRE	102 95	-0 12	102 99	-0 12	103 06	-0 24	103 11	-0 24	103 17	-0 24
	POST	102 94		102 98		103 04		103 09		103 15	
1+50	PRE	102 79	-0 24	102 83	-0 36	102 89	-0 24	102 94	-0 36	103 00	-0 24
	POST	102 77		102 80		102 87		102 91		102 98	
2+00	PRE	102 66	-0 12	102 69	-0 48	102 74	-0 24	102 77	-0 12	102 82	-0 24
	POST	102 65		102 65		102 72		102 76		102 80	
2+50	PRE	102 47	-0 24	102 52	-0 24	102 57	-0 36	102 61	-0 24	102 65	-0 12
	POST	102 45		102 50		102 54		102 59		102 64	
3+00	PRE	102 28	-0 12	102 33	-0 24	102 38	-0 24	102 44	-0 24	102 50	-0 36
	POST	102 27		102 31		102 36		102 42		102 47	
3+50	PRE	102 14	-0 24	102 18	-0 36	102 22	-0 24	102 26	-0 12	102.32	-0 24
	POST	102 12		102 15		102 20		102 25		102 30	
4+00	PRE	101 95	0 00	101 99	-0 24	102 04	-0 24	102 09	-0 12	102 14	-0 12
	POST	101 95		101 97		102 02		102 08		102 13	
4+50	PRE	101 79	0 00	101 82	-0 24	101 87	-0 12	101 90	0 00	101 95	0 00
	POST	101 79		101 80		101 86		101 90		101 95	
5+00	PRE	101 64	-0 12	101 68	-0 36	101 74	-0 24	101 78	-0 12	101 85	-0 12
	POST	101 63		101 65		101 72		101 77		101 84	

Elevation Readings and Overlay Thickness

9–19–92

SECTION 400602

OKLAHOMA

Trans. Offset		0'	Overlay Depth (IN.)	3'	Overlay Depth (IN.)	6'	Overlay Depth (IN.)	9'	Overlay Depth (IN.)	12'	Overlay Depth (IN.)
5+50	PRE	101 47	0 00	101 50	0 00	101 56	0 00	101 60	–0 12	101.67	0 00
	POST	101 47		101 50		101 56		101 59		101 67	
6+00	PRE	101 35	–0 12	101 40	–0 24	101 46	–0 24	101 50	–0 12	101.56	–0 12
	POST	101 34		101 38		101 44		101 49		101 55	
6+50	PRE	101 20	–0 12	101 23	–0 24	101 28	–0 12	101 33	–0 24	101 38	–0 12
	POST	101 19		101 21		101 27		101 31		101 37	
7+00	PRE	101 06	–0 12	101 09	–0 12	101 13	–0 12	101 19	0 00	101 26	–0 12
	POST	101 05		101 08		101 12		101 19		101 25	
7+50	PRE	100 94	–0 12	100 97	–0 12	101 01	–0 24	101 04	–0 12	101 08	0 00
	POST	100 93		100 96		100 99		101 03		101.08	
8+00	PRE	100 77	0 00	100 82	–0 24	100 86	0 00	100 90	–0 24	100 94	–0 12
	POST	100 77		100 80		100 86		100 88		100.93	
8+50	PRE	100 65	–0 12	100 68	–0 24	100 72	–0 12	100 75	–0 12	100 78	0 00
	POST	100 64		100 66		100 71		100 74		100 78	
9+00	PRE	100 50	–0 12	100 51	0 00	100 56	0 00	100 60	0 00	100 65	0 00
	POST	100 49		100 51		100 56		100 60		100 65	
9+50	PRE	100 34	–0 24	100 37	–0 24	100 42	–0 24	100 45	–0 12	100 50	0 00
	POST	100 32		100 35		100 40		100 44		100 50	
10+00	PRE	100 13	–0 24	100 16	–0 24	100 22	–0 12	100 26	–0 12	100 32	0.00
	POST	100 11		100 14		100 21		100 25		100 32	

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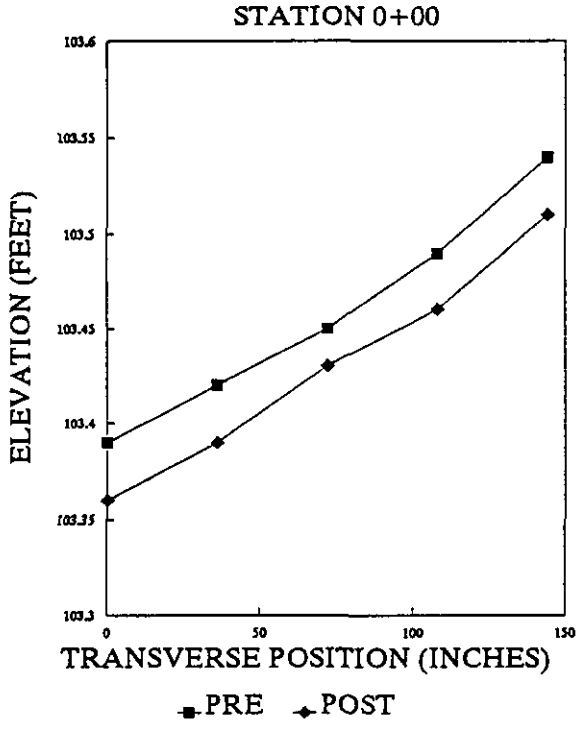
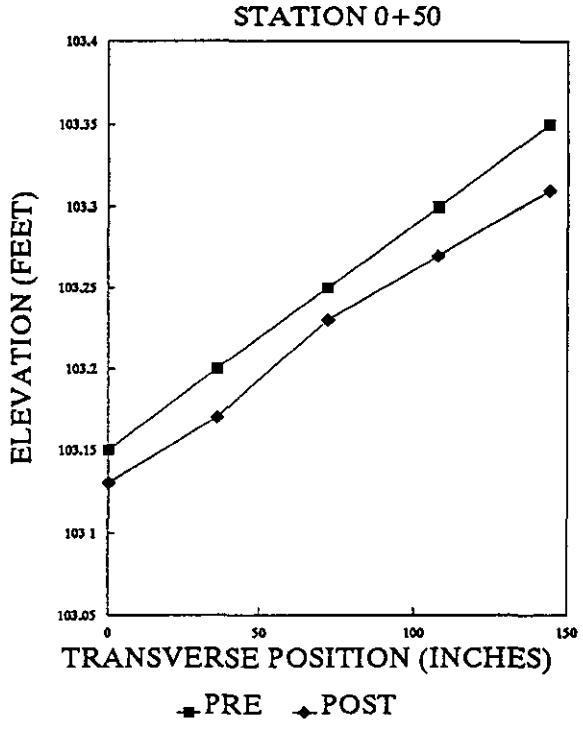
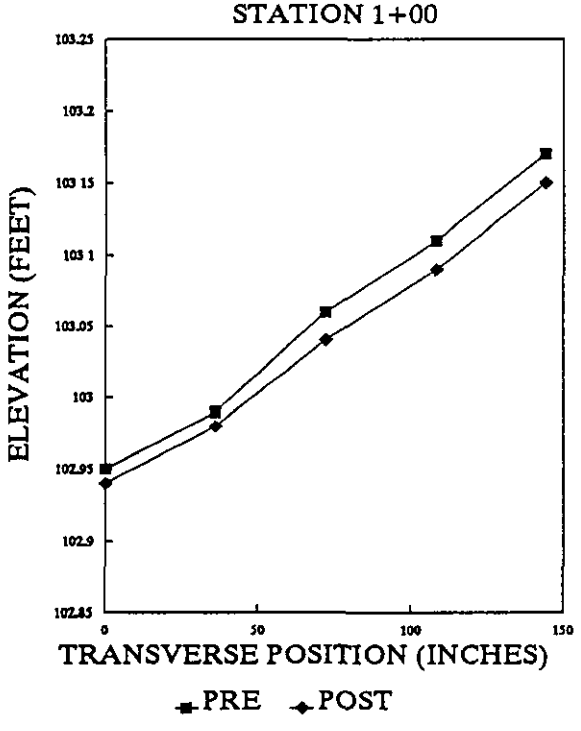
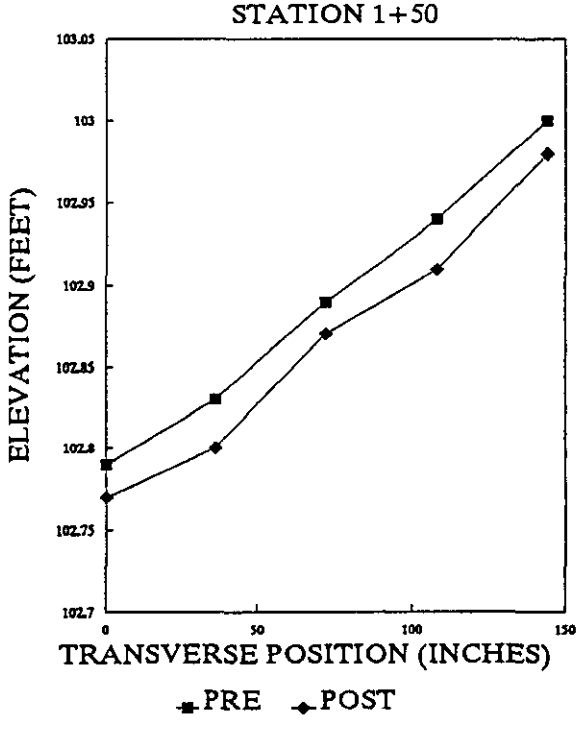
SECTION 400602

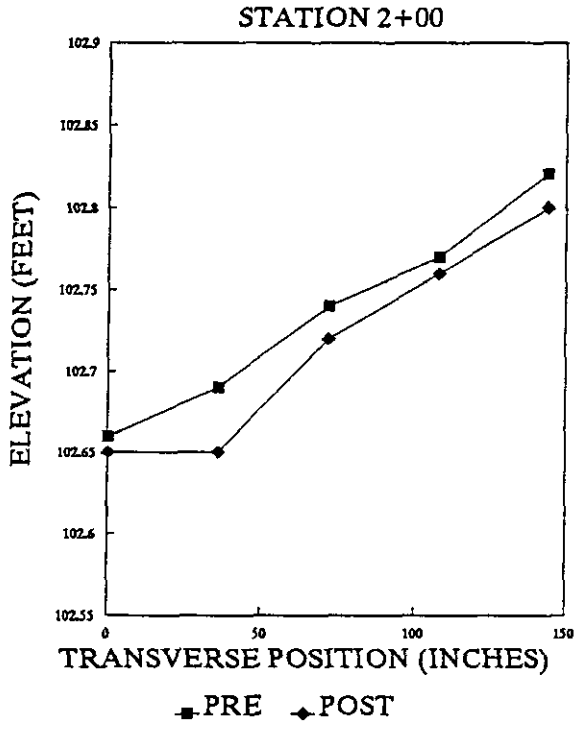


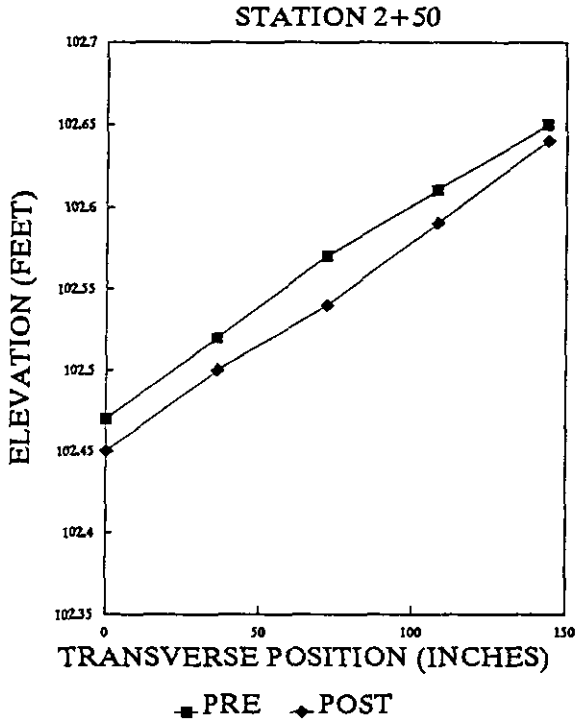


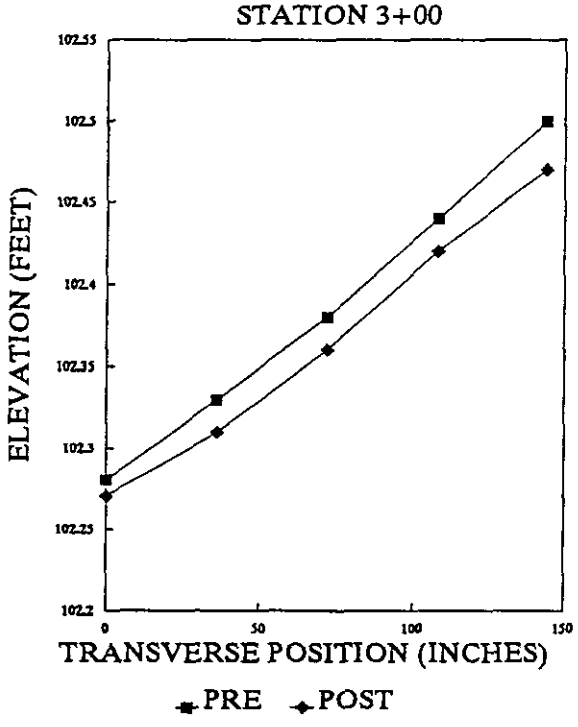


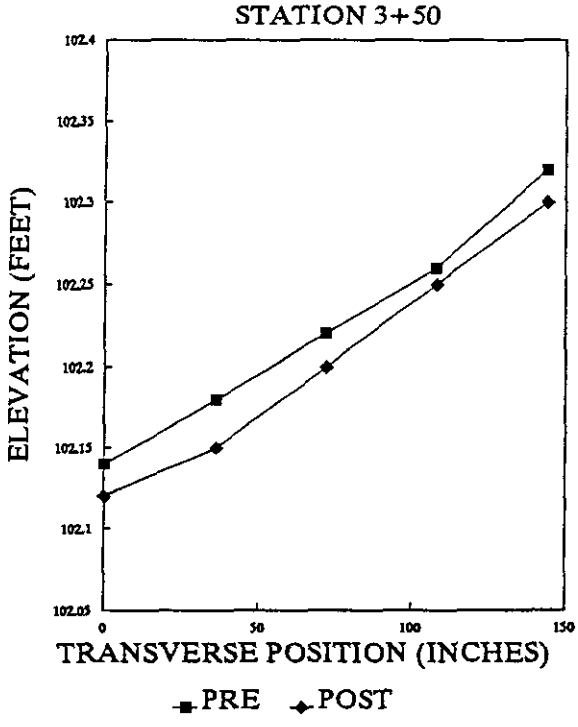


SECTION 400602

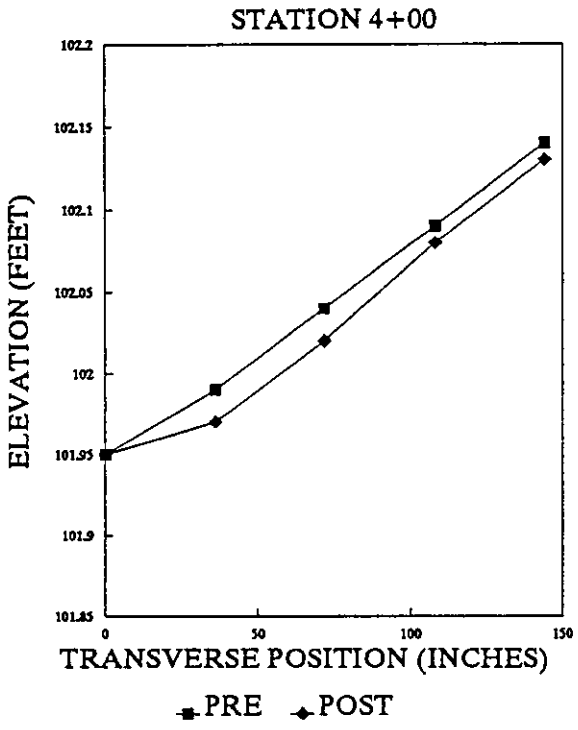


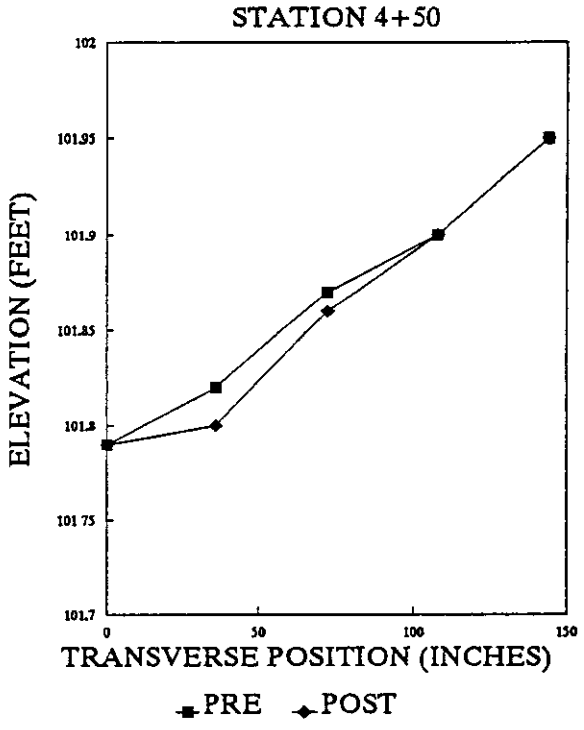


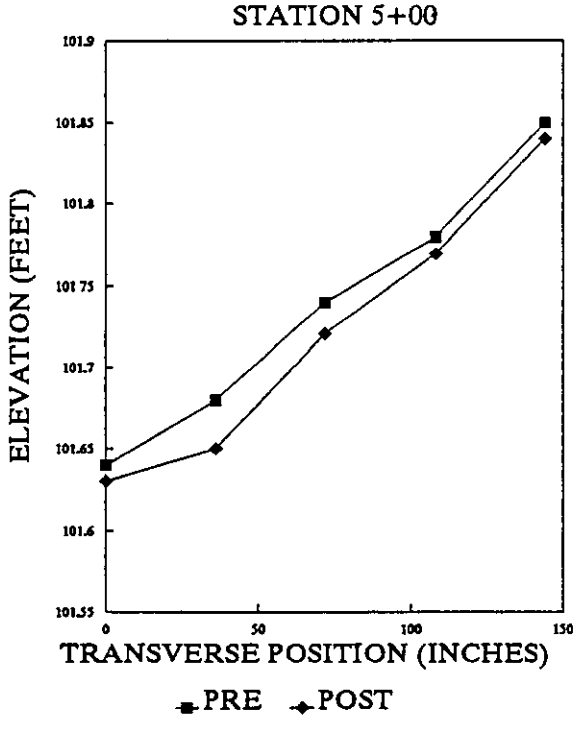


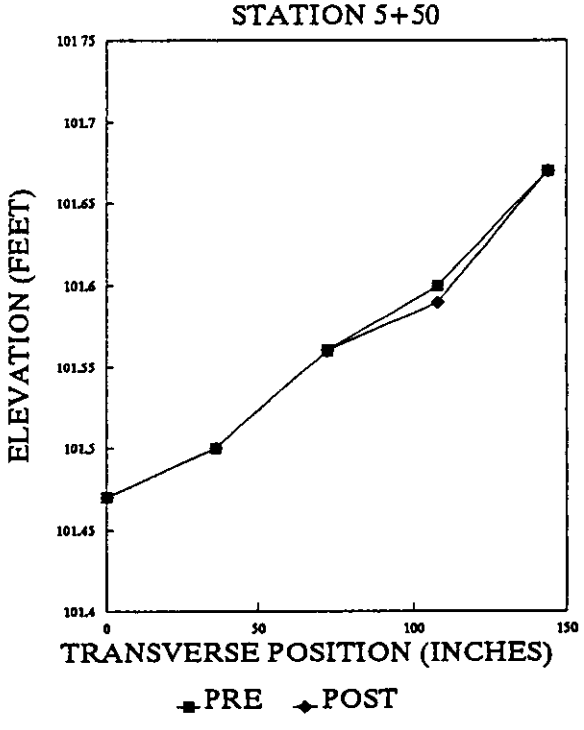


SECTION 400602









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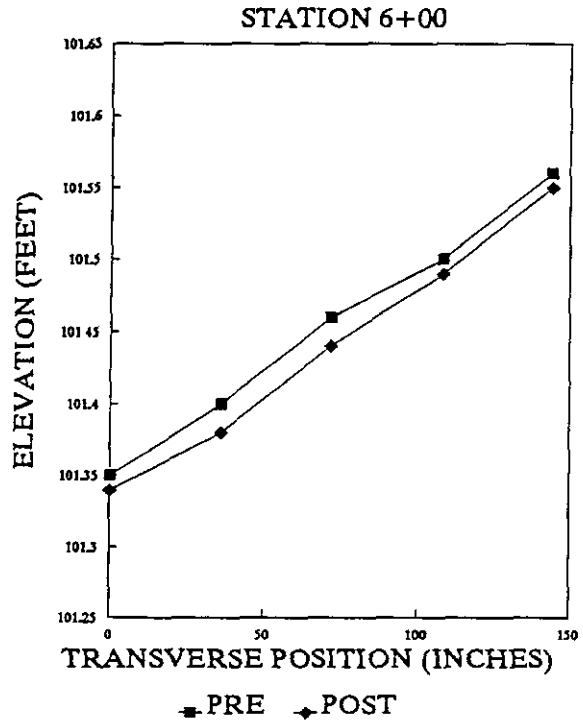

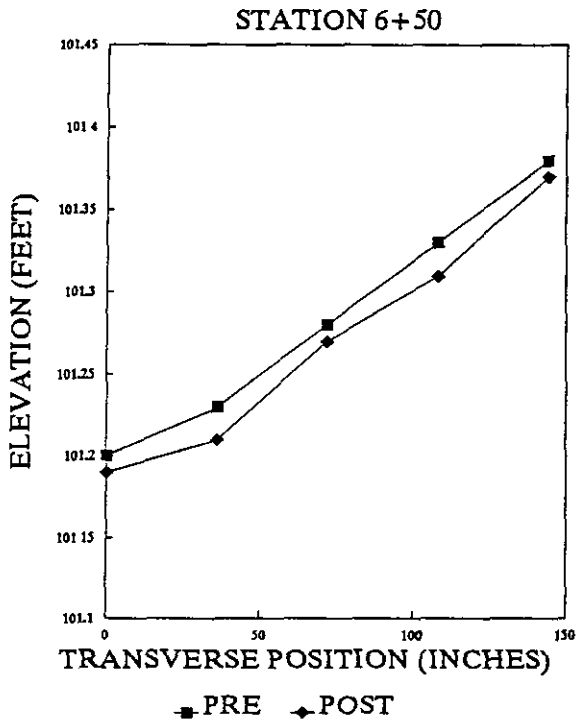

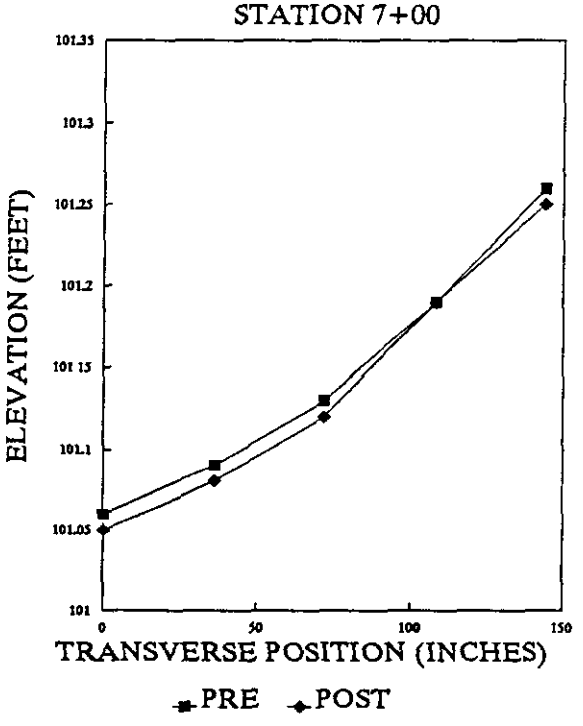

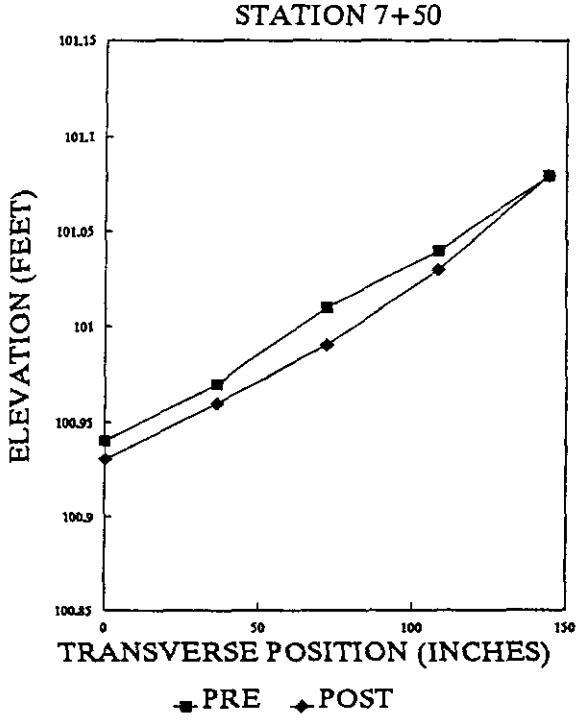

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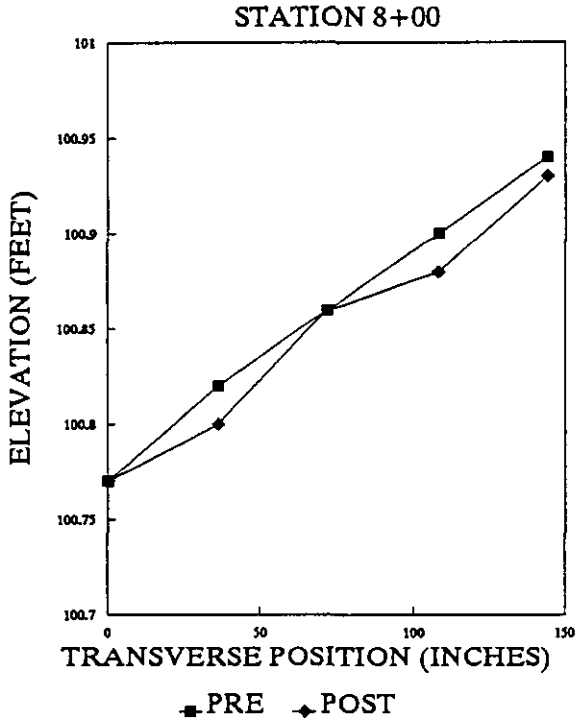
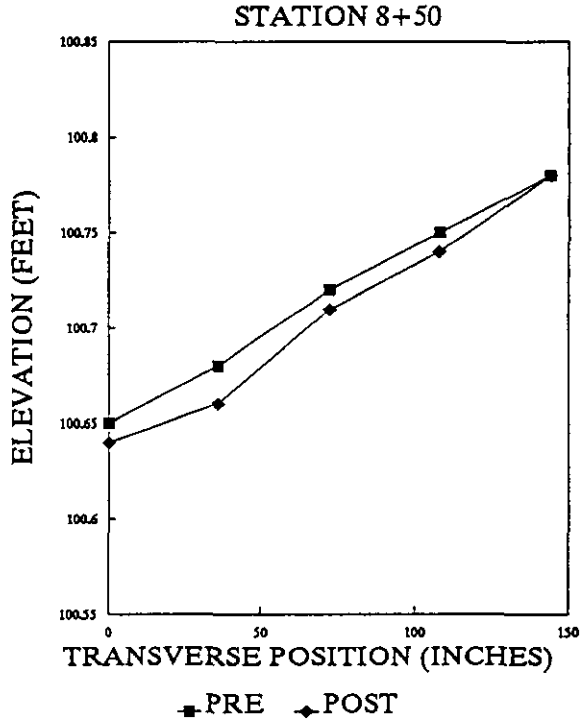
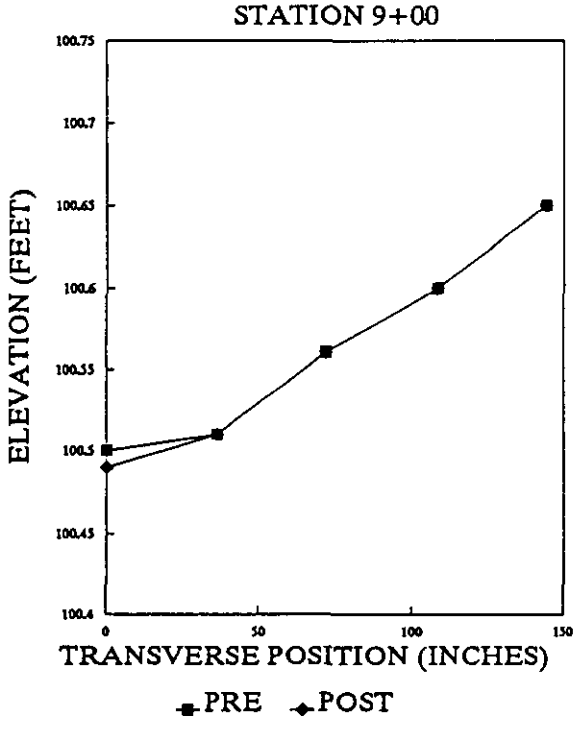
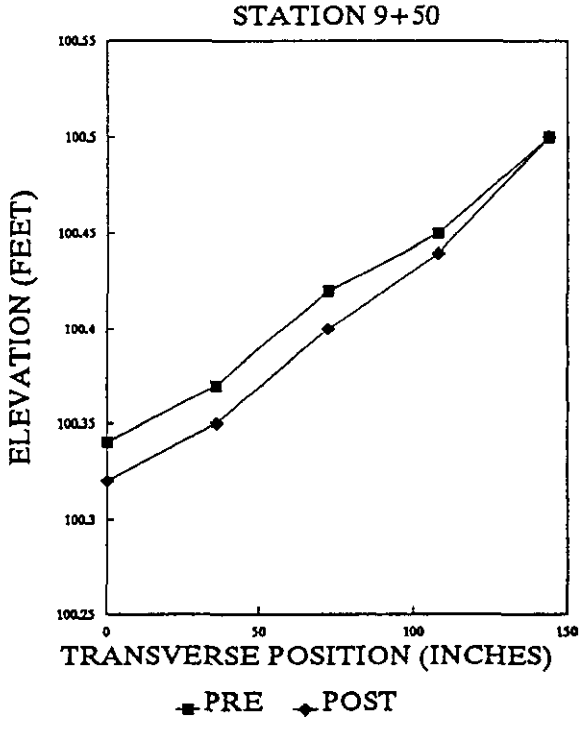
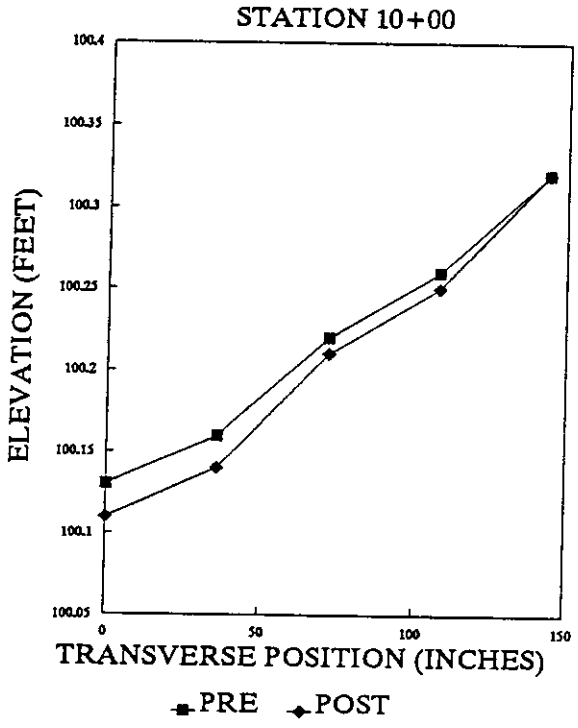








SECTION 400602



SECTION 400603 OKLAHOMA

Trans. Offset		0'	Overlay Depth (IN.)	3'	Overlay Depth (IN.)	6'	Overlay Depth (IN.)	9'	Overlay Depth (IN.)	12'	Overlay Depth (IN.)
0+00	PRE	100 78	3 96	100 81	4 08	100 85	4 08	100 88	4 08	100 93	3 84
	POST	101 11		101 15		101 19		101 22		101 25	
0+50	PRE	101 02	4 08	101 06	4 20	101 10	4 20	101 14	4 08	101 18	3 96
	POST	101 36		101 41		101 45		101 48		101 51	
1+00	PRE	101 26	3 60	101 28	3 96	101 33	4 08	101 37	3 96	101 41	4 20
	POST	101 56		101 61		101 67		101 70		101 76	
1+50	PRE	101 47	3 60	101 50	3 96	101 54	3 96	101 58	3 96	101 63	3 96
	POST	101 77		101 83		101 87		101 91		101 96	
2+00	PRE	101 68	3 72	101 72	3 84	101 76	4 08	101 80	4 08	101 86	3 84
	POST	101 99		102 04		102 10		102 14		102 18	
2+50	PRE	101 86	3 48	101.89	3 84	101 93	3 96	101 97	3 72	102 01	3.84
	POST	102 15		102 21		102 26		102 28		102 33	
3+00	PRE	102 01	3 84	102 04	3 96	102 09	3 96	102 12	4 08	102 17	3 96
	POST	102 33		102 37		102 42		102 46		102 50	
3+50	PRE	102 13	3 72	102 15	4 20	102 20	4 20	102 25	4 08	102 31	3 96
	POST	102.44		102 50		102 55		102 59		102 64	
4+00	PRE	102 21	3 84	102 25	3 96	102 29	4 08	102 33	3 96	102 38	3 96
	POST	102 53		102 58		102 63		102 66		102 71	
4+50	PRE	102 29	3 48	102 32	3 60	102 35	3 84	102 40	3 72	102 44	3 96
	POST	102 58		102 62		102 67		102 71		102 77	
5+00	PRE	102 34	3 36	102 35	3 72	102 39	3 84	102 43	3 84	102 48	3 84
	POST	102 62		102 66		102 71		102 75		102 80	

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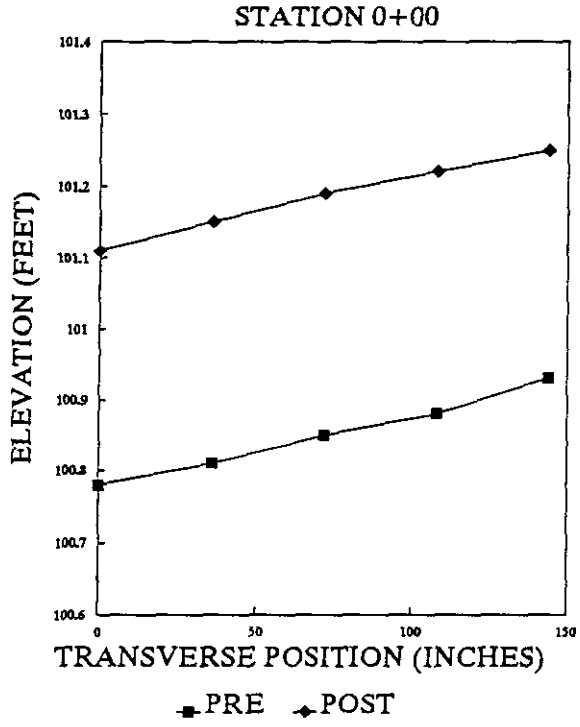
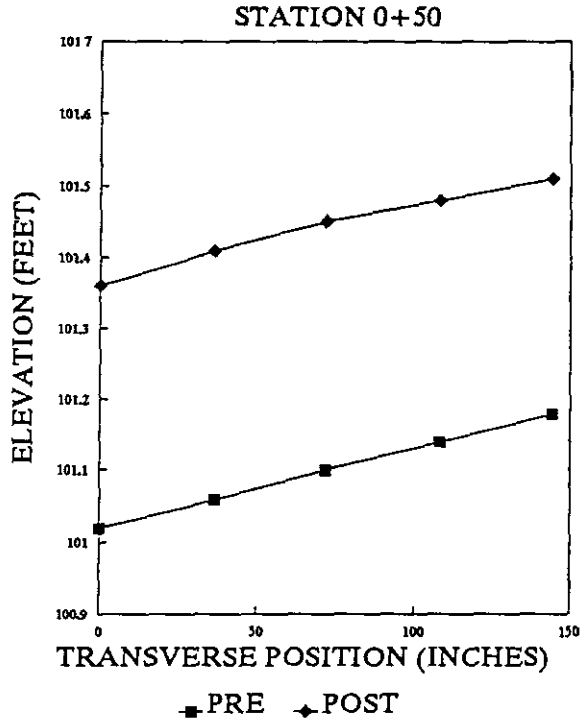
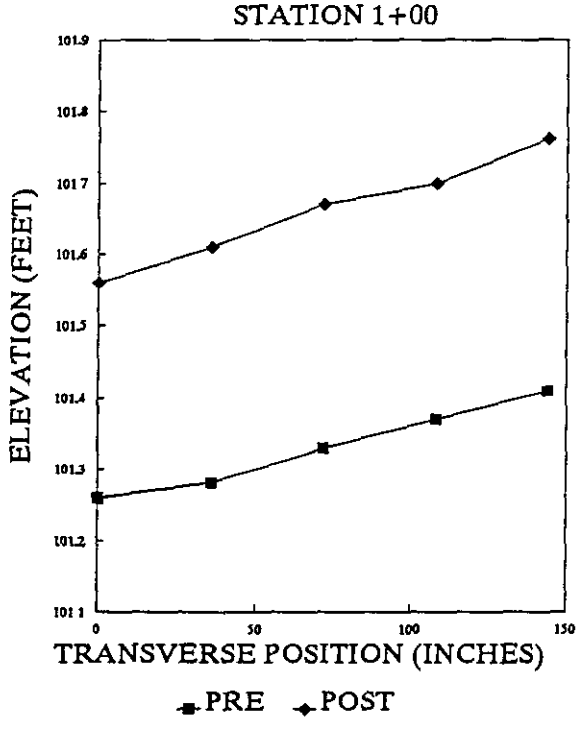
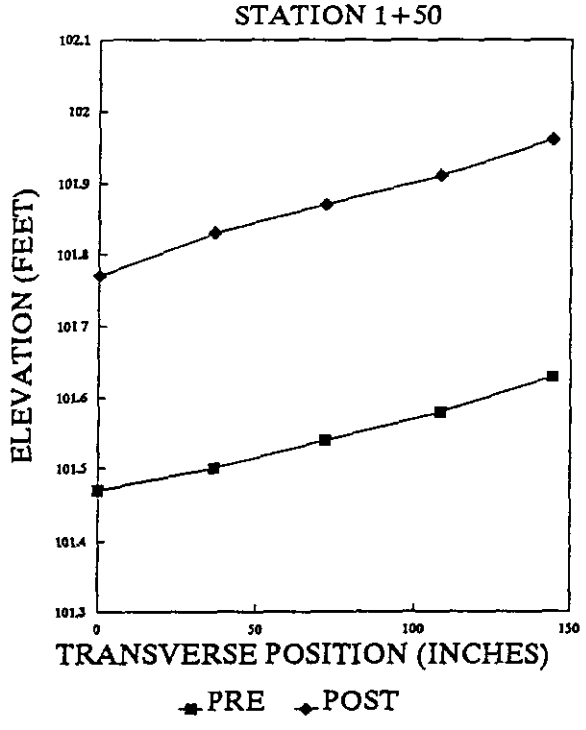
SECTION 400603

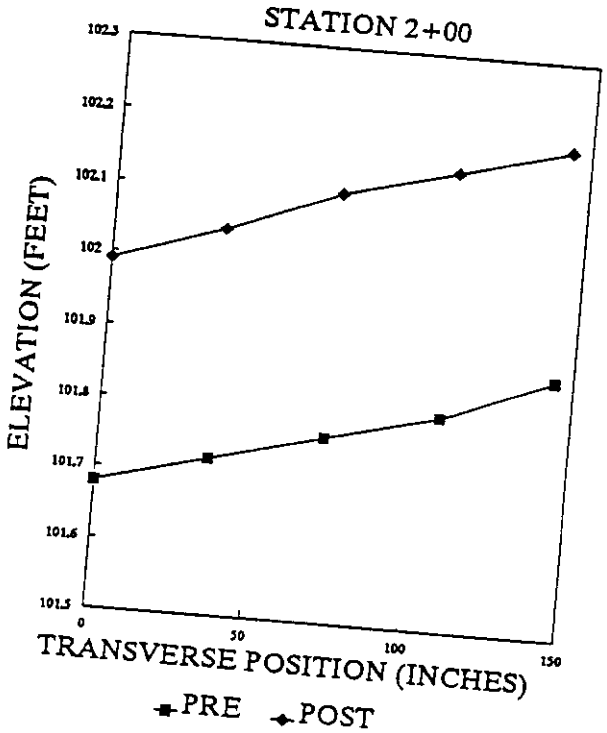


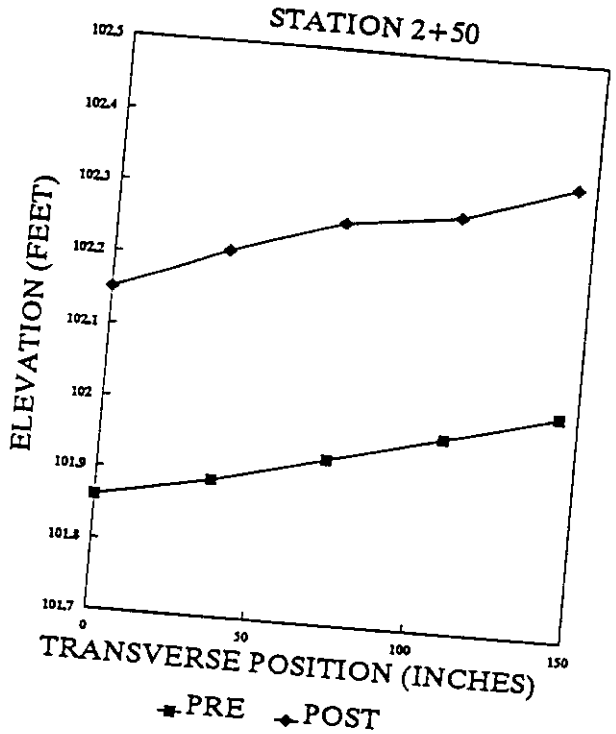


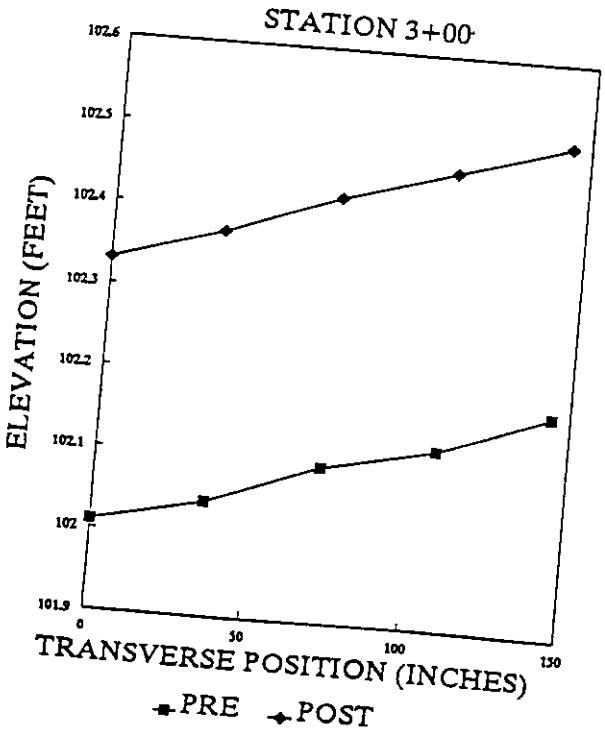


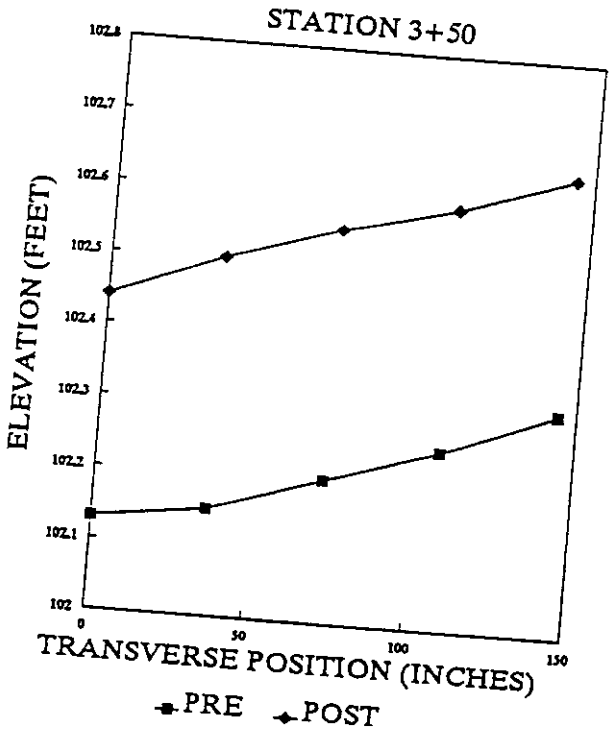


SECTION 400603

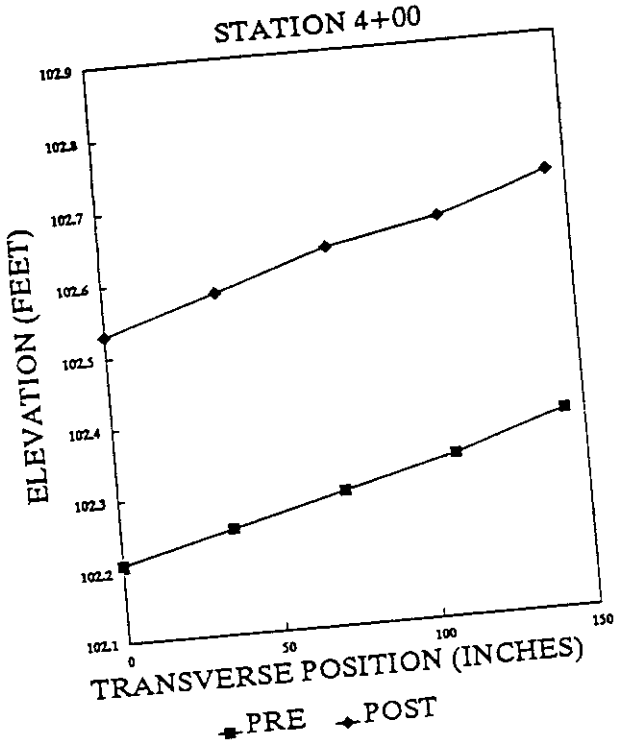


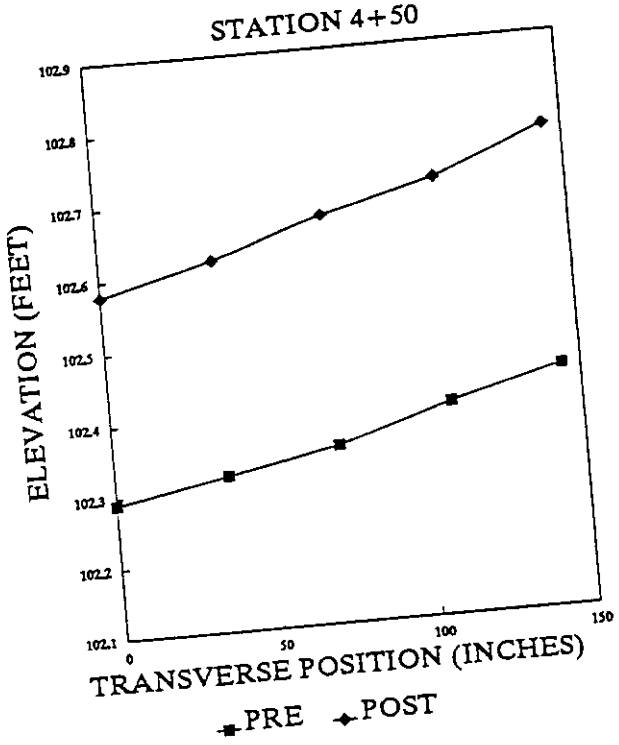


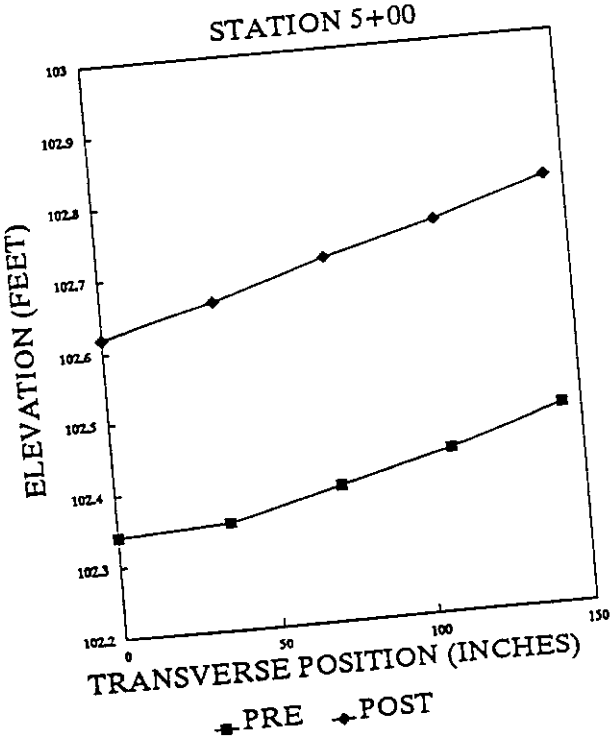




SECTION 400603







SECTION 400604 OKLAHOMA

Trans. Offset		0'	Overlay Depth (IN.)	3'	Overlay Depth (IN.)	6'	Overlay Depth (IN.)	9'	Overlay Depth (IN.)	12'	Overlay Depth (IN.)
0+00	PRE	101 40	3 96	101 43	4 08	101 48	4 20	101.53	3 96	101.58	3.96
	POST	101 73		101 77		101 83		101 86		101 91	
0+50	PRE	101 29	3 72	101 32	3 84	101 36	3 96	101 40	3 84	101 44	3 84
	POST	101 60		101 64		101 69		101 72		101.76	
1+00	PRE	101 08	3 84	101 12	3 96	101 16	4 08	101 20	4 08	101 26	3 84
	POST	101 40		101 45		101 50		101 54		101 58	
1+50	PRE	100 91	3 36	100 93	3 72	100 97	3 84	101 00	3 96	101 06	3 96
	POST	101 19		101 24		101 29		101 33		101 39	
2+00	PRE	100 67	3 84	100 70	3 96	100 75	3 96	100.79	3 84	100 84	3 84
	POST	100 99		101 03		101 08		101 11		101 16	
2+50	PRE	100 45	3 84	100 48	3 96	100 53	3 84	100 57	3.72	100 62	3 72
	POST	100 77		100 81		100 85		100 88		100 93	
3+00	PRE	100 17	4 20	100.22	4 08	100 27	4 08	100 31	3 96	100 36	3 96
	POST	100 52		100 56		100 61		100 64		100 69	
3+50	PRE	100 00	4 08	100 03	4 20	100 08	4 08	100 12	3 96	100 16	4 08
	POST	100 34		100 38		100 42		100 45		100.50	
4+00	PRE	99 74	4 32	99 78	4 32	99 83	4 32	99 88	4 08	99 94	3 96
	POST	100 10		100 14		100 19		100.22		100 27	
4+50	PRE	99 59	4 32	99 62	4 20	99 67	4 20	99 71	4 08	99 75	4 08
	POST	99 95		99 97		100 02		100 05		100 09	
5+00	PRE	99 41	4 44	99 43	4 56	99 48	4 44	99 53	4 08	99.59	3 96
	POST	99 78		99 81		99 85		99 87		99 92	

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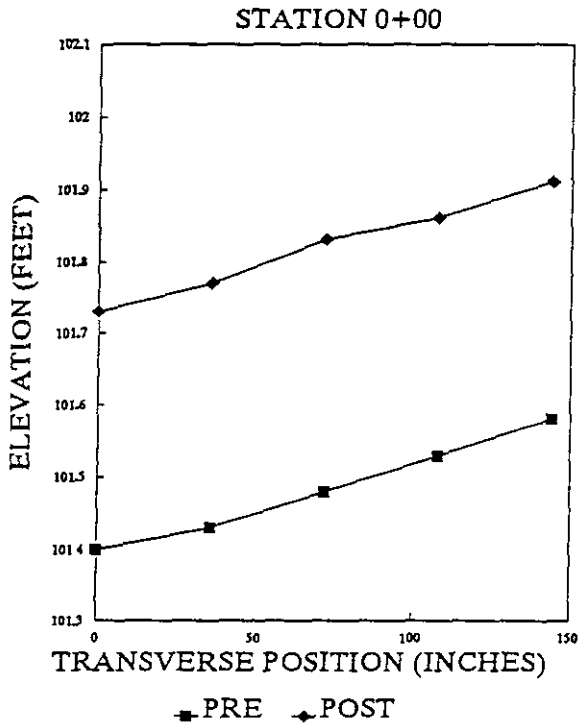
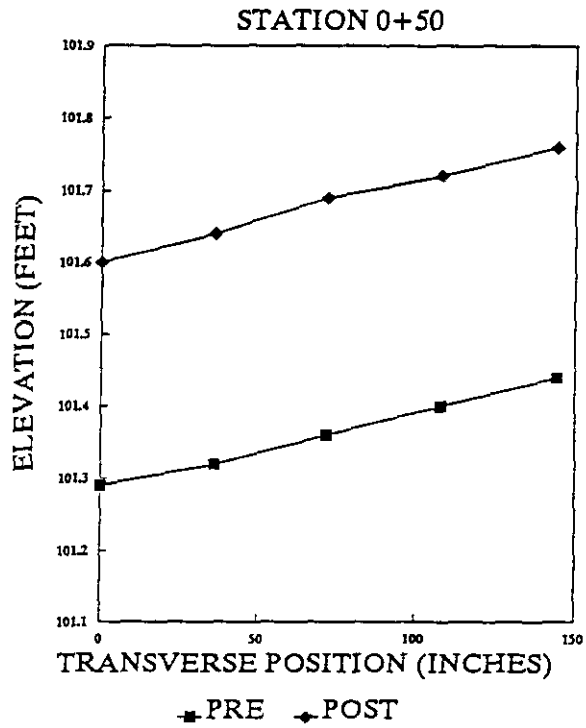
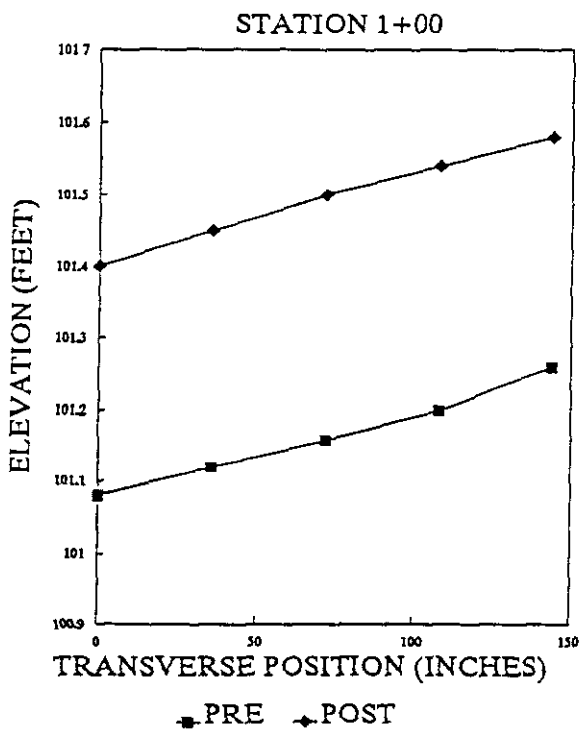
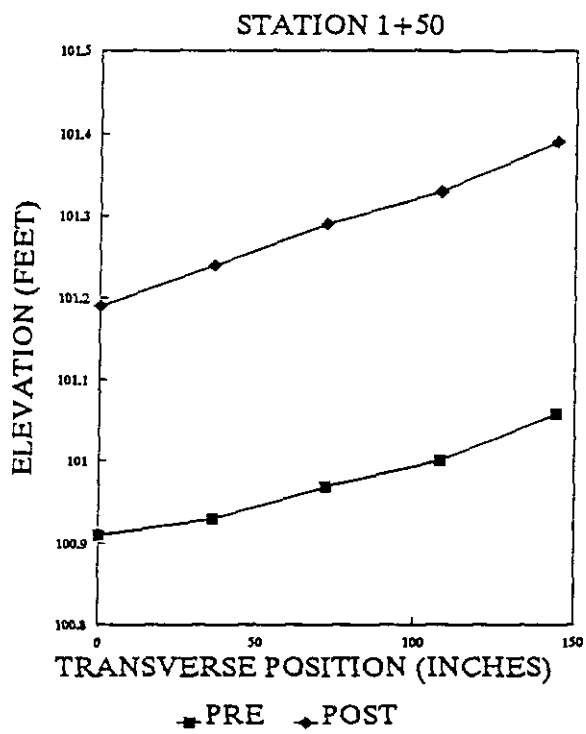
SECTION 400604

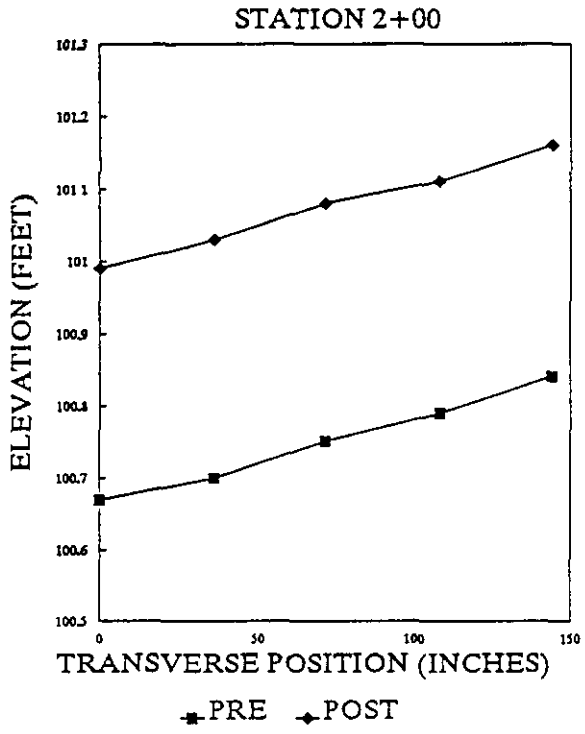


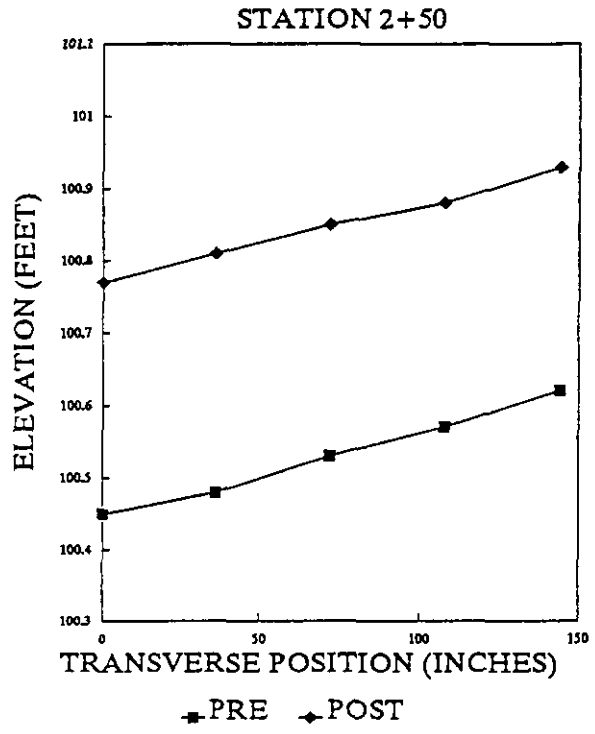


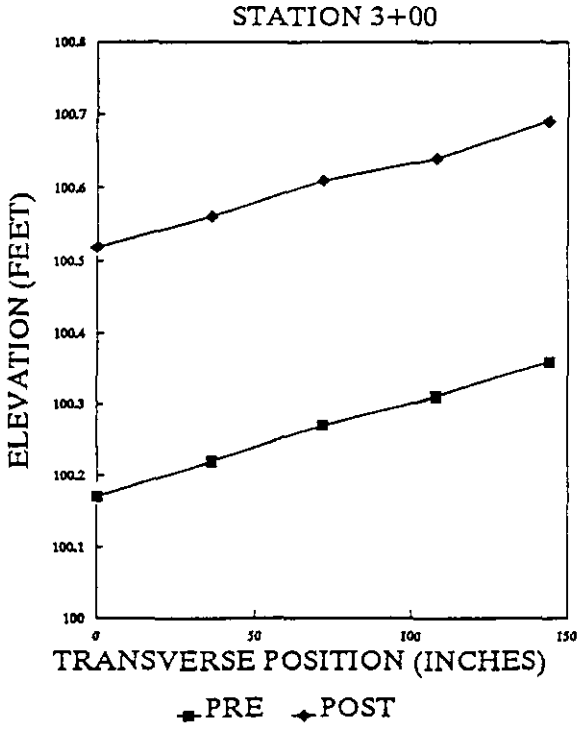


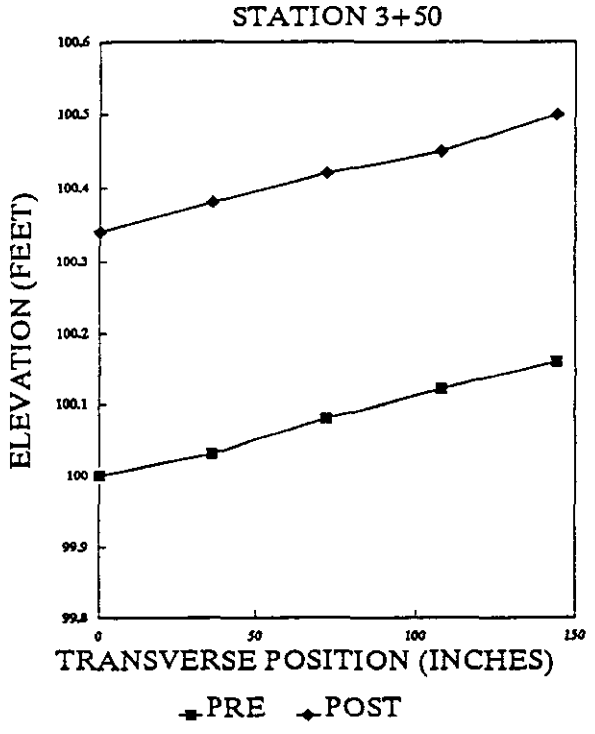


SECTION 400604

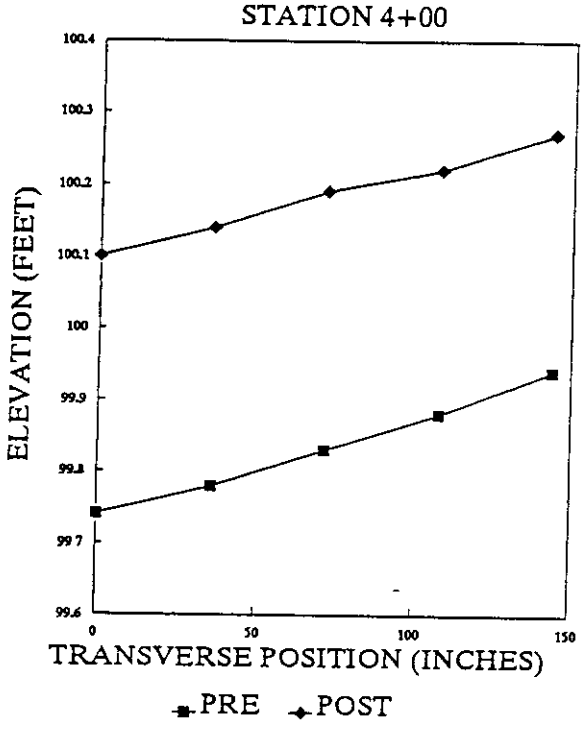


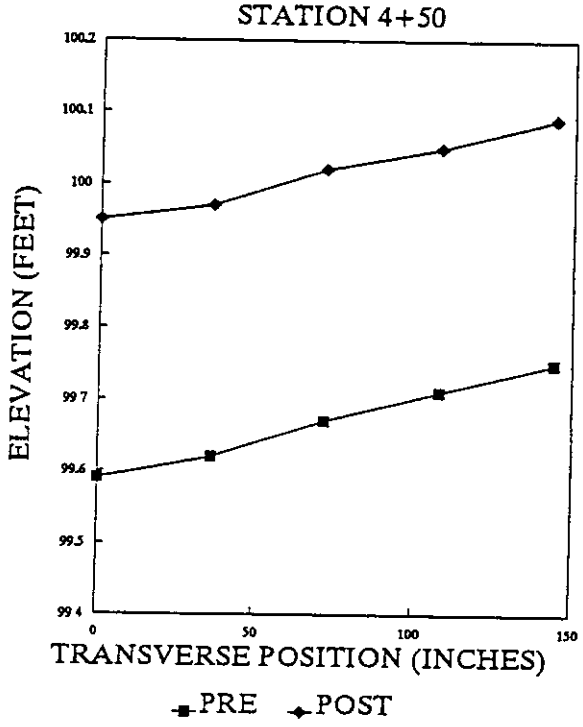


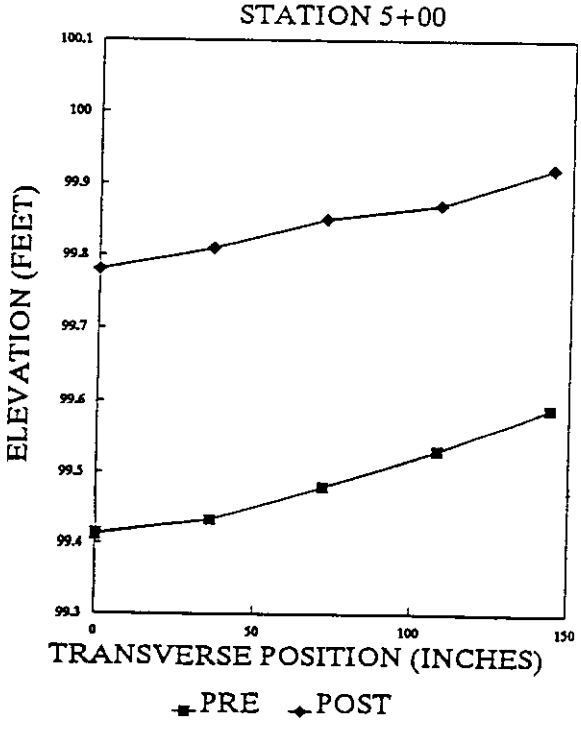




SECTION 400604







SECTION 400605 OKLAHOMA

Trans. Offset		0'	Overlay Depth (IN.)	3'	Overlay Depth (IN.)	6'	Overlay Depth (IN.)	9'	Overlay Depth (IN.)	12'	Overlay Depth (IN.)
0+00	PRE	103 65	−0 24	103 69	−0 12	103 74	−0 24	103 78	−0 12	103 83	−0.12
	POST	103 63		103 68		103 72		103 77		103 82	
0+50	PRE	103 49	−0 12	103 53	−0 24	103 57	−0 12	103 62	0.00	103 66	−0 12
	POST	103 48		103 51		103 56		103 62		103 65	
1+00	PRE	103 32	−0 12	103 35	−0 24	103 40	−0 24	103 44	−0 24	103 48	−0 12
	POST	103 31		103 33		103 38		103 42		103 47	
1+50	PRE	103 09	−0 12	103 14	−0 24	103 18	−0 24	103 22	−0 12	103 27	−0 12
	POST	103 08		103 12		103 16		103 21		103 26	
2+00	PRE	102 94	−0 12	102 98	−0 12	103 02	−0 12	103 06	−0 12	103 11	−0 12
	POST	102 93		102 97		103 01		103 05		103 10	
2+50	PRE	102 79	−0 24	102 82	−0 24	102 86	−0 24	102 90	−0 24	102 95	−0 12
	POST	102 77		102 80		102 84		102 88		102 94	
3+00	PRE	102 58	0 00	102 62	−0 24	102 67	−0 24	102 71	−0 24	102 76	−0 12
	POST	102 58		102 60		102 65		102 69		102 75	
3+50	PRE	102 41	−0 24	102 43	−0 24	102.48	−0 12	102.53	−0.12	102 58	−0.12
	POST	102 39		102 41		102 47		102 52		102 57	
4+00	PRE	102 19	−0 24	102 22	−0 12	102 27	−0 24	102 32	−0 24	102 36	−0 12
	POST	102 17		102 21		102 25		102 30		102 35	
4+50	PRE	101 97	−0 12	102 01	−0 12	102 05	0 00	102 09	0 00	102 14	0 00
	POST	101 96		102 00		102 05		102 09		102 14	
5+00	PRE	101.79	−0 12	101 82	0 00	101 87	−0.12	101 91	−0 12	101 95	0 00
	POST	101 78		101 82		101 86		101 90		101 95	

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SECTION 400605 OKLAHOMA

Trans. Offset		0'	Overlay Depth (IN.)	3'	Overlay Depth (IN.)	6'	Overlay Depth (IN.)	9'	Overlay Depth (IN.)	12'	Overlay Depth (IN.)
5+50	PRE	101.56	0 00	101 59	0 00	101 65	0.00	101 69	0 00	101 74	0 00
	POST	101.56		101 59		101 65		101 69		101.74	
6+00	PRE	101 40	–0 12	101 43	–0 12	101 47	0 00	101 51	0 00	101 56	0 00
	POST	101 39		101 42		101 47		101 51		101.56	
6+50	PRE	101 17	0 00	101 21	0 00	101 26	0 00	101 31	0 00	101.36	0.00
	POST	101 17		101 21		101 26		101 31		101 36	
7+00	PRE	100 96	0 00	101 00	0 00	101 04	0 00	101 09	0 00	101 16	0 00
	POST	100 96		101 00		101 04		101 09		101 16	
7+50	PRE	100 79	0 00	100 83	–0 12	100 87	0 00	100 91	0 00	100 96	0 00
	POST	100 79		100 82		100 87		100 91		100 96	
8+00	PRE	100 57	0 00	100 60	–0 12	100 65	–0 12	100 69	0 00	100 75	0 00
	POST	100 57		100 59		100 64		100 69		100 75	
8+50	PRE	100 36	0 00	100 38	0 00	100 43	0 00	100 47	0 00	100 52	0 00
	POST	100 36		100 38		100 43		100 47		100 52	
9+00	PRE	100 15	0 00	100 19	0 00	100 24	0 00	100 28	0 00	100 34	0 00
	POST	100 15		100 19		100 24		100 28		100 34	
9+50	PRE	99 98	0 00	100 02	0 00	100 07	–0 12	100 11	0 00	100 16	–0 12
	POST	99 98		100 02		100 06		100 11		100 15	
10+00	PRE	99 86	0 00	99 89	0 00	99 93	0 00	99 98	0 00	100 03	0 00
	POST	99 86		99 89		99 93		99 98		100 03	

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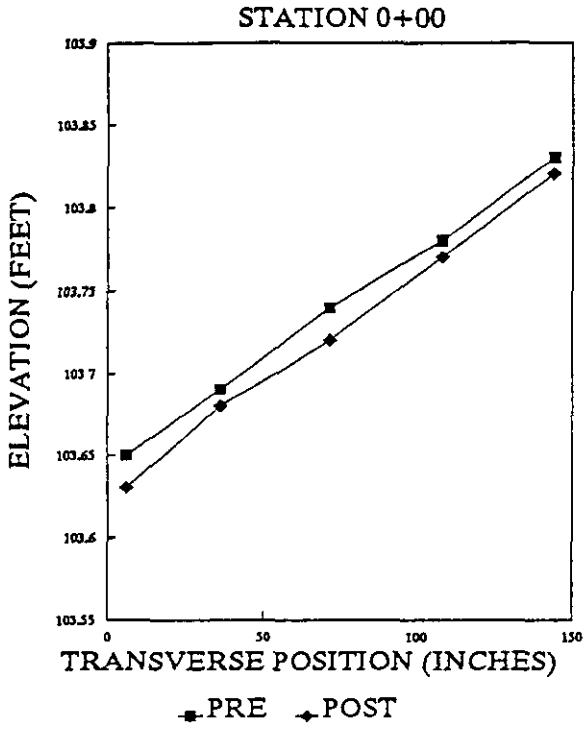
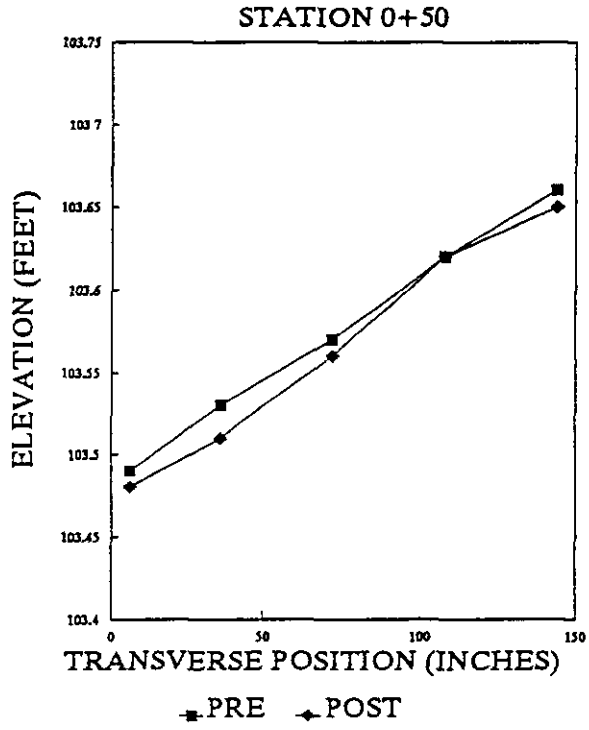
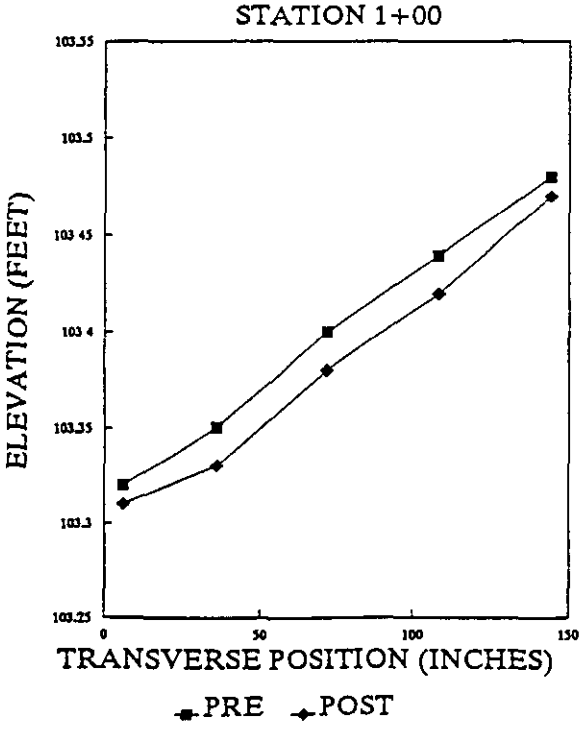
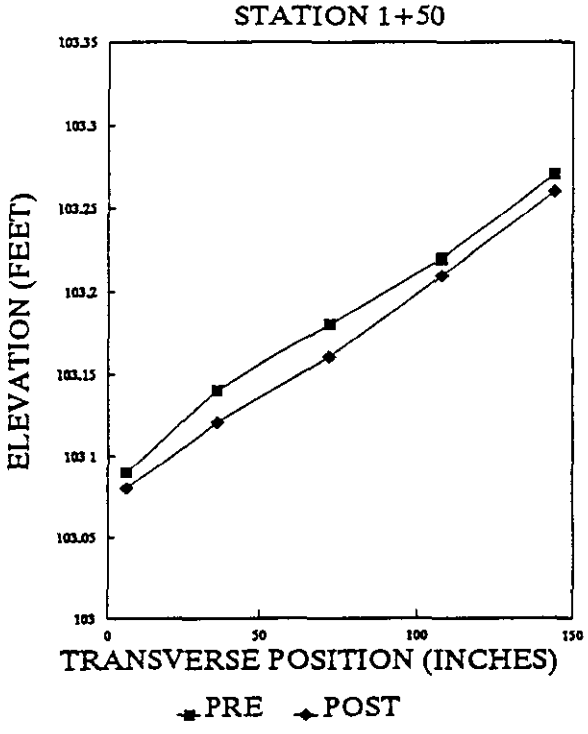
SECTION 400605

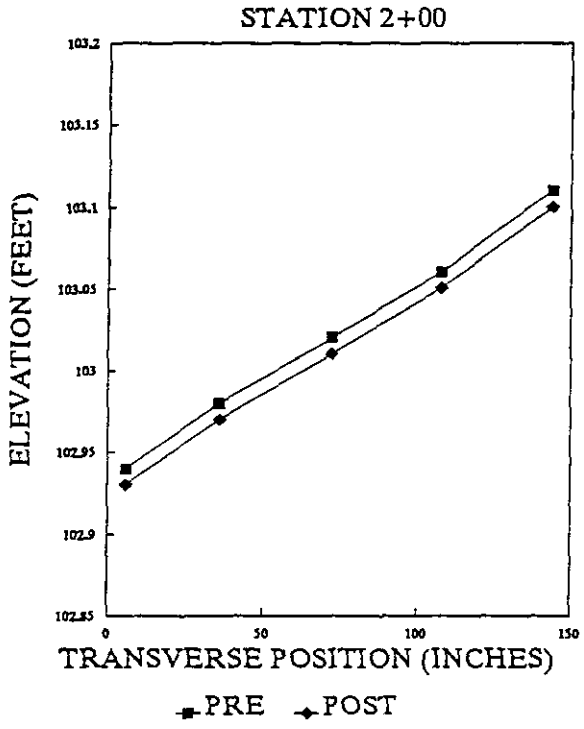


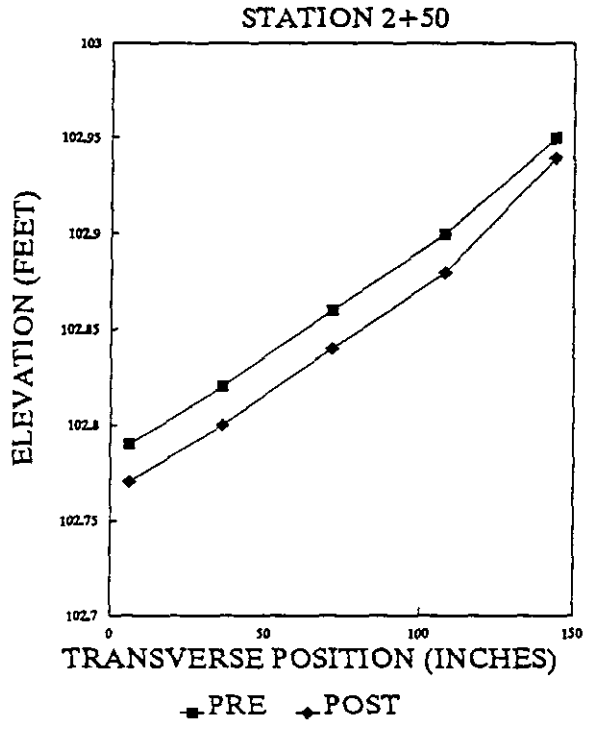


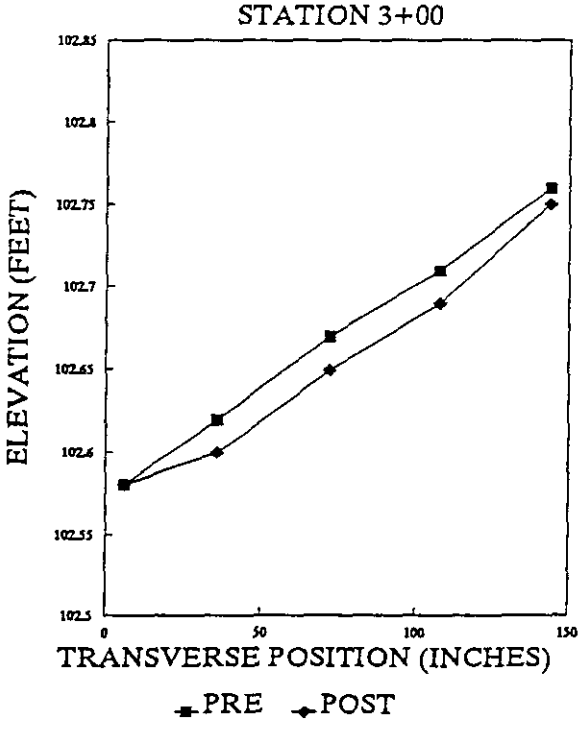


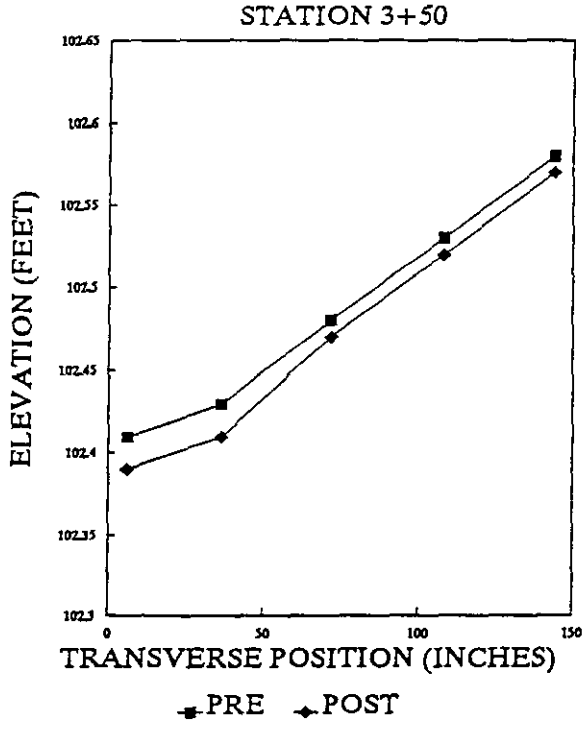


SECTION 400605

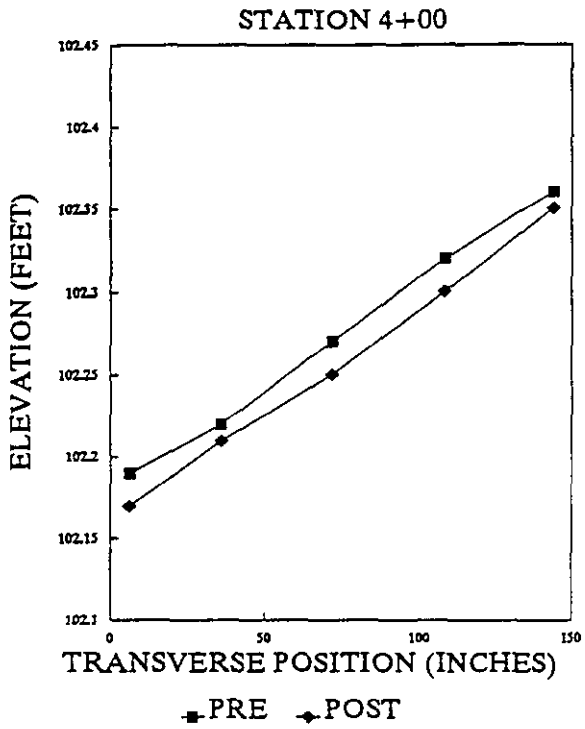


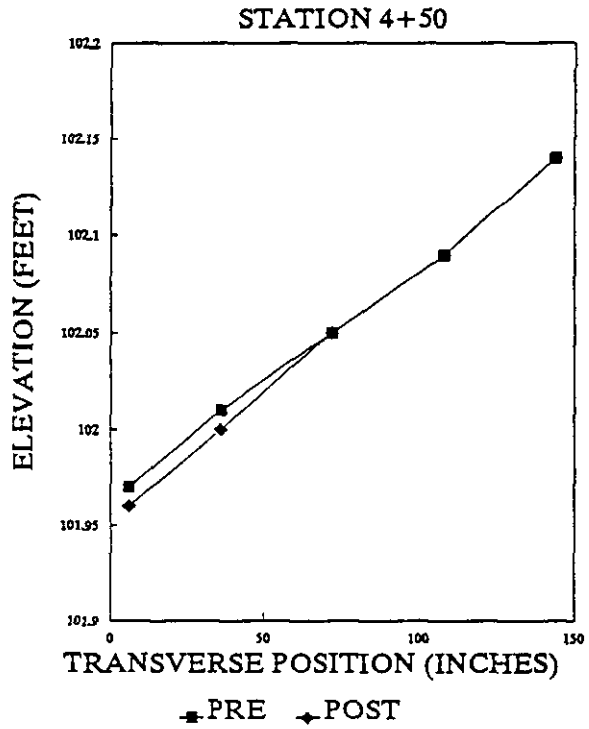


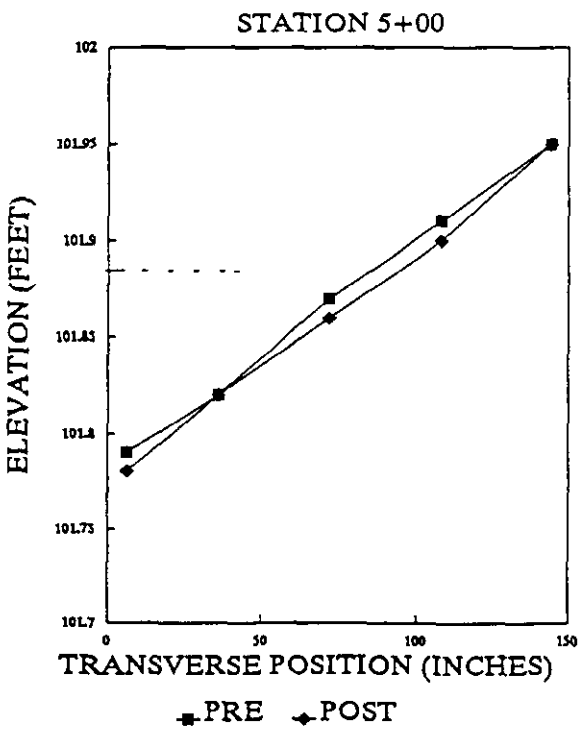


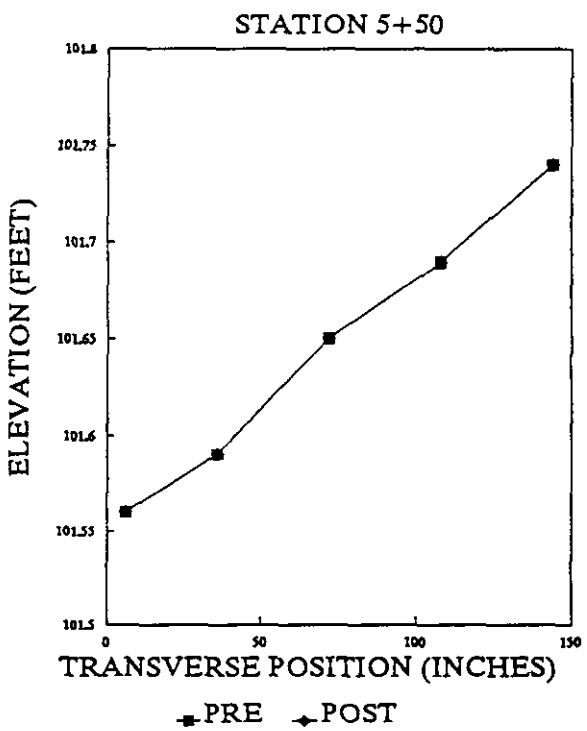


SECTION 400605

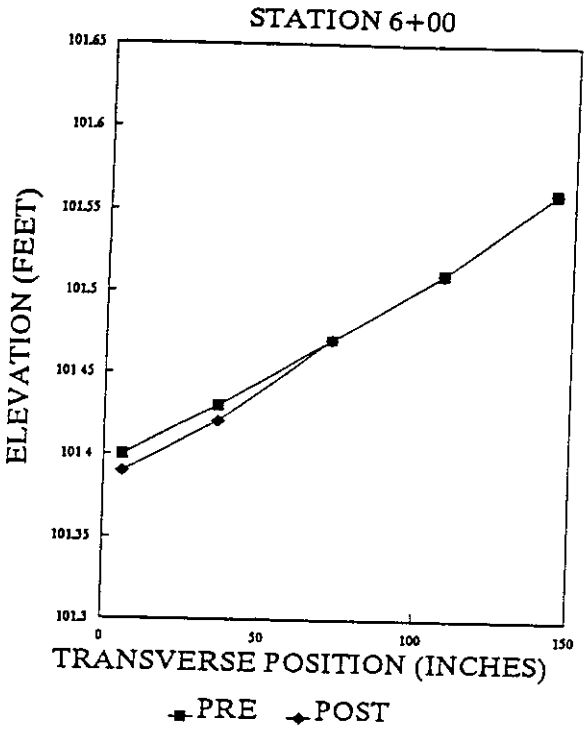


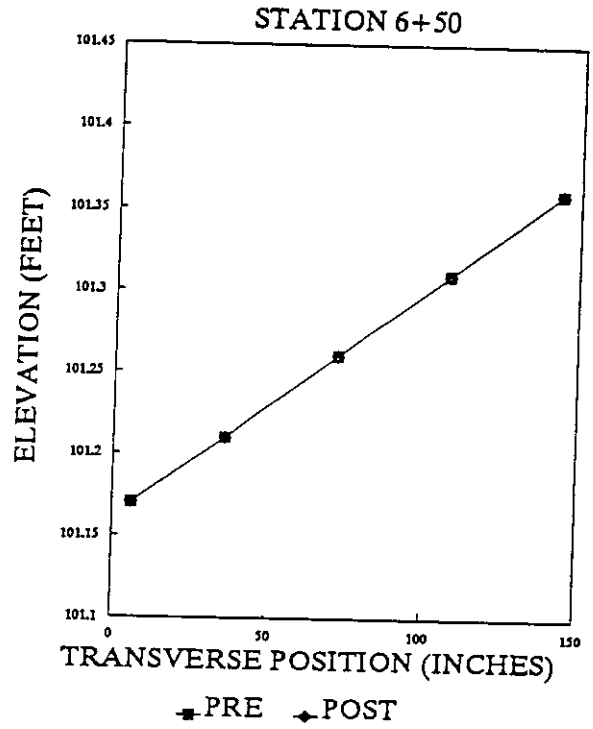


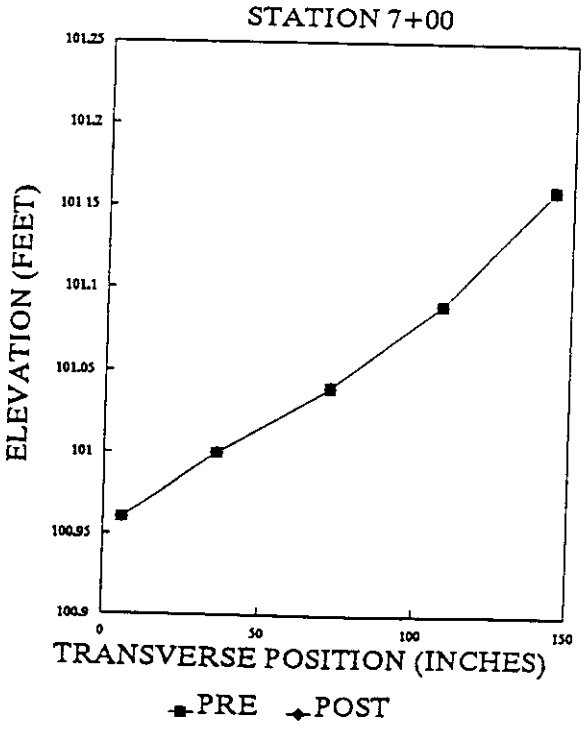


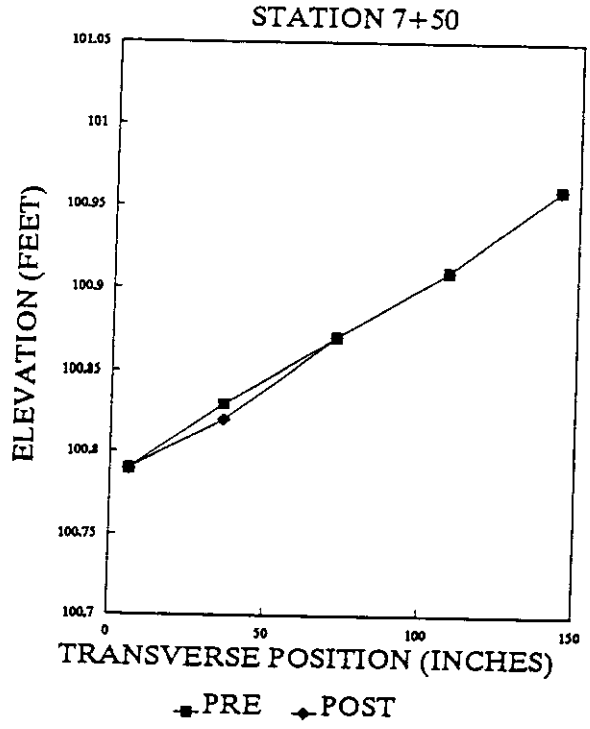


SECTION 400605

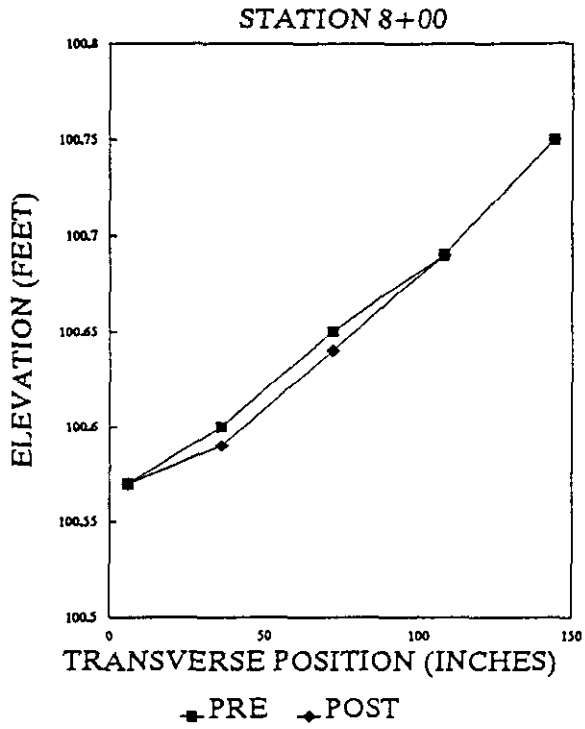


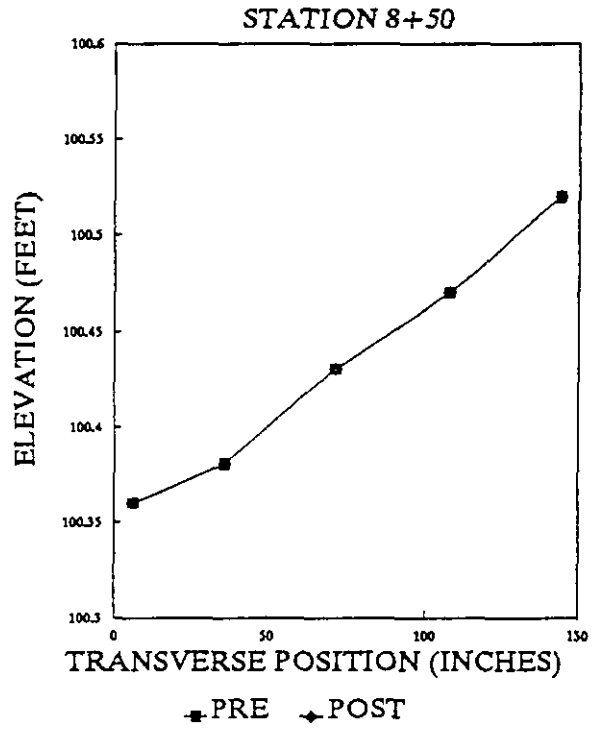


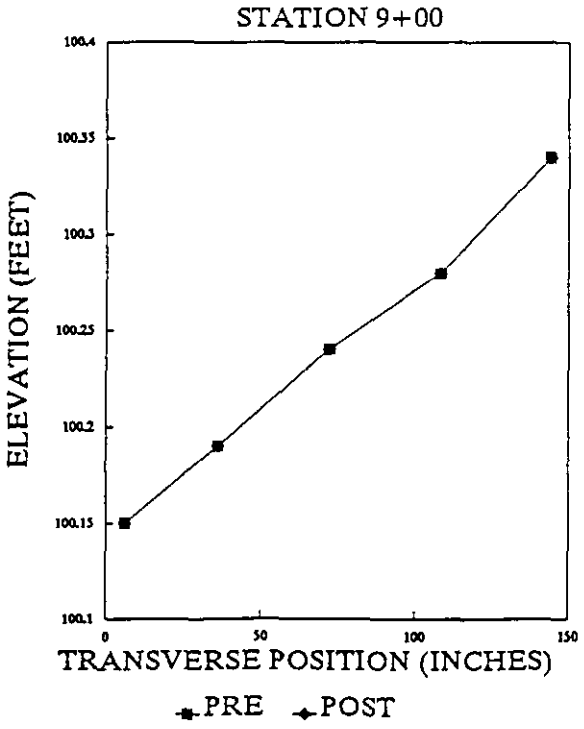


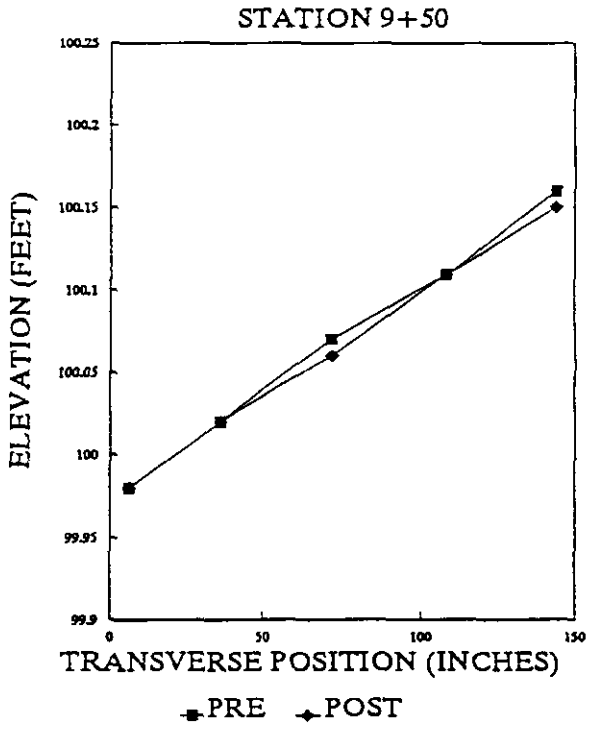


SECTION 400605

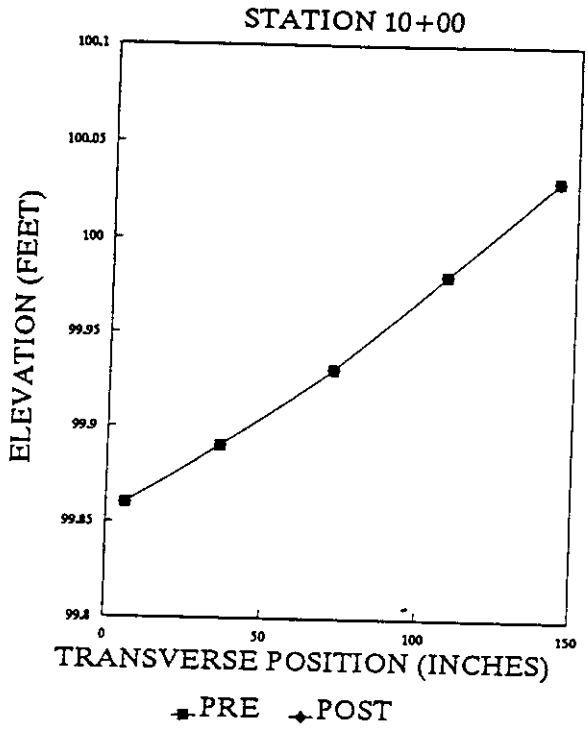








SECTION 400605



Elevation Readings and Overlay Thickness

SECTION 400606 OKLAHOMA

Trans	Offset	0'	Overlay Depth (IN)	3'	Overlay Depth (IN)	6'	Overlay Depth (IN)	9'	Overlay Depth (IN)	12'	Overlay Depth (IN.)
0+00	PRE	101 22	4 44	101 26	4 44	101 30	4 32	101 34	4 20	101 38	4 20
	POST	101 59		101 63		101 66		101 69		101 73	
0+50	PRE	101 04	4 08	101 07	4 08	101 11	4 08	101 15	3 96	101 20	3 84
	POST	101 38		101 41		101 45		101 48		101 52	
1+00	PRE	100 83	3 96	100 87	3 96	100 92	3 84	100 96	3 60	101 01	3 60
	POST	101 16		101 20		101 24		101 26		101 31	
1+50	PRE	100 62	4 32	100 66	4 20	100 70	4 08	100 75	3 84	100 79	3 84
	POST	100 98		101 01		101 04		101 07		101 11	
2+00	PRE	100 44	3 96	100 46	4 08	100 50	3 96	100 53	3 84	100 57	3 84
	POST	100 77		100 80		100 83		100 85		100 89	
2+50	PRE	100 25	3 96	100 28	3 96	100 32	3 84	100 36	3 72	100 40	3 72
	POST	100 58		100 61		100 64		100 67		100 71	
3+00	PRE	100 06	4 08	100 08	4 20	100 13	3 96	100 17	3 84	100 22	3 84
	POST	100 40		100 43		100 46		100 49		100 54	
3+50	PRE	99 83	4 68	99 87	4 56	99 91	4 44	99 95	4 32	100 00	4 08
	POST	100 22		100 25		100 28		100 31		100 34	
4+00	PRE	99 63	4 56	99 67	4 44	99 72	4 20	99 76	4 08	99 81	4 08
	POST	100 01		100 04		100 07		100 10		100 15	
4+50	PRE	99 43	4 08	99 46	4 20	99 50	4 20	99 54	3 96	99 59	3 84
	POST	99 77		99 81		99 85		99 87		99 91	
5+00	PRE	99 22	4 08	99 26	4 08	99 30	4 08	99 34	3 96	99 39	3 96
	POST	99 56		99 60		99 64		99 67		99 72	

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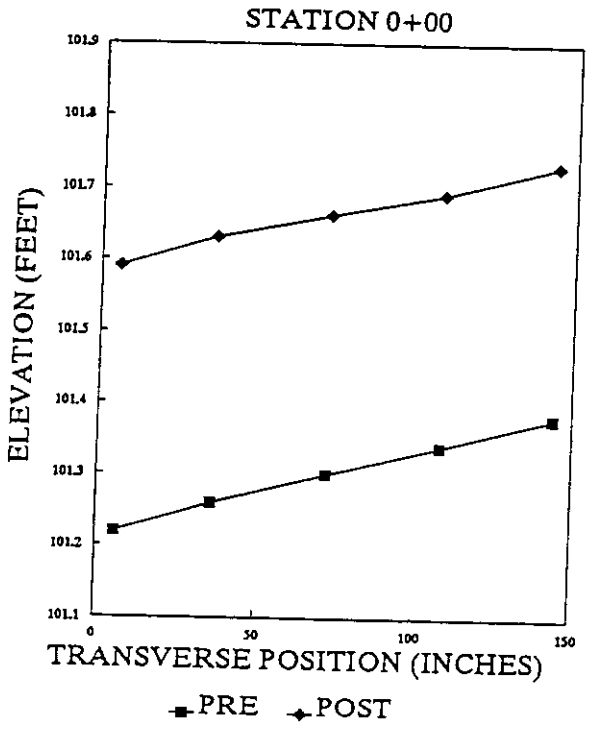
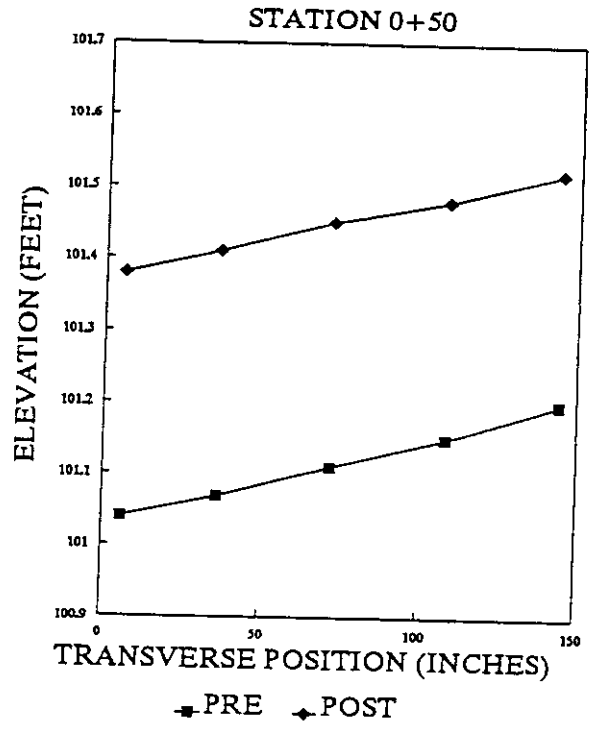
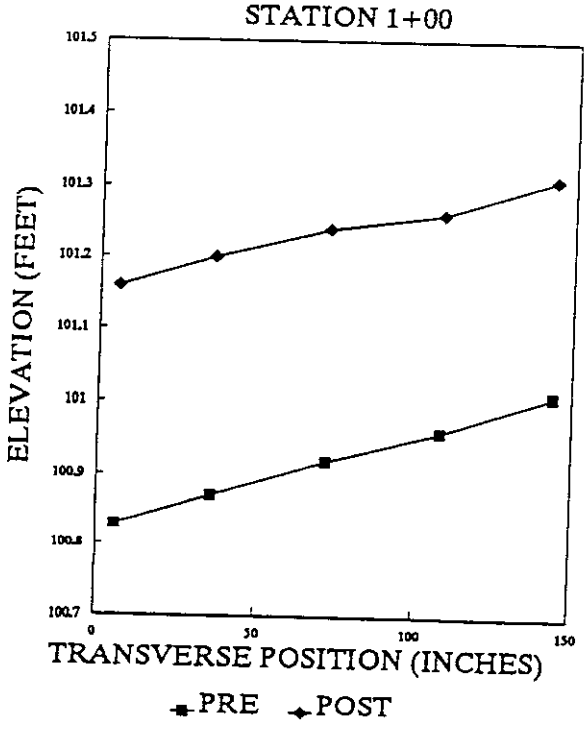
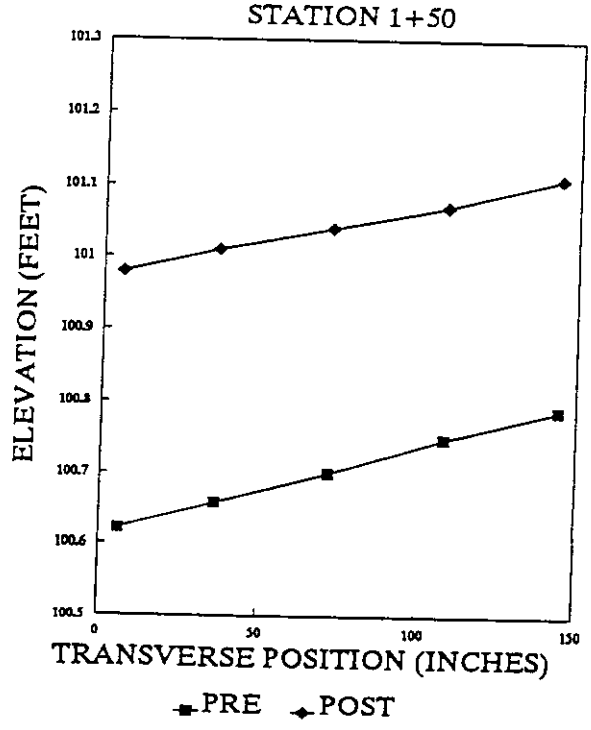
SECTION 400606

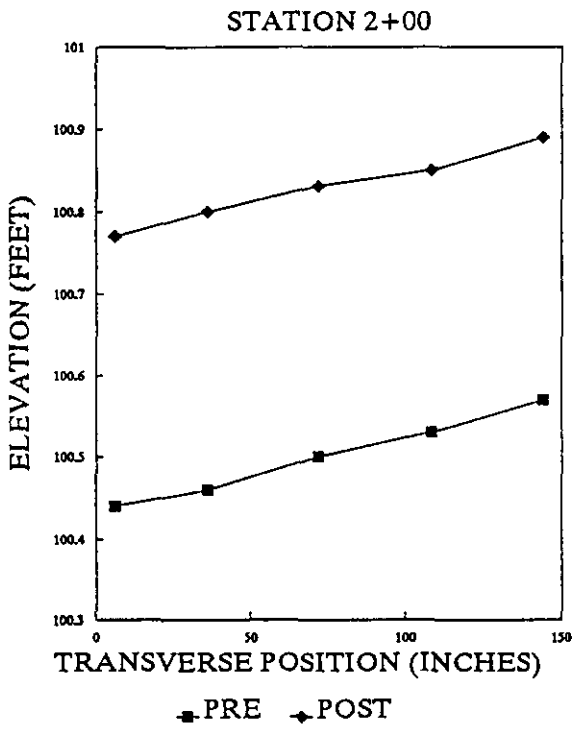


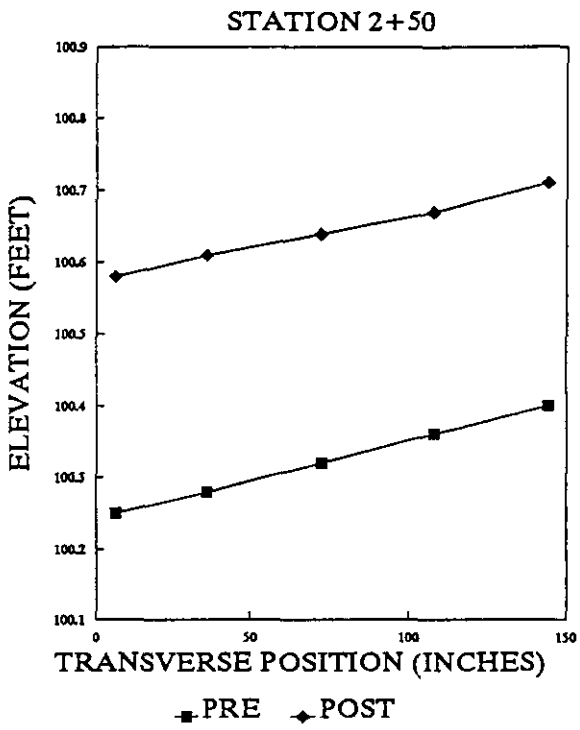


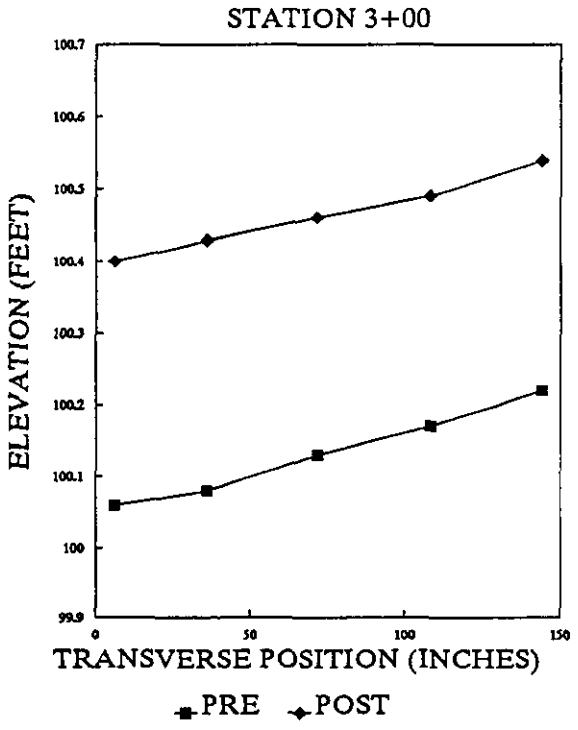


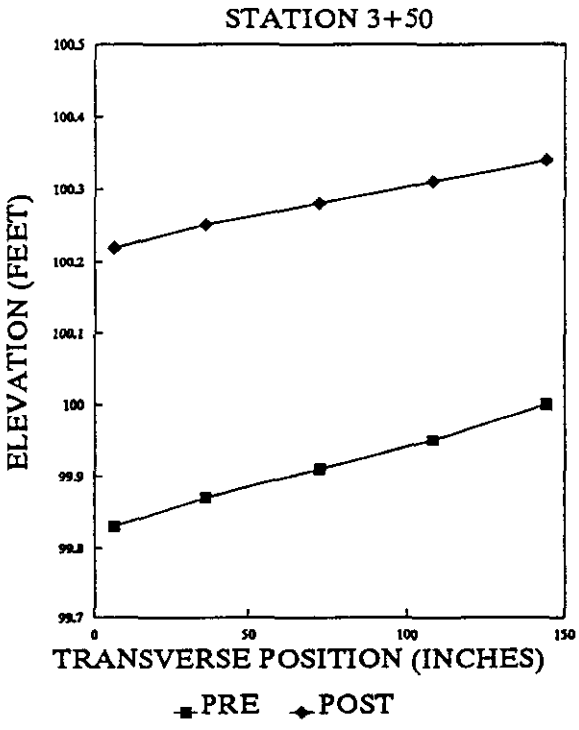


SECTION 400606

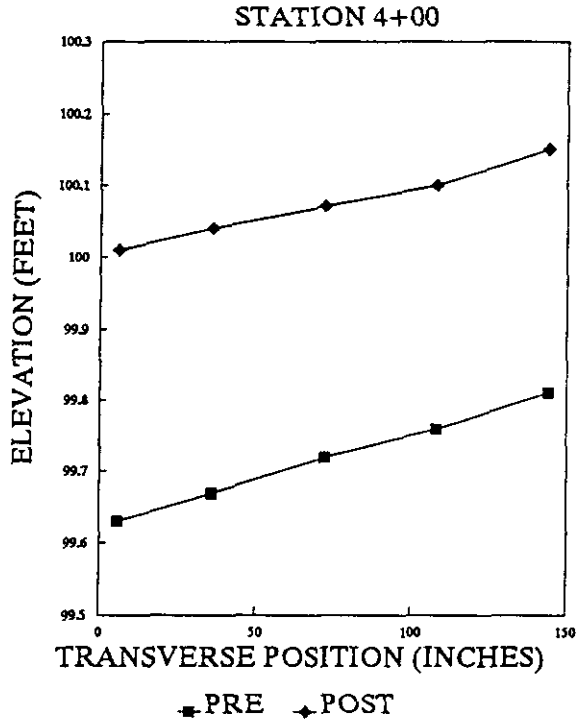


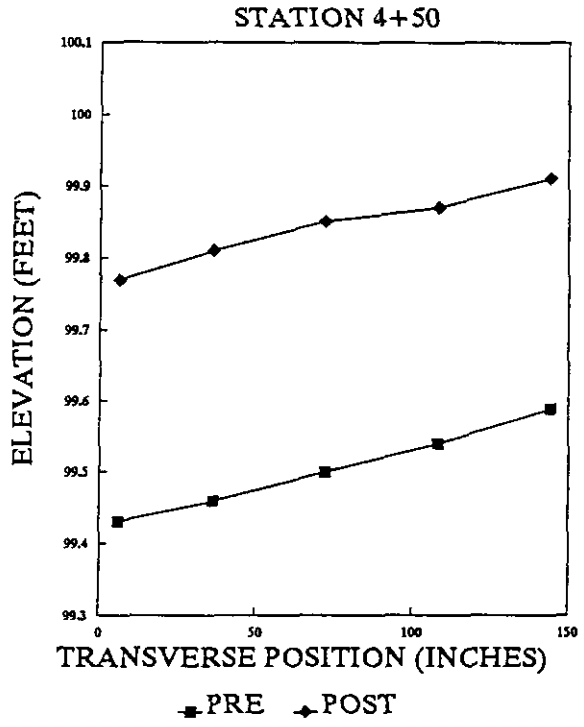


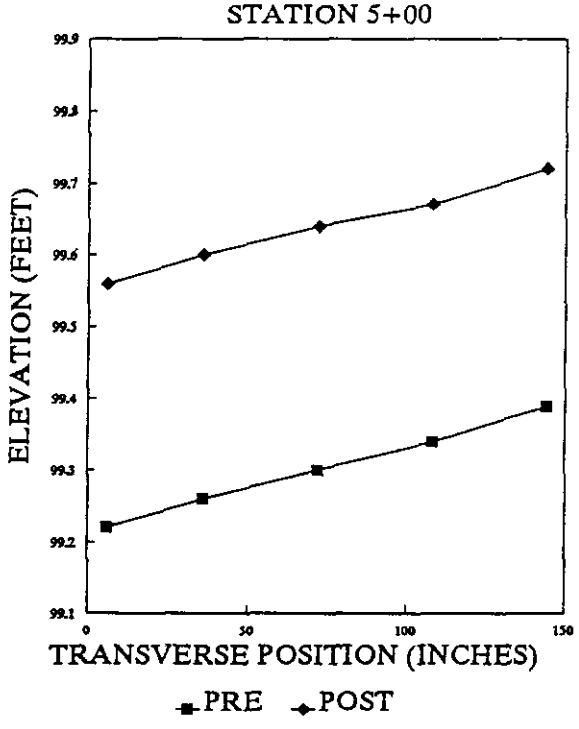




SECTION 400606







SECTION 400607 OKLAHOMA

Trans. Offset		0'	Overlay Depth (IN.)	3'	Overlay Depth (IN)	6'	Overlay Depth (IN.)	9'	Overlay Depth (IN.)	12'	Overlay Depth (IN.)
0+00	PRE	105 25	5 28	105 29	5 52	105 35		105 39	5 16	105 43	5 16
	POST	105 69		105 75		105 79		105 82		105 86	
0+50	PRE	105 03	4 92	105 06	5 52	105 11	5 52	105 16	5 40	105 21	5 28
	POST	105 44		105 52		105 57		105 61		105 65	
1+00	PRE	104 83	4 68	104 87	4 92	104 92	4 92	104 96	4 92	105 01	4 68
	POST	105 22		105 28		105 33		105 37		105 40	
1+50	PRE	104 66	3 96	104 70	4 32	104 74	4 32	104 78	4 32	104 81	4 44
	POST	104 99		105 06		105 10		105 14		105 18	
2+00	PRE	104 41	4 20	104 45	4 56	104 50	4 56	104 54	4 56	104.60	4.20
	POST	104 76		104 83		104 88		104 92		104 95	
2+50	PRE	104 22	4 20	104 26	4 44	104 31	4 56	104 35	4.44	104 40	4 32
	POST	104 57		104 63		104 69		104 72		104 76	
3+00	PRE	104 02	4 08	104 06	4 44	104 11	4 44	104 16	4 32	104 20	4 44
	POST	104 36		104 43		104 48		104 52		104 57	
3+50	PRE	103 82	4 08	103 86	4 44	103 92	4 44	103 96	4 44	104 01	4 44
	POST	104 16		104 23		104 29		104 33		104 38	
4+00	PRE	103.67	3 60	103 71	3 96	103 76	4 08	103 79	4 20	103 83	4 20
	POST	103 97		104 04		104 10		104 14		104 18	
4+50	PRE	103 50	3 60	103 53	3 96	103 57	4 08	103 62	3 96	103 66	4 08
	POST	103 80		103 86		103 91		103 95		104 00	
5+00	PRE	103 27	4 20	103 31	4 44	103 36	4 56	103 40	4 56	103 45	4 56
	POST	103 62		103 68		103 74		103 78		103 83	

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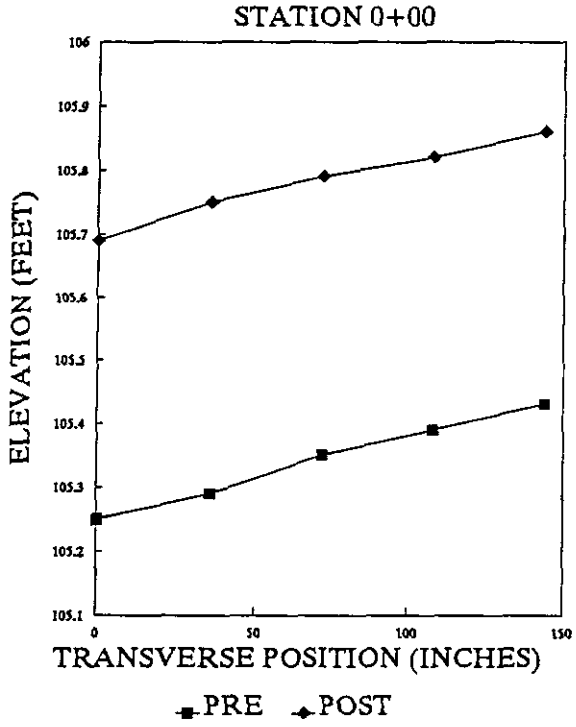
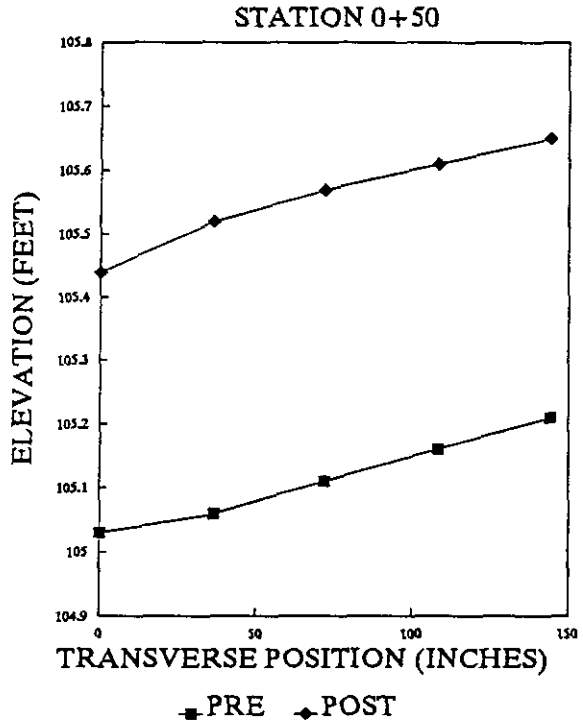
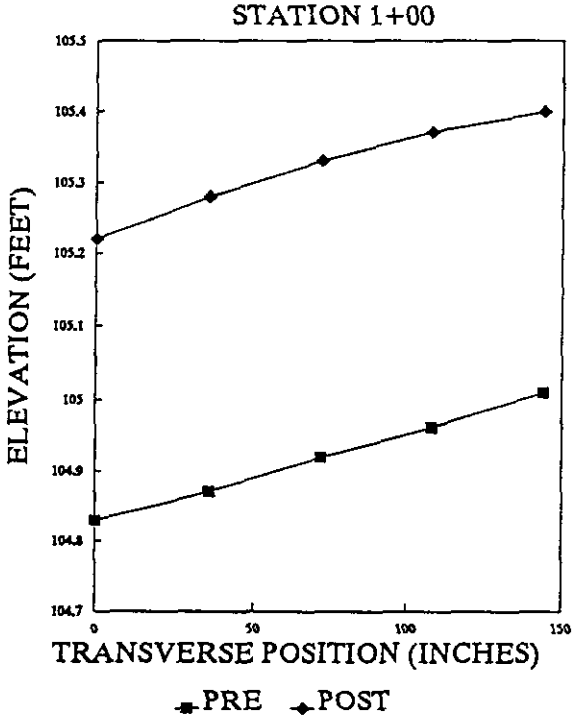
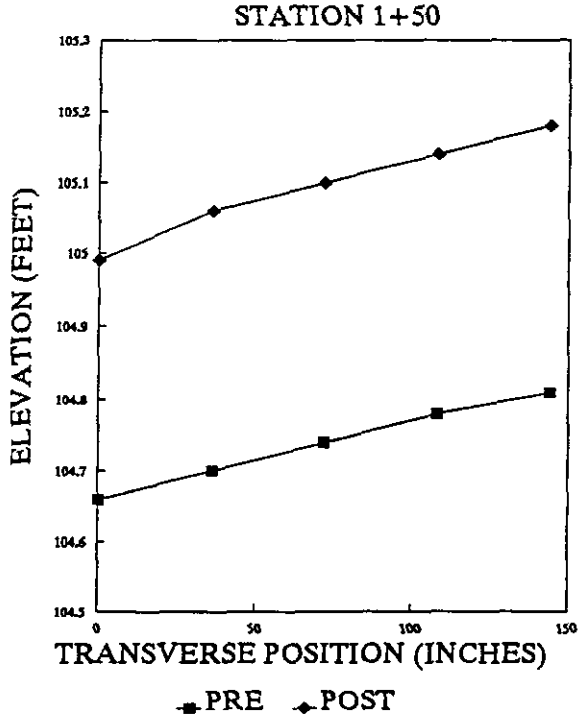
SECTION 400607

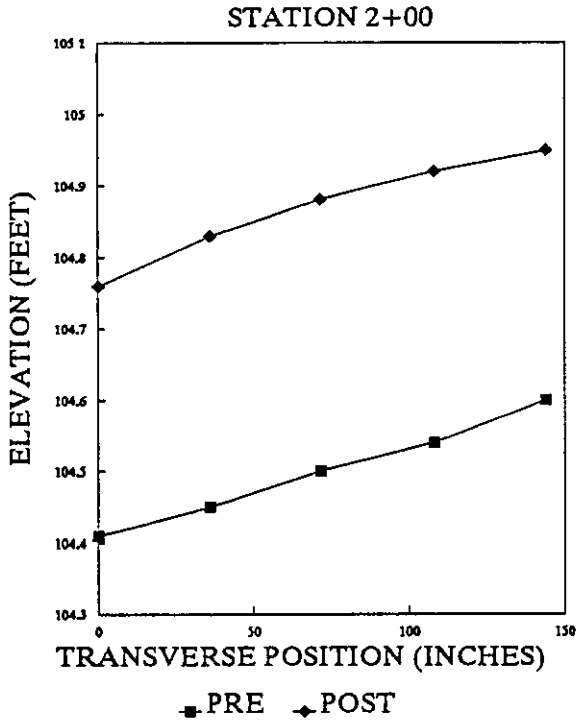


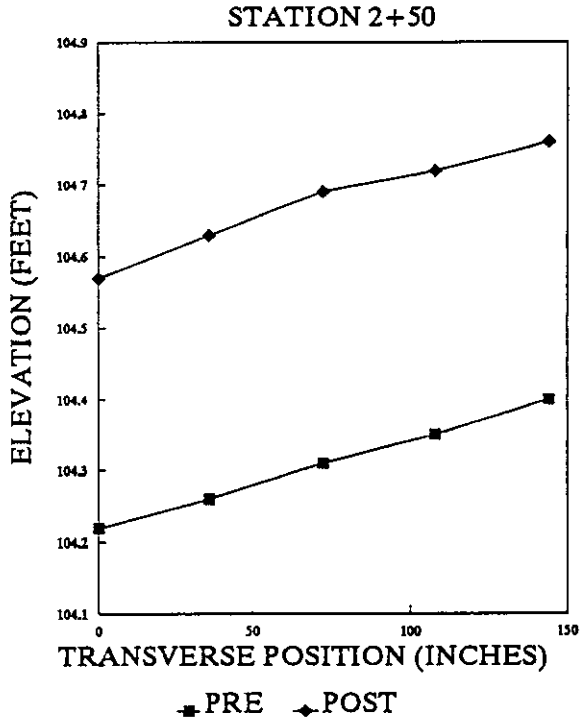


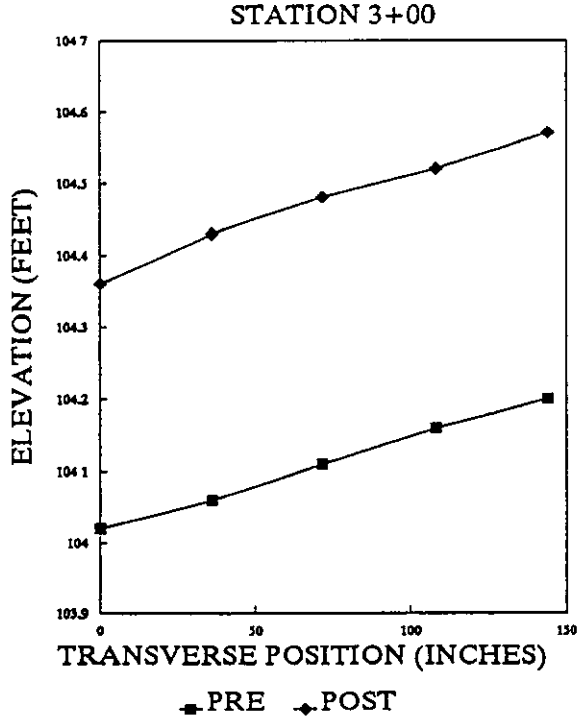


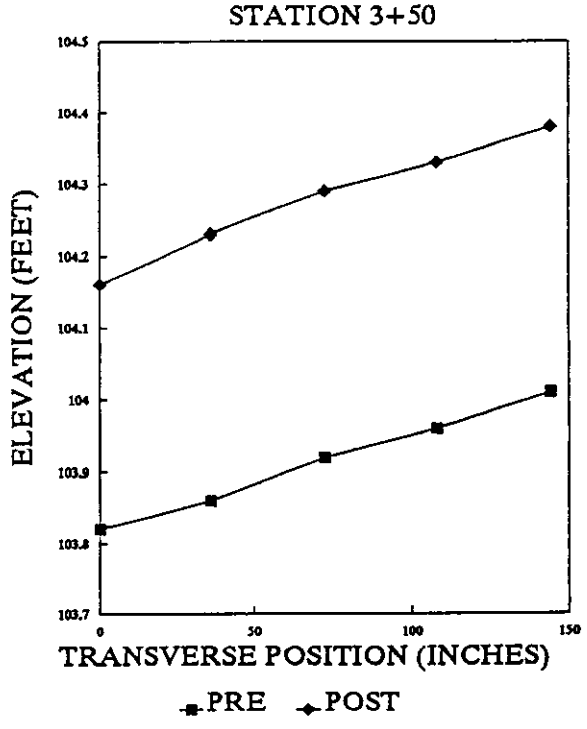


SECTION 400607

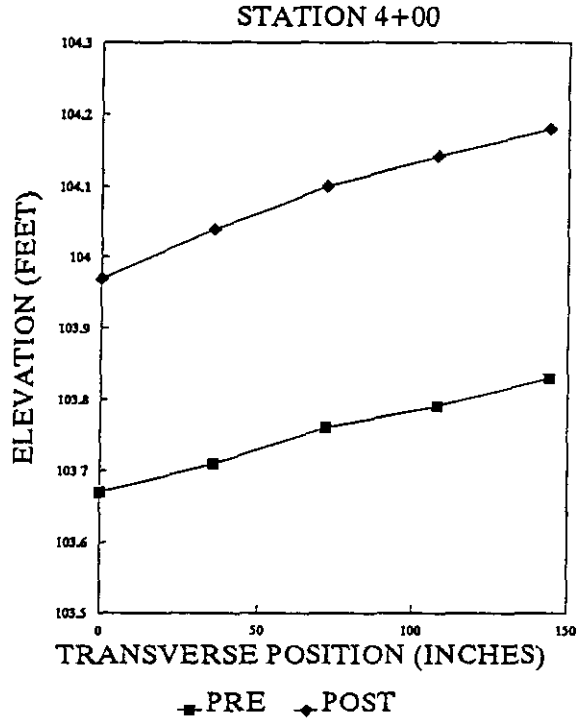


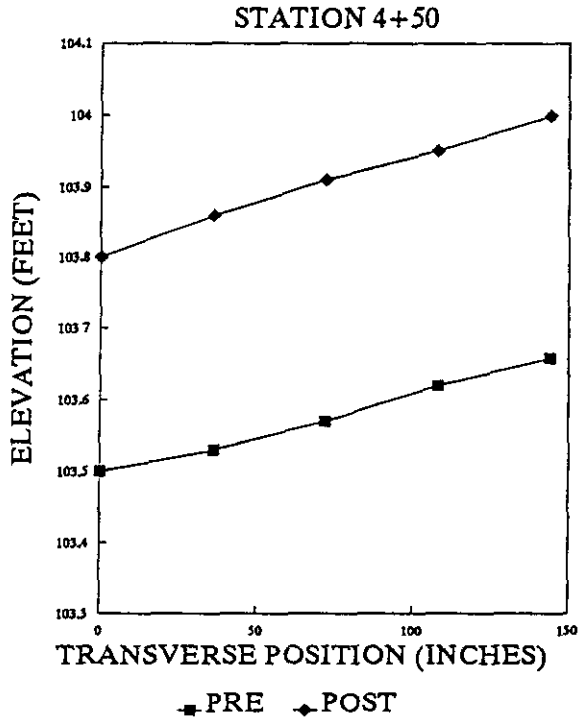


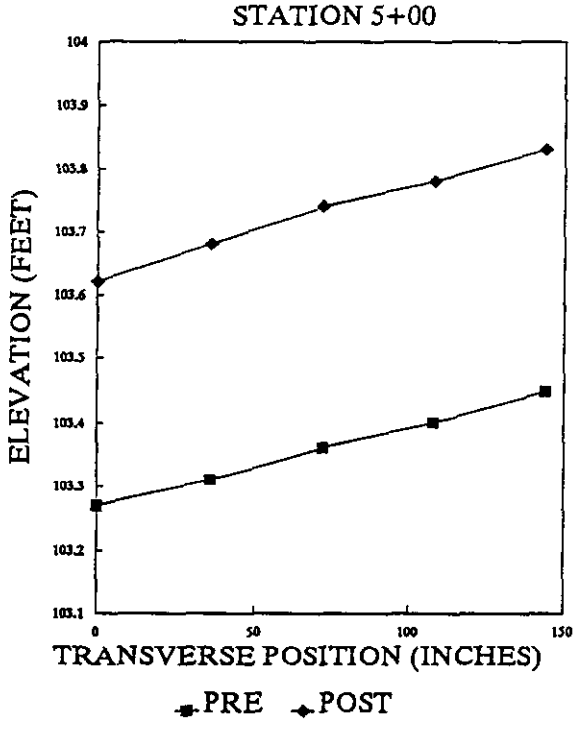




SECTION 400607







SECTION 400608 OKLAHOMA

Trans. Offset		0'	Overlay Depth (IN.)	3'	Overlay Depth (IN.)	6'	Overlay Depth (IN.)	9'	Overlay Depth (IN.)	12'	Overlay Depth (IN.)
0+00	PRE	102 36	7 80	102 39	8 16	102 44	8 28	102 49	8 16	102 54	8 04
	POST	103 01		103 07		103 13		103 17		103 21	
0+50	PRE	102 16	7 92	102 20	8 28	102 25	8 28	102 29	8 40	102 34	8 40
	POST	102 82		102 89		102 94		102 99		103 04	
1+00	PRE	101 96	7 44	102 00	7 80	102 05	7 92	102 09	8 28	102 13	8 04
	POST	102 58		102 65		102 71		102 78		102 80	
1+50	PRE	101 76	8 28	101 81	8 64	101 86	8 64	101 90	8 52	101 94	8 52
	POST	102 45		102 53		102 58		102 61		102 65	
2+00	PRE	101 58	7 44	101 61	7 80	101 66	7 92	101 70	8 04	101 74	8 04
	POST	102 20		102 26		102 32		102 37		102.41	
2+50	PRE	101 37	7 20	101 40	7 56	101 45	7 68	101 49	7 80	101 53	7 92
	POST	101 97		102 03		102 09		102 14		102 19	
3+00	PRE	101 17	6 96	101 20	7 44	101 25	7 56	101 29	7 68	101 33	7 92
	POST	101 75		101 82		101 88		101 93		101 99	
3+50	PRE	100 96	7 32	100 99	7 92	101 04	8.04	101 08	8 28	101.14	8 28
	POST	101 57		101 65		101.71		101 77		101 83	
4+00	PRE	100 74	7 32	100 78	7 68	100 83	7 92	100 86	8 16	100 91	8 16
	POST	101 35		101 42		101 49		101 54		101 59	
4+50	PRE	100 56	7 08	100 59	7 68	100 64	7 92	100 69	7 92	100 73	8 16
	POST	101.15		101 23		101.30		101 35		101 41	
5+00	PRE	100 37	7 08	100 41	7 68	100 45	7 92	100 49	8 16	100 53	8 28
	POST	100 96		101 05		101 11		101 17		101 22	

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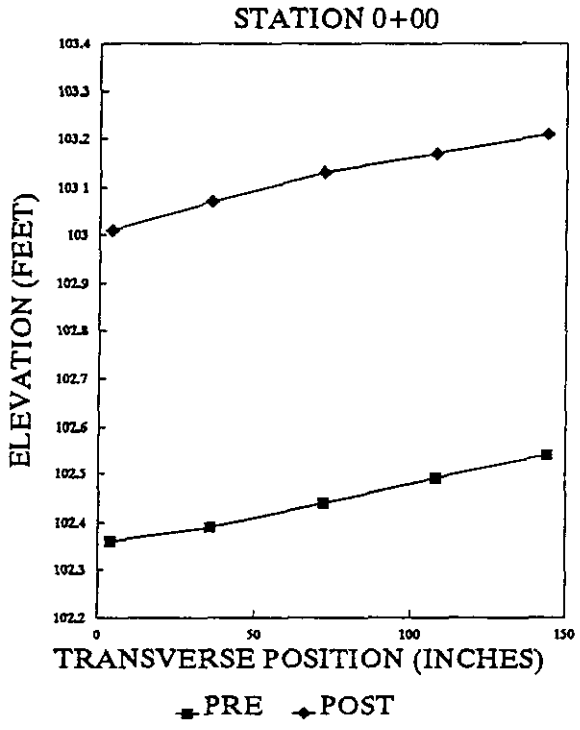
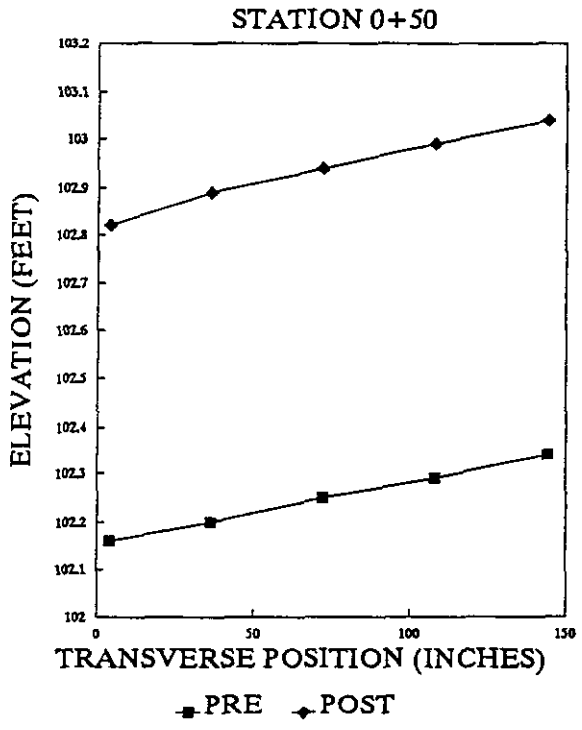
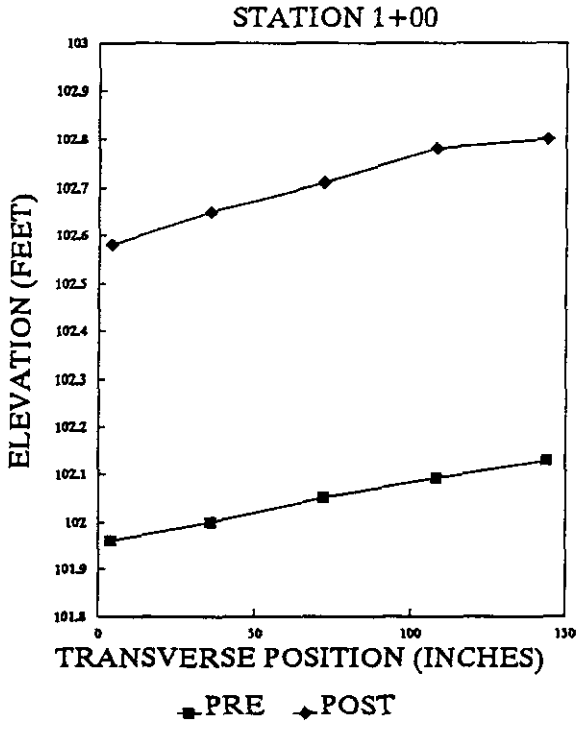
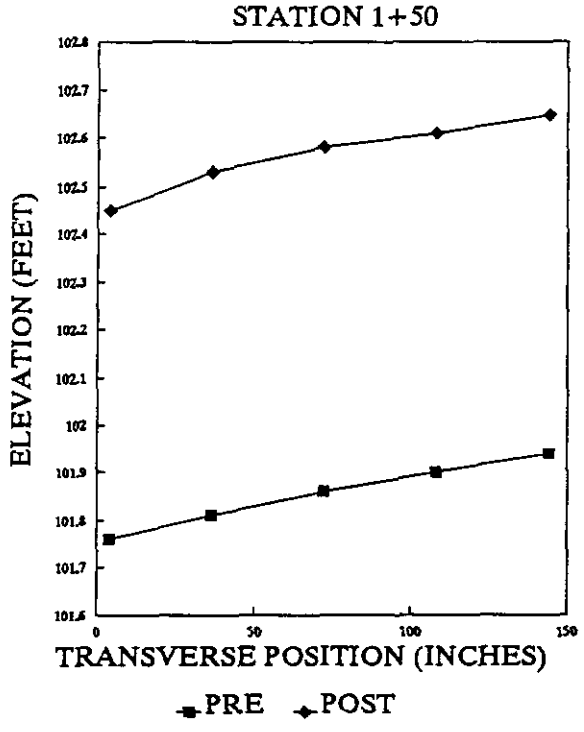
SECTION 400608

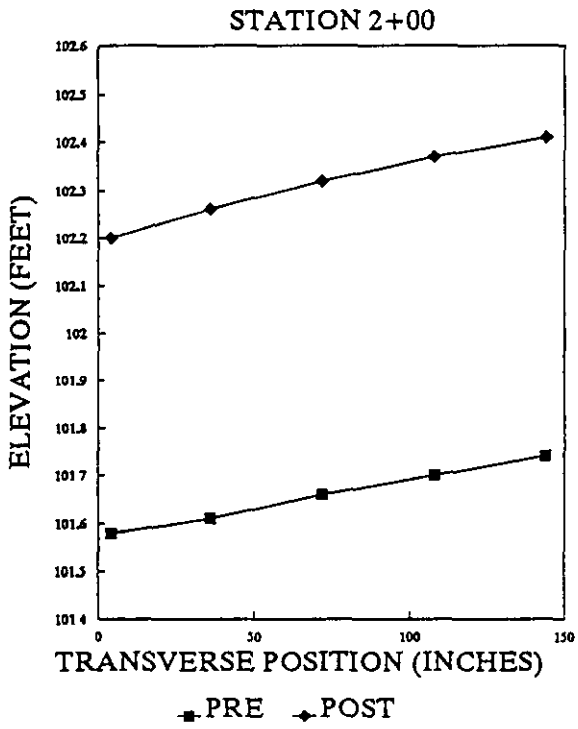


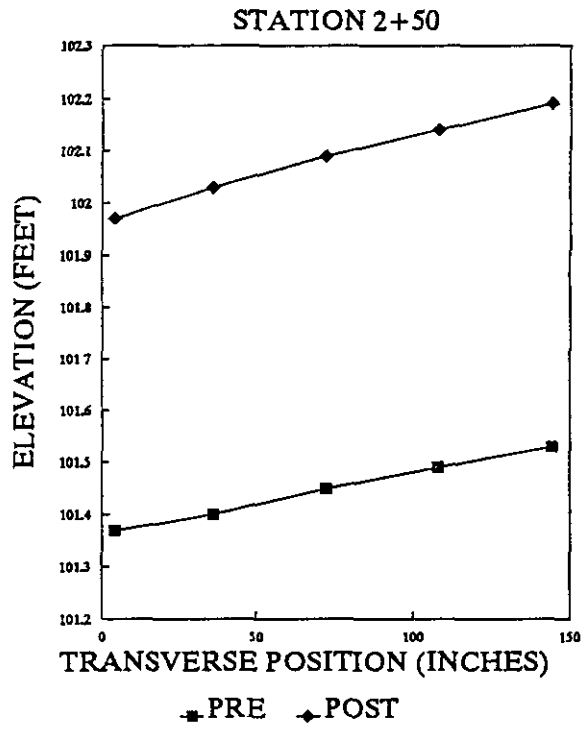


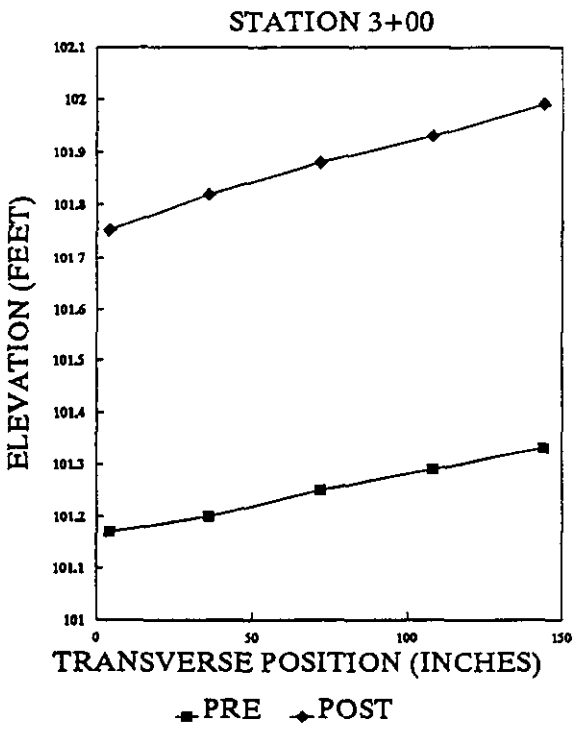


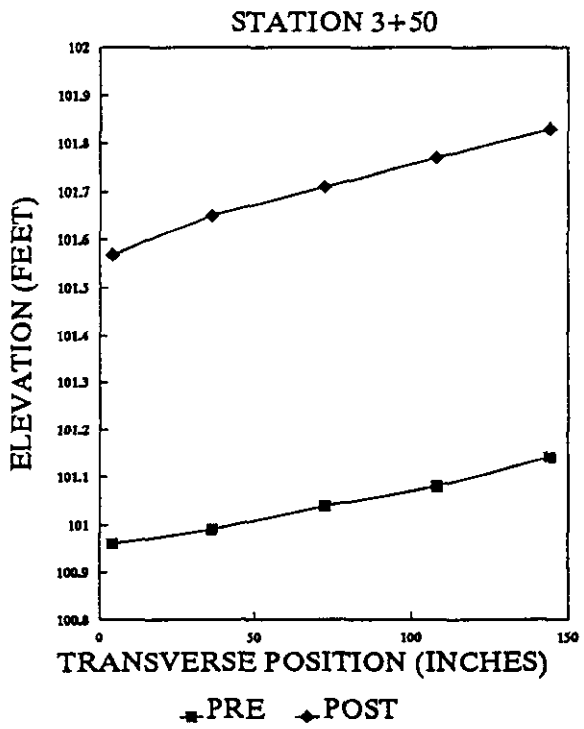


SECTION 400608

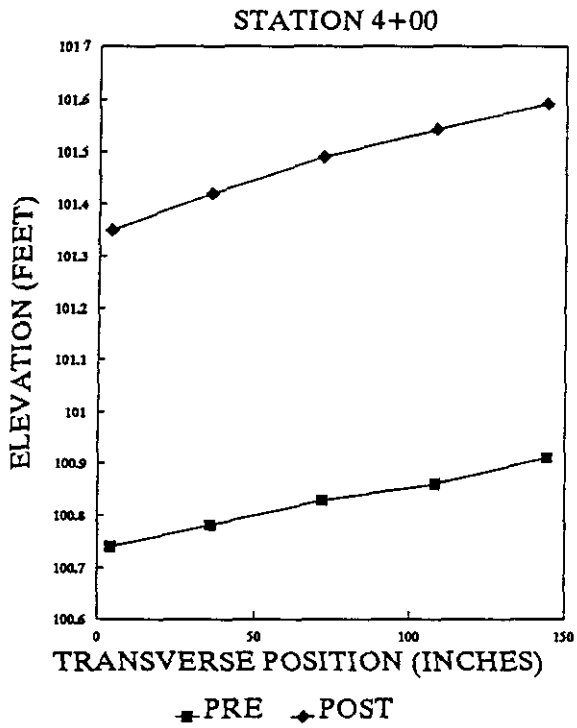


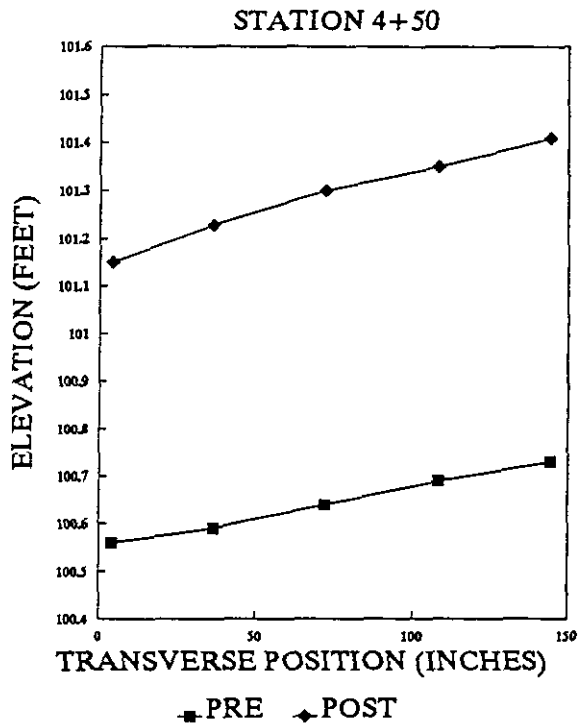


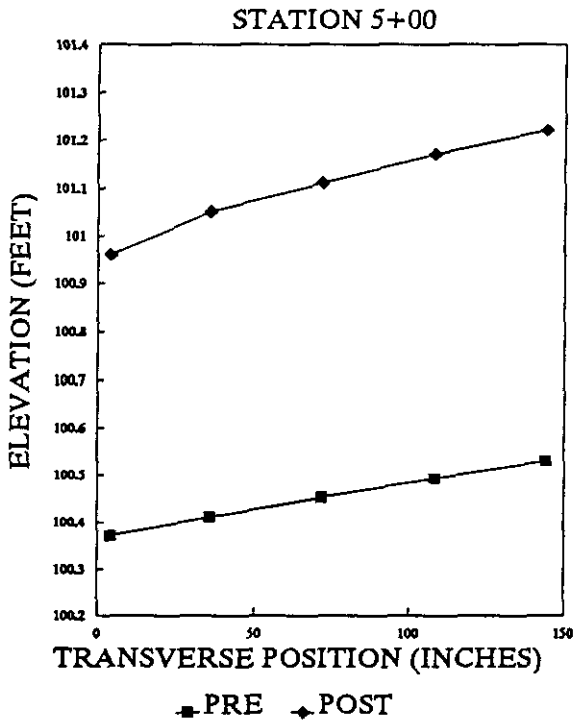




SECTION 400608

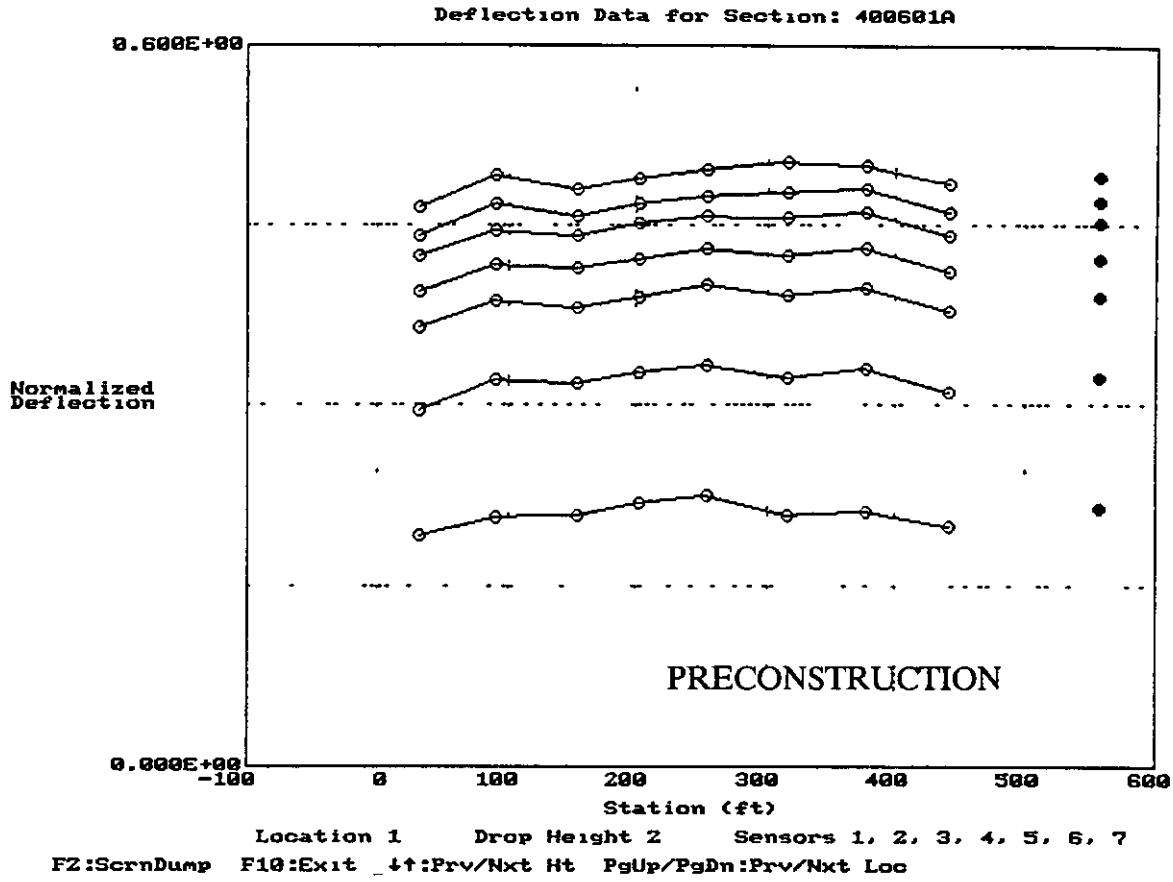






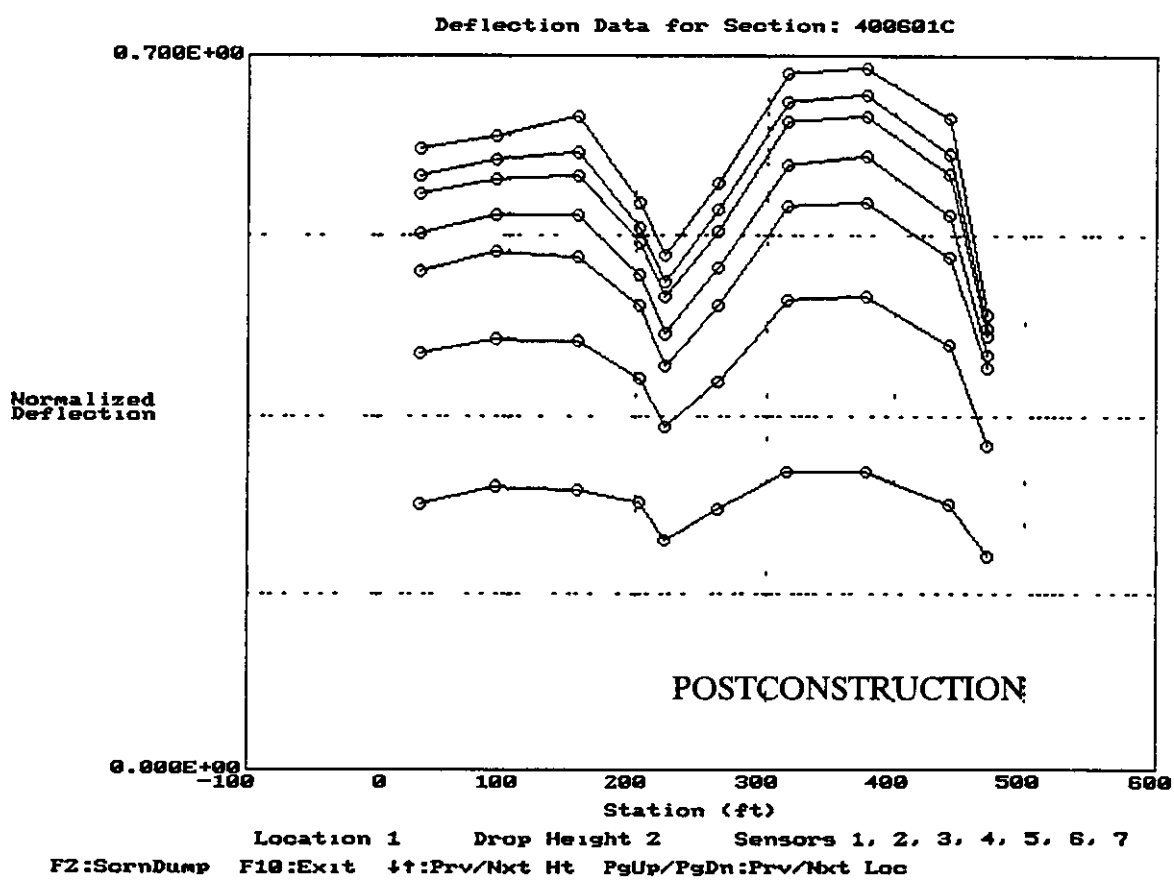
APPENDIX C

STRUCTURAL CAPACITY DATA



Location 1 Drop Height 2 Sensors 1, 2, 3, 4, 5, 6, 7

FZ:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc



Location 1 Drop Height 2 Sensors 1, 2, 3, 4, 5, 6, 7

FZ:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc

PRECONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400601A Mean Values (mils/kip)

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.4909	0.4689	0.4511	0.4219	0.3897	0.3226	0.2148
	3	0.4816	0.4613	0.4430	0.4134	0.3819	0.3175	0.2095
	4	0.4751	0.4521	0.4346	0.4044	0.3736	0.3092	0.2039
1	2	0.4888	0.4661	0.4470	0.4178	0.3862	0.3200	0.2089
	3	0.4808	0.4567	0.4386	0.4093	0.3787	0.3128	0.2024
	4	0.4740	0.4495	0.4319	0.4027	0.3715	0.3064	0.1974

Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	2	0.0119	0.0125	0.0119	0.0121	0.0116	0.0119	0.0101
	3	0.0105	0.0110	0.0115	0.0111	0.0113	0.0104	0.0091
	4	0.0087	0.0090	0.0090	0.0092	0.0091	0.0091	0.0080

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	4	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1	2	2.43%	2.67%	2.67%	2.89%	3.00%	3.73%	4.85%
	3	2.18%	2.41%	2.63%	2.70%	2.99%	3.34%	4.51%
	4	1.83%	1.99%	2.08%	2.28%	2.46%	2.97%	4.05%

POSTCONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400601C Mean Values (mils/kip)

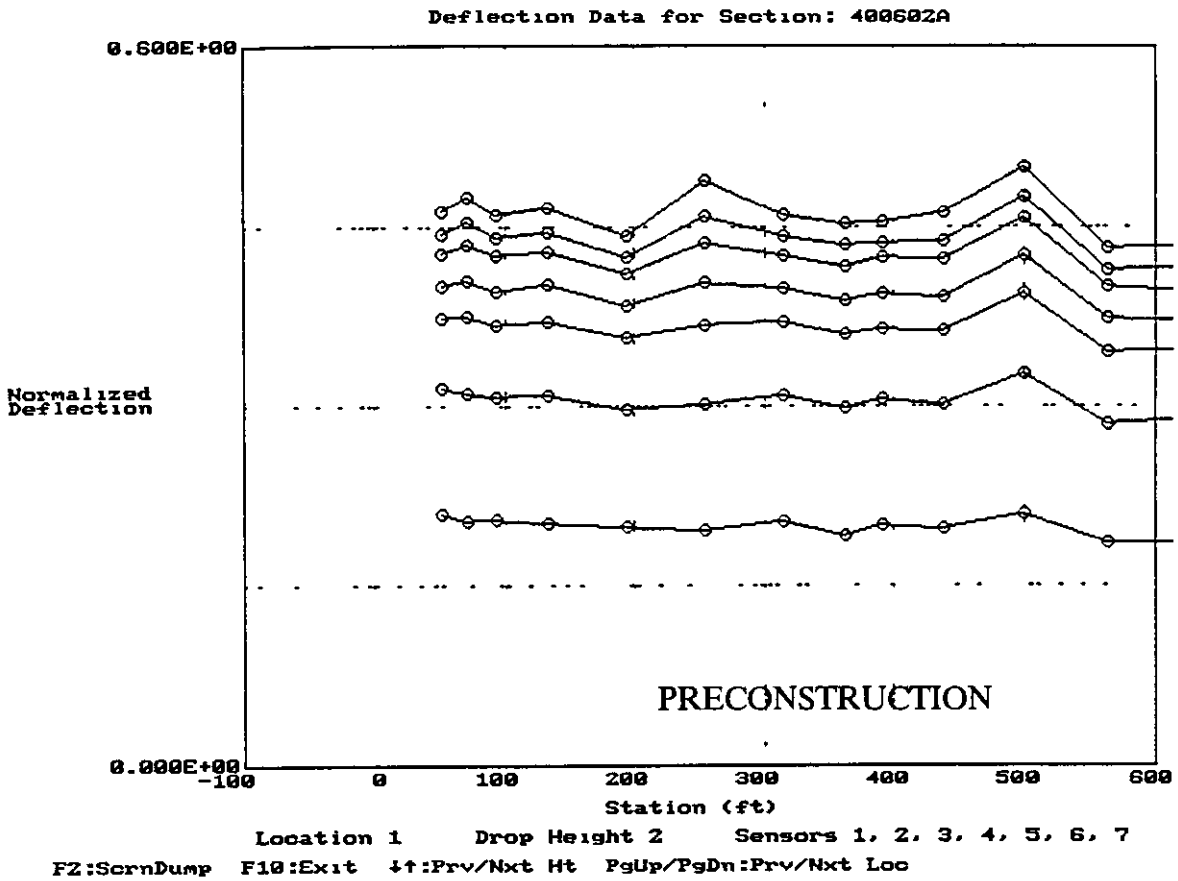
Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	0.5965	0.5701	0.5527	0.5176	0.4827	0.4037	0.2645
	3	0.5893	0.5619	0.5434	0.5096	0.4749	0.3968	0.2581
	4	0.5731	0.5454	0.5270	0.4943	0.4598	0.3842	0.2484

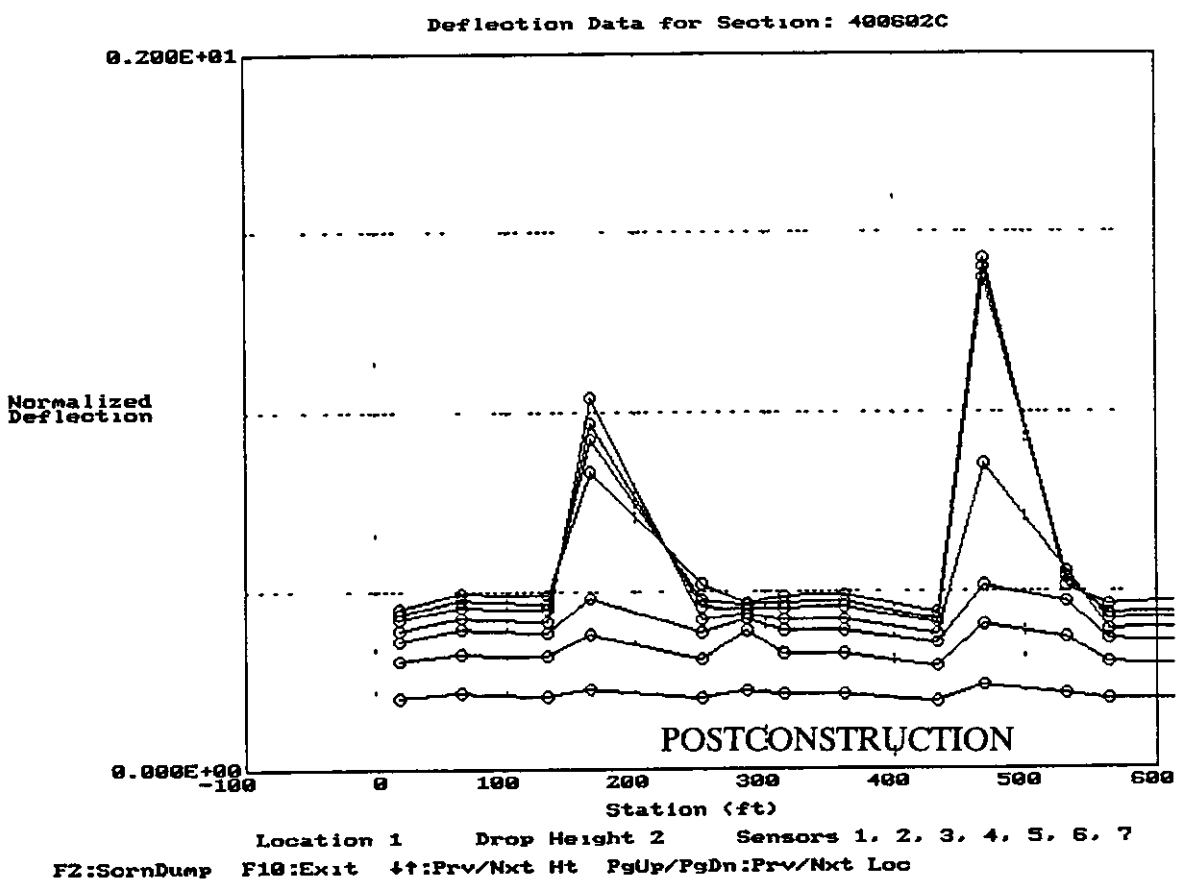
Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	0.0762	0.0723	0.0685	0.0631	0.0553	0.0471	0.0271
	3	0.0743	0.0698	0.0670	0.0612	0.0537	0.0458	0.0267
	4	0.0717	0.0684	0.0652	0.0588	0.0518	0.0431	0.0252

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	12.78%	12.68%	12.40%	12.19%	11.45%	11.66%	10.24%
	3	12.60%	12.42%	12.33%	12.01%	11.32%	11.54%	10.35%
	4	12.51%	12.54%	12.38%	11.90%	11.27%	11.22%	10.14%


Deflection Data for Section: 400602A
0.600E+00
Normalized Deflection
0.000E+00
-100
0
100
200
300
400
500
600
Station (ft)
PRECONSTRUCTION
Location 1 Drop Height 2 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc


Deflection Data for Section: 400602C
0.200E+01
Normalized Deflection
0.000E+00
-100
0
100
200
300
400
500
600
Station (ft)
POSTCONSTRUCTION
Location 1 Drop Height 2 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc

PRECONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400602A Mean Values (mils/kip)

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.4946	0.4727	0.4530	0.4222	0.3860	0.3181	0.2062
	3	0.4871	0.4642	0.4453	0.4144	0.3825	0.3121	0.2004
	4	0.4835	0.4588	0.4397	0.4086	0.3765	0.3063	0.1958
1	2	0.4608	0.4405	0.4237	0.3939	0.3651	0.3031	0.1993
	3	0.4584	0.4363	0.4190	0.3912	0.3619	0.2994	0.1951
	4	0.4566	0.4334	0.4159	0.3873	0.3589	0.2964	0.1920

Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	2	0.0177	0.0156	0.0143	0.0143	0.0127	0.0109	0.0081
	3	0.0175	0.0153	0.0144	0.0130	0.0124	0.0111	0.0081
	4	0.0178	0.0155	0.0141	0.0139	0.0125	0.0111	0.0081

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	4	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1	2	3.83%	3.54%	3.37%	3.64%	3.47%	3.58%	4.04%
	3	3.83%	3.52%	3.43%	3.33%	3.43%	3.70%	4.17%
	4	3.90%	3.57%	3.40%	3.58%	3.49%	3.74%	4.21%

POSTCONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400602C Mean Values (mils/kip)

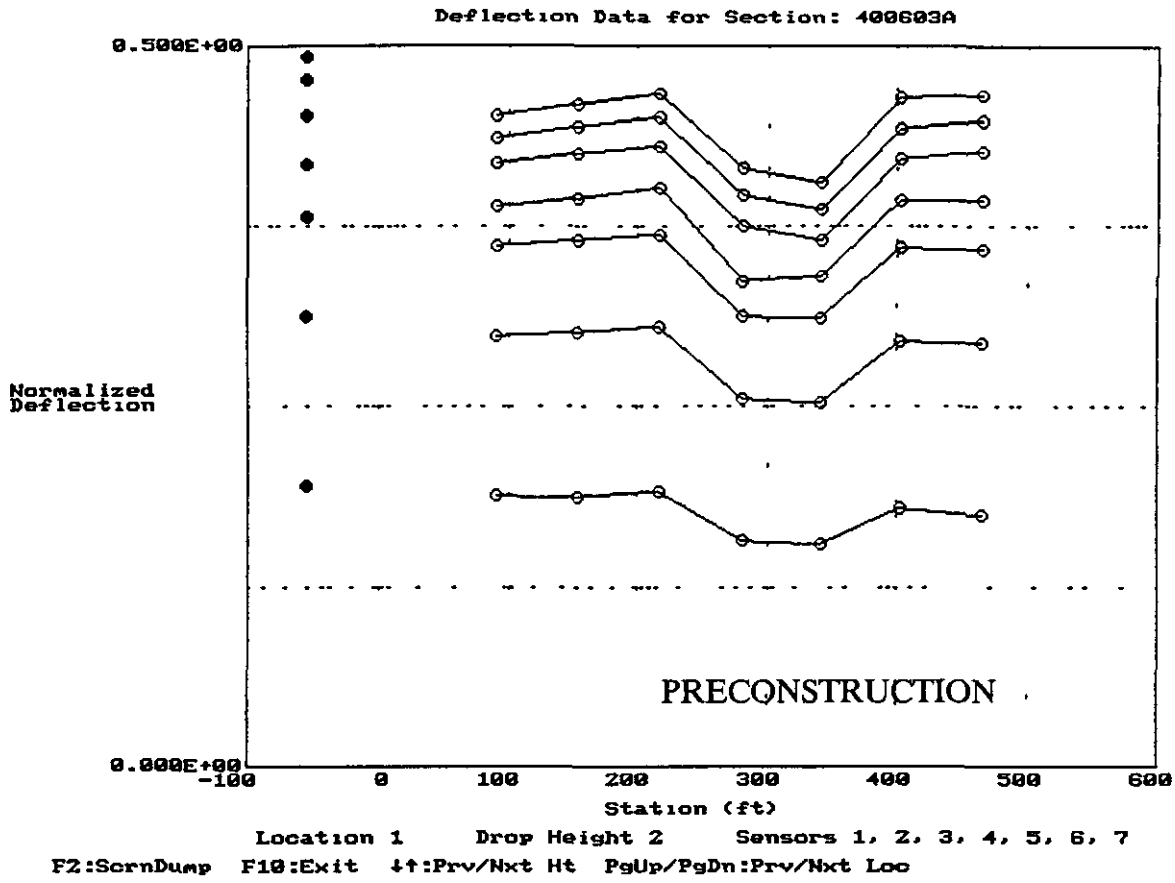
Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	0.5624	0.5514	0.5396	0.4951	0.4047	0.3336	0.2065
	3	0.5511	0.5372	0.5272	0.4878	0.3978	0.3257	0.2002
	4	0.5406	0.5266	0.5157	0.4819	0.3919	0.3206	0.1952

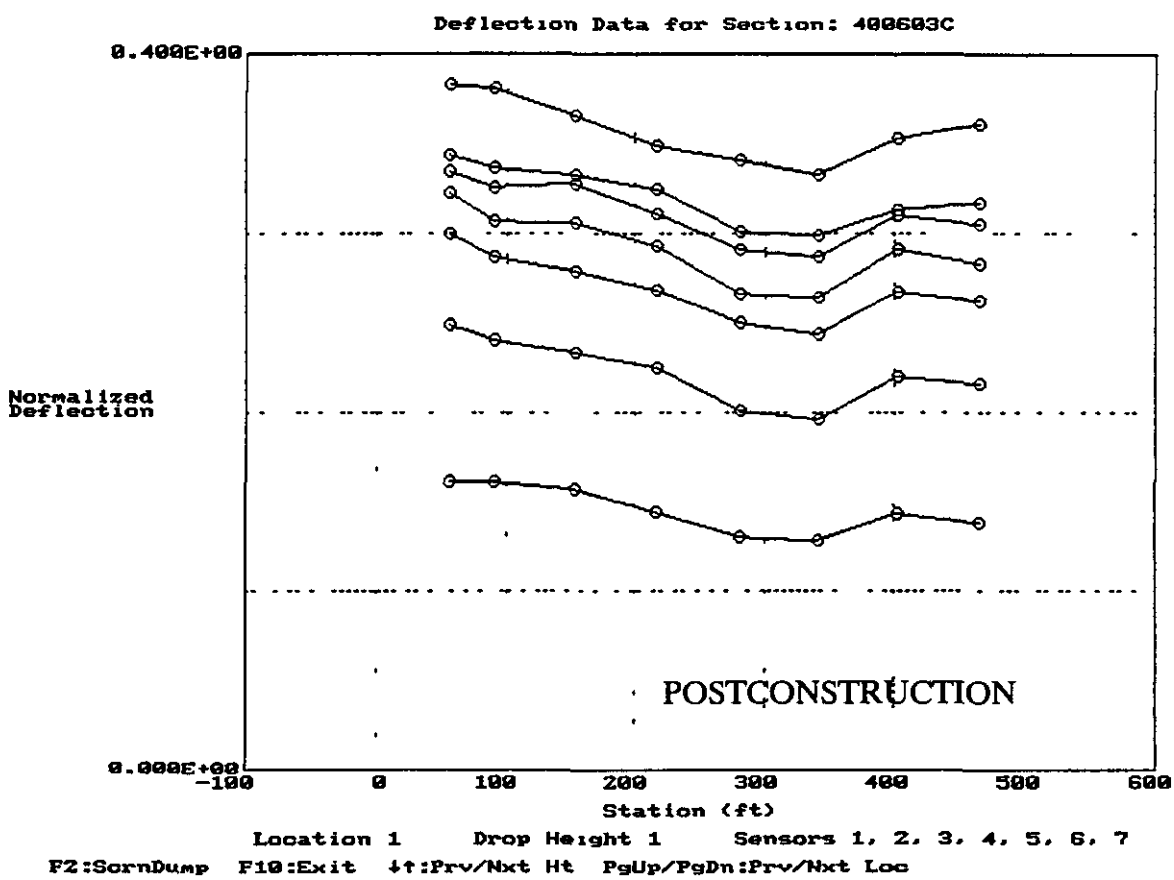
Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	0.2208	0.2295	0.2343	0.1742	0.0442	0.0330	0.0144
	3	0.2045	0.2121	0.2179	0.1729	0.0455	0.0326	0.0138
	4	0.1919	0.1999	0.2059	0.1732	0.0469	0.0344	0.0148

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	39.27%	41.62%	43.42%	35.20%	10.93%	9.88%	7.00%
	3	37.11%	39.48%	41.33%	35.45%	11.43%	10.00%	6.89%
	4	35.49%	37.95%	39.92%	35.95%	11.96%	10.74%	7.56%


Deflection Data for Section: 400603A
0.500E+00
0.000E+00
Normalized Deflection
PRECONSTRUCTION
-100
0
100
200
300
400
500
600
Station (ft)
Location 1 Drop Height 2 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc


Deflection Data for Section: 400603C
0.400E+00
0.000E+00
Normalized Deflection
POSTCONSTRUCTION
-100
0
100
200
300
400
500
600
Station (ft)
Location 1 Drop Height 1 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc

PRECONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400603A Mean Values (mils/kip)

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.4924	0.4759	0.4508	0.4175	0.3817	0.3129	0.1949
	3	0.4935	0.4764	0.4519	0.4184	0.3836	0.3109	0.1938
	4	0.4899	0.4703	0.4466	0.4130	0.3794	0.3078	0.1906
1	2	0.4465	0.4292	0.4087	0.3776	0.3484	0.2862	0.1763
	3	0.4466	0.4274	0.4070	0.3769	0.3482	0.2854	0.1769
	4	0.4464	0.4272	0.4064	0.3773	0.3477	0.2844	0.1761

Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	2	0.0257	0.0263	0.0265	0.0274	0.0249	0.0223	0.0149
	3	0.0277	0.0271	0.0265	0.0271	0.0257	0.0224	0.0157
	4	0.0269	0.0267	0.0266	0.0258	0.0251	0.0225	0.0153

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	4	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1	2	5.75%	6.13%	6.49%	7.26%	7.13%	7.80%	8.42%
	3	6.19%	6.34%	6.50%	7.18%	7.38%	7.87%	8.90%
	4	6.02%	6.25%	6.54%	6.84%	7.21%	7.91%	8.69%

POSTCONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400603C Mean Values (mils/kip)

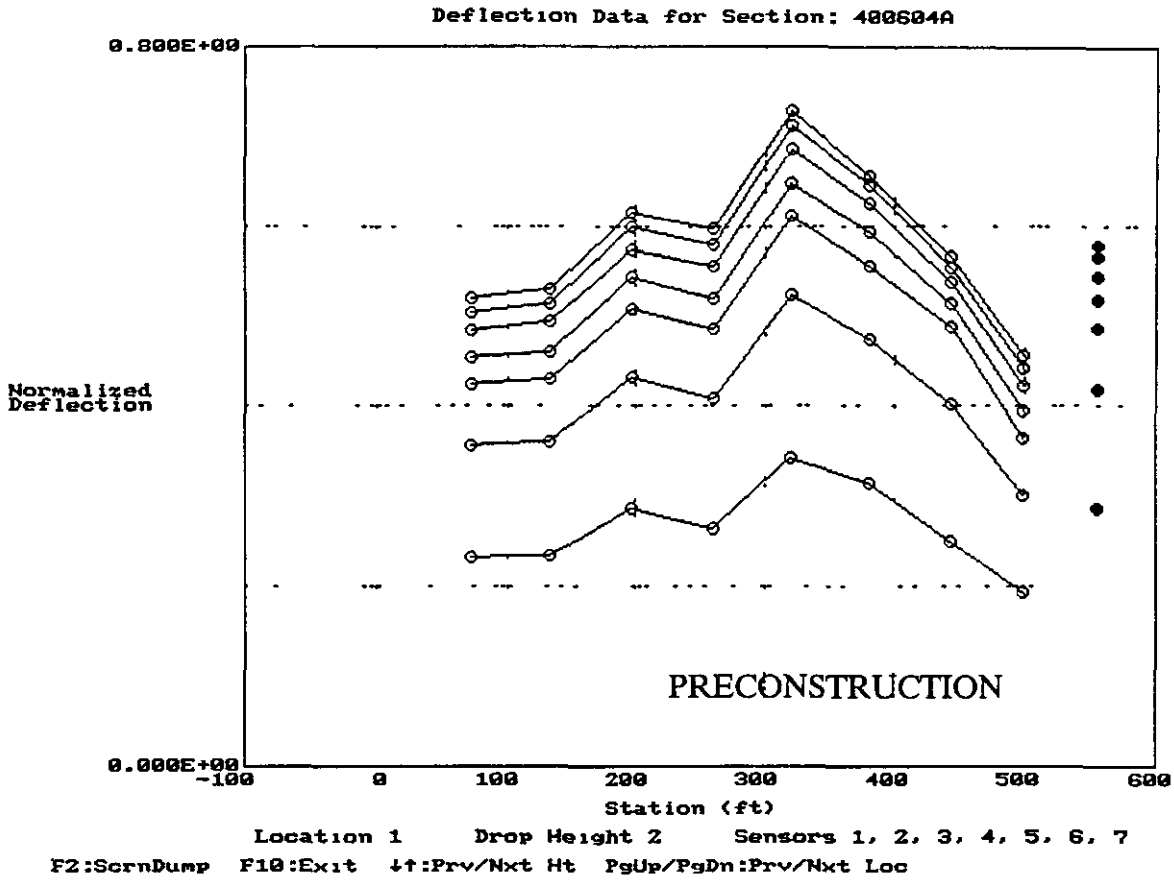
Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	0.3582	0.3212	0.3117	0.2918	0.2696	0.2230	0.1455
	2	0.3587	0.3202	0.3101	0.2907	0.2697	0.2241	0.1448
	3	0.3558	0.3164	0.3068	0.2870	0.2667	0.2220	0.1437
	4	0.3483	0.3083	0.2990	0.2794	0.2602	0.2168	0.1404

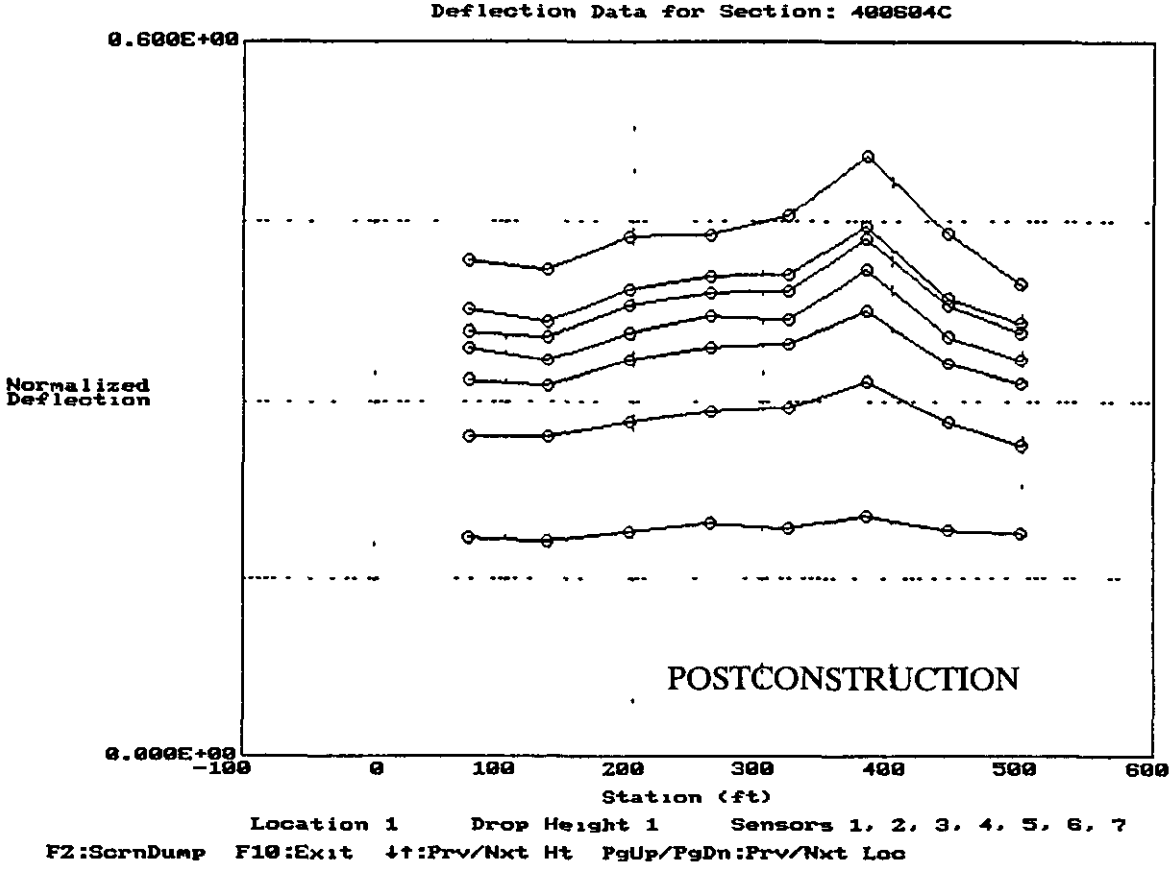
Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	0.0179	0.0164	0.0171	0.0202	0.0186	0.0184	0.0132
	2	0.0158	0.0173	0.0170	0.0182	0.0171	0.0165	0.0123
	3	0.0153	0.0166	0.0164	0.0171	0.0161	0.0163	0.0124
	4	0.0140	0.0164	0.0165	0.0166	0.0163	0.0157	0.0116

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	4.99%	5.11%	5.49%	6.92%	6.89%	8.27%	9.06%
	2	4.40%	5.42%	5.47%	6.27%	6.33%	7.36%	8.47%
	3	4.31%	5.24%	5.35%	5.95%	6.04%	7.36%	8.66%
	4	4.01%	5.32%	5.50%	5.96%	6.26%	7.23%	8.30%


Deflection Data for Section: 400S04A
0.800E+00
Normalized Deflection
0.000E+00
-100
0
100
200
300
400
500
600
Station (ft)
PRECONSTRUCTION
Location 1 Drop Height 2 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc


Deflection Data for Section: 400S04C
0.600E+00
Normalized Deflection
0.000E+00
-100
0
100
200
300
400
500
600
Station (ft)
POSTCONSTRUCTION
Location 1 Drop Height 1 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc

PRECONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400604A Mean Values (mils/kip)

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.5776	0.5650	0.5436	0.5183	0.4865	0.4173	0.2866
	3	0.5631	0.5507	0.5298	0.4993	0.4732	0.4064	0.2724
	4	0.5486	0.5381	0.5175	0.4914	0.4616	0.3973	0.2697
1	2	0.5837	0.5691	0.5472	0.5160	0.4838	0.4067	0.2644
	3	0.5754	0.5591	0.5377	0.5067	0.4744	0.3994	0.2590
	4	0.5686	0.5524	0.5304	0.4998	0.4683	0.3936	0.2555

Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	2	0.0849	0.0854	0.0835	0.0813	0.0784	0.0705	0.0478
	3	0.0813	0.0814	0.0804	0.0772	0.0747	0.0667	0.0447
	4	0.0788	0.0795	0.0782	0.0755	0.0733	0.0654	0.0453

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	4	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1	2	14.54%	15.00%	15.26%	15.75%	16.20%	17.35%	18.07%
	3	14.13%	14.56%	14.96%	15.24%	15.74%	16.69%	17.26%
	4	13.86%	14.40%	14.75%	15.11%	15.65%	16.61%	17.75%

POSTCONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400604C Mean Values (mils/kip)

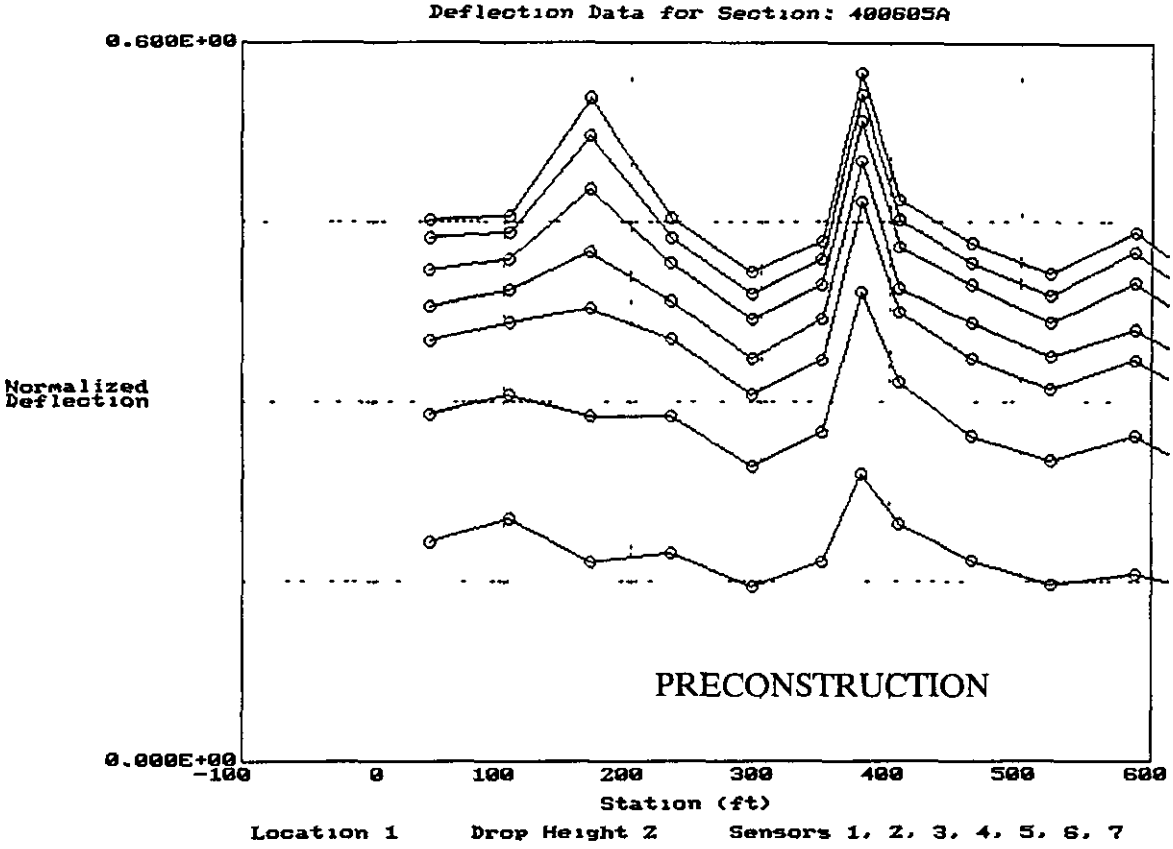
Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	0.4371	0.3924	0.3809	0.3590	0.3352	0.2835	0.1906
	2	0.4339	0.3859	0.3754	0.3531	0.3306	0.2804	0.1858
	3	0.4274	0.3796	0.3693	0.3472	0.3249	0.2748	0.1829
	4	0.4148	0.3677	0.3573	0.3370	0.3149	0.2663	0.1766

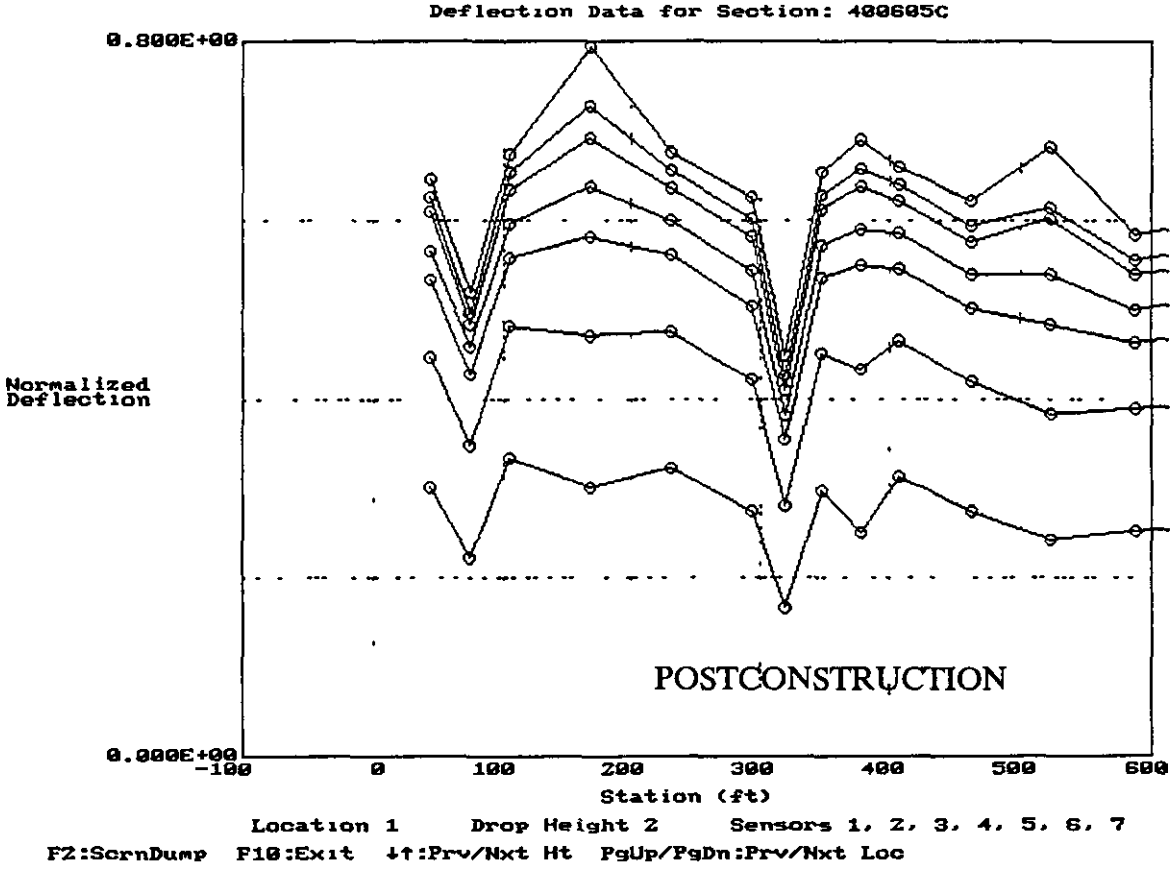
Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	0.0326	0.0267	0.0266	0.0245	0.0207	0.0172	0.0066
	2	0.0324	0.0276	0.0259	0.0246	0.0223	0.0178	0.0079
	3	0.0317	0.0262	0.0258	0.0238	0.0213	0.0167	0.0080
	4	0.0318	0.0270	0.0259	0.0246	0.0222	0.0174	0.0083

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	7.47%	6.80%	6.98%	6.81%	6.19%	6.05%	3.45%
	2	7.46%	7.15%	6.91%	6.96%	6.74%	6.33%	4.26%
	3	7.42%	6.91%	6.99%	6.84%	6.57%	6.09%	4.37%
	4	7.66%	7.33%	7.24%	7.29%	7.04%	6.55%	4.68%


Deflection Data for Section: 400605A
0.600E+00
Normalized Deflection
0.000E+00
-100
0
100
200
300
400
500
600
Station (ft)
PRECONSTRUCTION
Location 1 Drop Height 2 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc


Deflection Data for Section: 400605C
0.800E+00
Normalized Deflection
0.000E+00
-100
0
100
200
300
400
500
600
Station (ft)
POSTCONSTRUCTION
Location 1 Drop Height 2 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc

PRECONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400605A Mean Values (mils/kip)

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	0.4506	0.4322	0.4083	0.3755	0.3447	0.2794	0.1685
	3	0.4481	0.4276	0.4036	0.3722	0.3415	0.2762	0.1672
	4	0.4454	0.4248	0.4012	0.3701	0.3395	0.2755	0.1671

Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	0.0471	0.0462	0.0431	0.0409	0.0390	0.0352	0.0249
	3	0.0464	0.0459	0.0424	0.0398	0.0378	0.0340	0.0236
	4	0.0470	0.0450	0.0424	0.0400	0.0377	0.0333	0.0234

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	10.46%	10.68%	10.56%	10.90%	11.32%	12.59%	14.78%
	3	10.35%	10.73%	10.51%	10.70%	11.08%	12.31%	14.14%
	4	10.56%	10.58%	10.56%	10.80%	11.10%	12.08%	13.97%

POSTCONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400605C Mean Values (mils/kip)

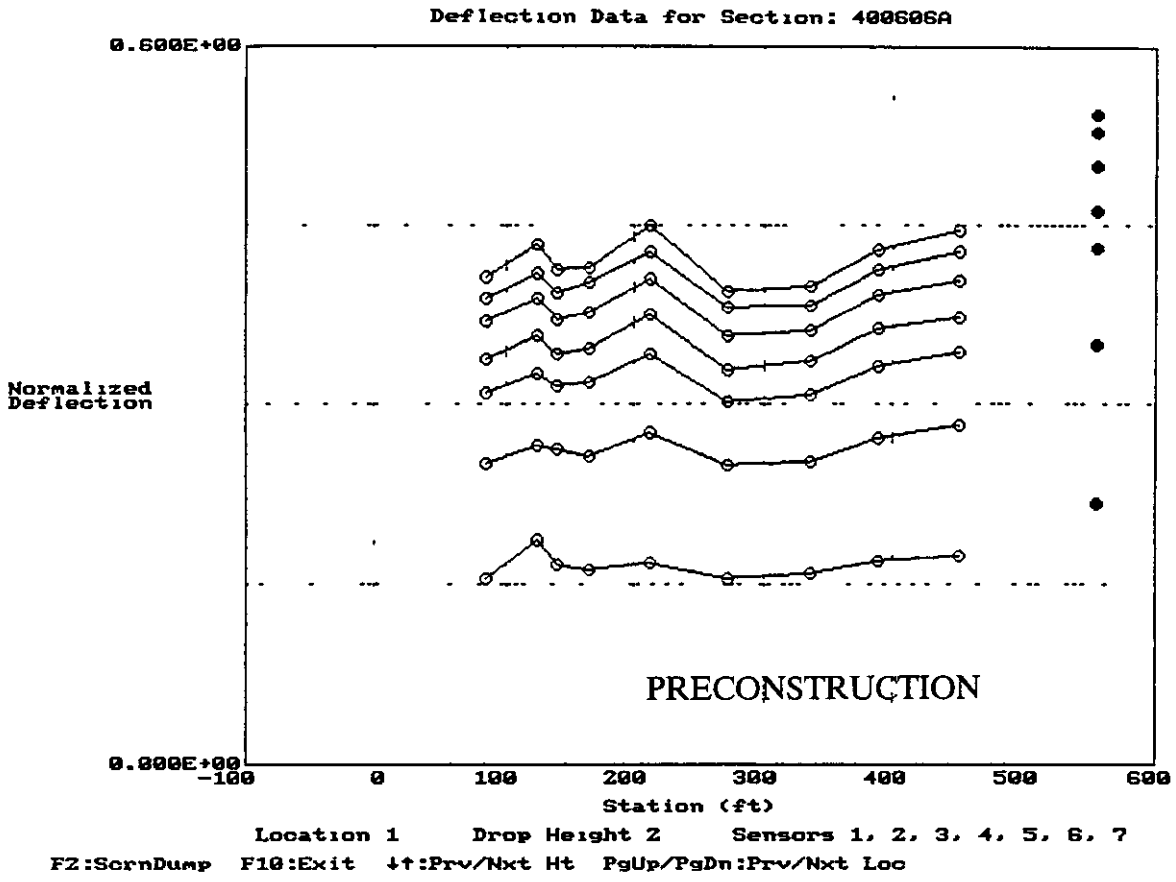
Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	0.6349	0.6054	0.5868	0.5467	0.5069	0.4211	0.2720
	3	0.6290	0.5984	0.5790	0.5394	0.4998	0.4153	0.2665
	4	0.6244	0.5936	0.5741	0.5345	0.4947	0.4102	0.2620

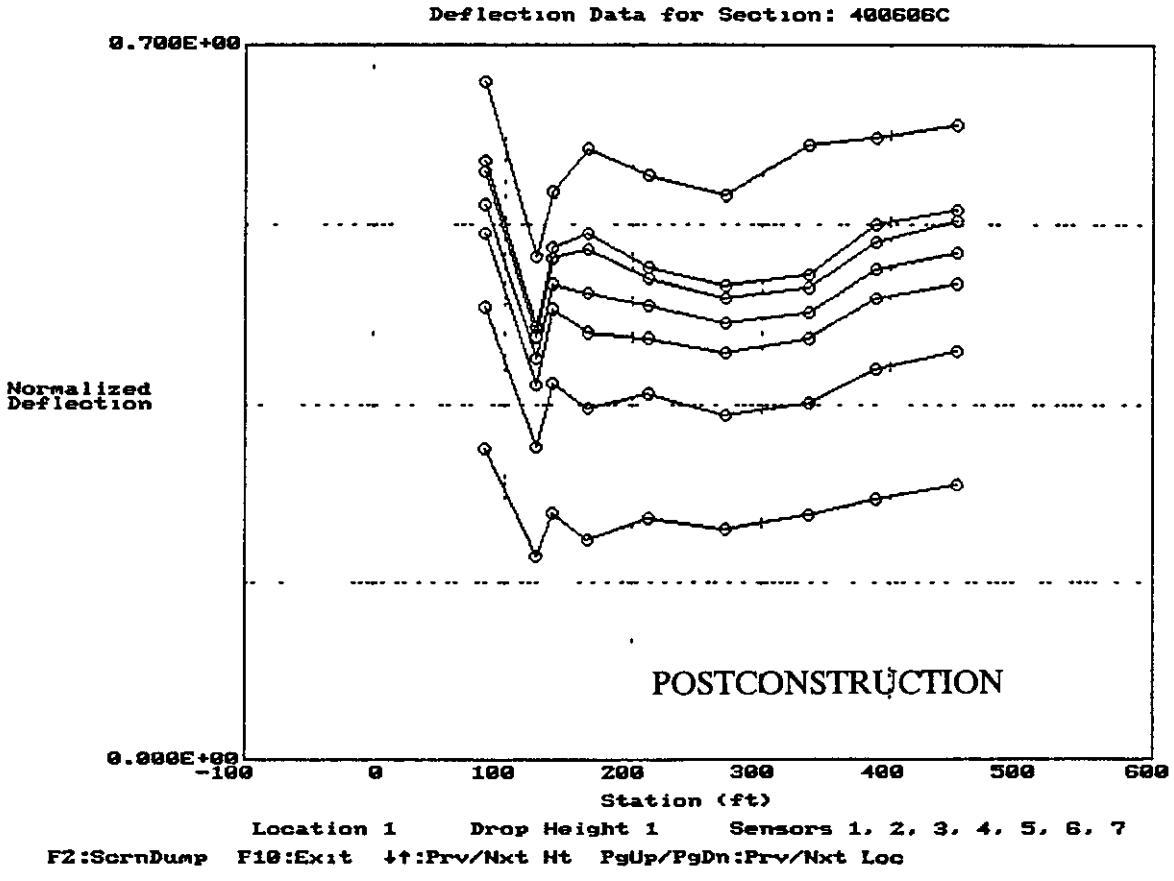
Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	0.0762	0.0699	0.0666	0.0613	0.0568	0.0507	0.0386
	3	0.0753	0.0687	0.0653	0.0595	0.0545	0.0495	0.0367
	4	0.0744	0.0682	0.0646	0.0591	0.0542	0.0487	0.0367

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	12.00%	11.55%	11.34%	11.21%	11.20%	12.05%	14.18%
	3	11.98%	11.48%	11.28%	11.04%	10.90%	11.91%	13.78%
	4	11.91%	11.49%	11.26%	11.06%	10.95%	11.88%	14.00%


Deflection Data for Section: 400606A
0.600E+00
Normalized Deflection
0.000E+00
-100
0
100
200
300
400
500
600
Station (ft)
PRECONSTRUCTION
Location 1 Drop Height 2 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc


Deflection Data for Section: 400606C
0.700E+00
Normalized Deflection
0.000E+00
-100
0
100
200
300
400
500
600
Station (ft)
POSTCONSTRUCTION
Location 1 Drop Height 1 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc

PRECONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400606A Mean Values (mils/kip)

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.5423	0.5273	0.4996	0.4622	0.4299	0.3501	0.2175
	3	0.5499	0.5287	0.4998	0.4664	0.4316	0.3517	0.2187
	4	0.5459	0.5246	0.4996	0.4640	0.4282	0.3510	0.2177
1	2	0.4206	0.4030	0.3804	0.3508	0.3215	0.2629	0.1662
	3	0.4252	0.4054	0.3828	0.3536	0.3246	0.2640	0.1670
	4	0.4239	0.4042	0.3817	0.3532	0.3236	0.2631	0.1655

Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	2	0.0200	0.0179	0.0177	0.0165	0.0149	0.0120	0.0103
	3	0.0199	0.0189	0.0172	0.0166	0.0152	0.0124	0 0111
	4	0.0203	0.0190	0.0179	0.0169	0.0158	0.0129	0.0100

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	4	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1	2	4.76%	4.44%	4.66%	4.71%	4.63%	4.58%	6.23%
	3	4.69%	4.66%	4.48%	4.68%	4.68%	4.71%	6.68%
	4	4.80%	4.69%	4.68%	4.79%	4.89%	4.91%	6.05%

POSTCONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400606C Mean Values (mils/kip)

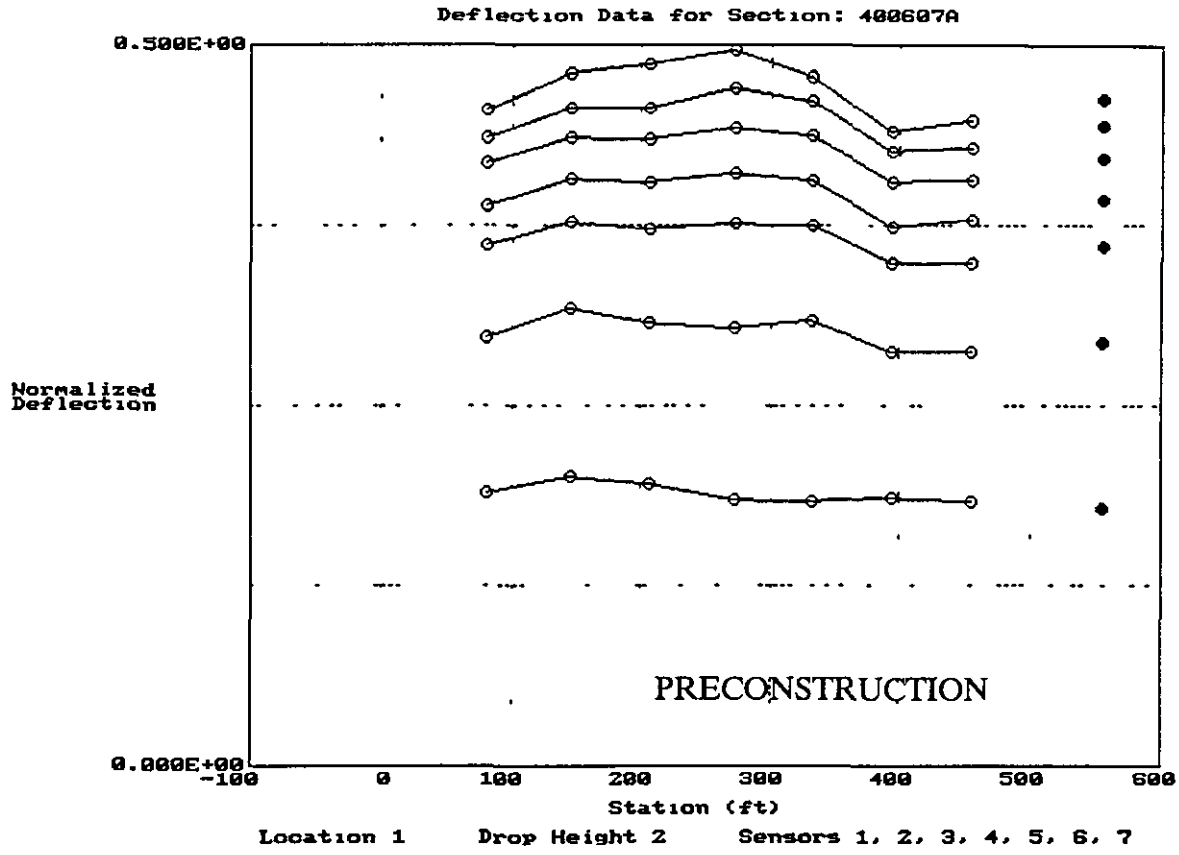
Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	0.5856	0.5020	0.4900	0.4622	0.4332	0.3678	0.2446
	2	0.5894	0.5032	0.4910	0.4636	0.4338	0.3677	0.2436
	3	0.5847	0.4961	0.4844	0.4580	0.4290	0.3622	0.2396
	4	0.5730	0.4847	0.4739	0.4472	0.4190	0.3537	0.2330

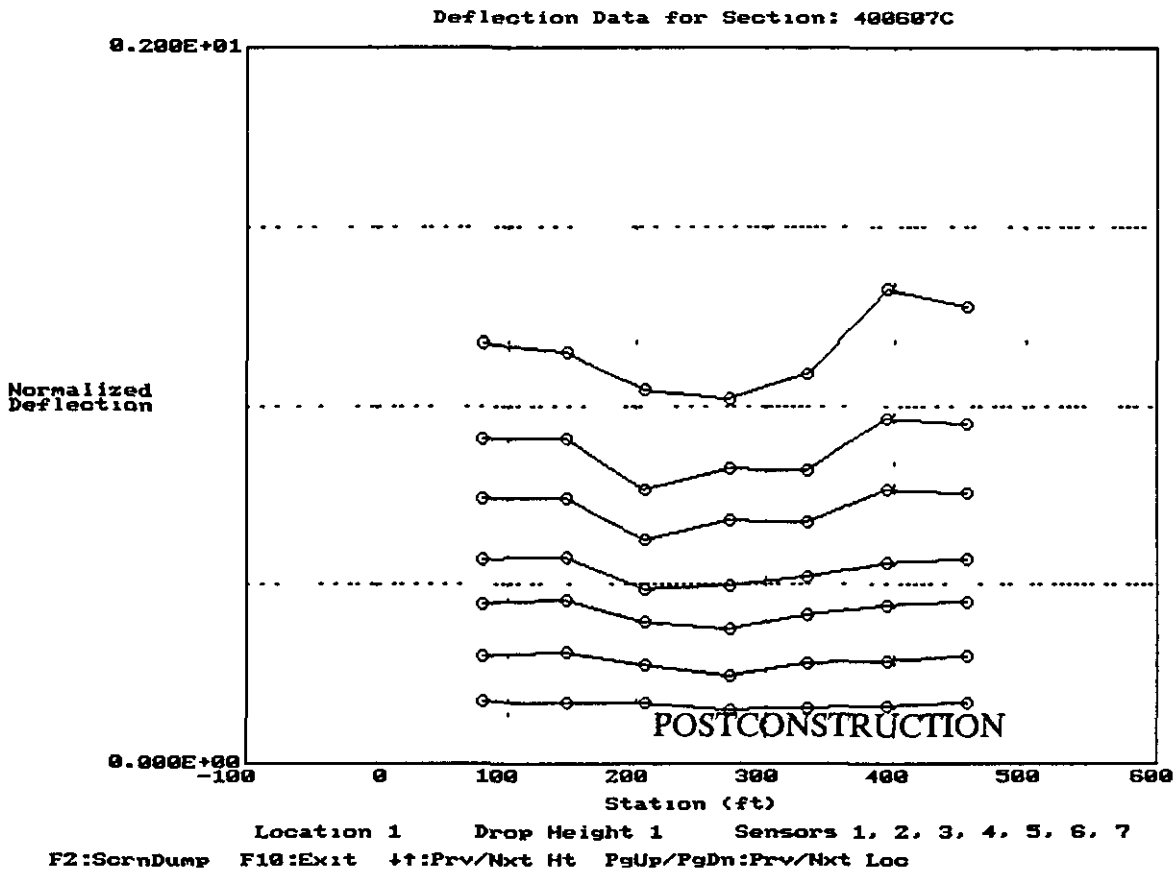
Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	0.0487	0.0467	0.0461	0.0429	0.0427	0.0397	0.0308
	2	0.0487	0.0470	0.0449	0.0436	0.0421	0.0399	0.0330
	3	0.0487	0.0460	0.0442	0.0430	0.0415	0.0395	0.0322
	4	0.0462	0.0444	0.0423	0.0406	0.0391	0.0372	0.0317

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	8.32%	9.31%	9.40%	9.27%	9.86%	10.80%	12.59%
	2	8.27%	9.35%	9.14%	9.40%	9.70%	10.84%	13.54%
	3	8.33%	9.27%	9.13%	9.38%	9.69%	10.92%	13.43%
	4	8.06%	9.16%	8.93%	9.08%	9.34%	10.51%	13.58%


Deflection Data for Section: 400607A
0.500E+00
Normalized Deflection
0.000E+00
-100
0
100
200
300
400
500
600
Station (ft)
PRECONSTRUCTION
Location 1 Drop Height 2 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc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0.200E+01
Normalized Deflection
0.000E+00
-100
0
100
200
300
400
500
600
Station (ft)
POSTCONSTRUCTION
Location 1 Drop Height 1 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc

PRECONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400607A Mean Values (mils/kip)

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.4625	0.4443	0.4214	0.3919	0.3606	0.2939	0.1788
	3	0.4632	0.4516	0.4272	0.3975	0.3656	0.2973	0.1827
	4	0.4711	0.4540	0.4297	0.3989	0.3687	0.3004	0.1840
1	2	0.4690	0.4481	0.4258	0.3960	0.3656	0.3016	0.1895
	3	0.4674	0.4498	0.4269	0.3969	0.3668	0.3024	0.1895
	4	0.4669	0.4468	0.4242	0.3945	0.3647	0.3001	0.1893

Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	2	0.0213	0.0170	0.0156	0.0151	0.0128	0.0111	0.0069
	3	0.0199	0.0170	0.0154	0.0141	0.0133	0.0101	0.0062
	4	0.0203	0.0157	0.0149	0.0138	0.0121	0.0100	0.0065

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	4	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1	2	4.54%	3.80%	3.67%	3.82%	3.51%	3.69%	3.63%
	3	4.25%	3.77%	3.60%	3.54%	3.62%	3.35%	3.29%
	4	4.35%	3.51%	3.52%	3.49%	3.31%	3.34%	3.46%

POSTCONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400607C Mean Values (mils/kip)

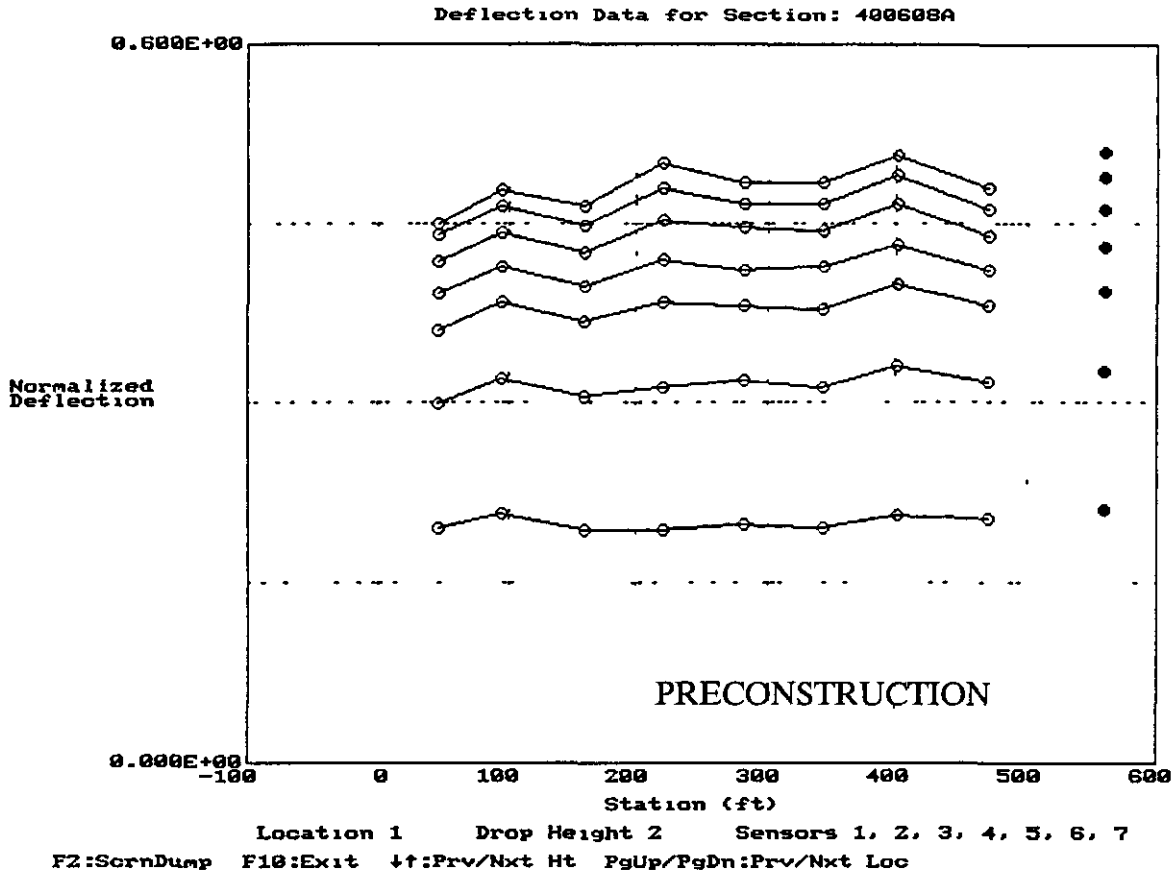
Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	1.1547	0.8763	0.7114	0.5387	0.4246	0.2860	0.1643
	2	1.1070	0.8488	0.6967	0.5351	0.4256	0.2862	0.1616
	3	1.0644	0.8191	0.6771	0.5239	0.4193	0.2825	0.1592
	4	1.0379	0.7963	0.6603	0.5138	0.4124	0.2802	0.1592

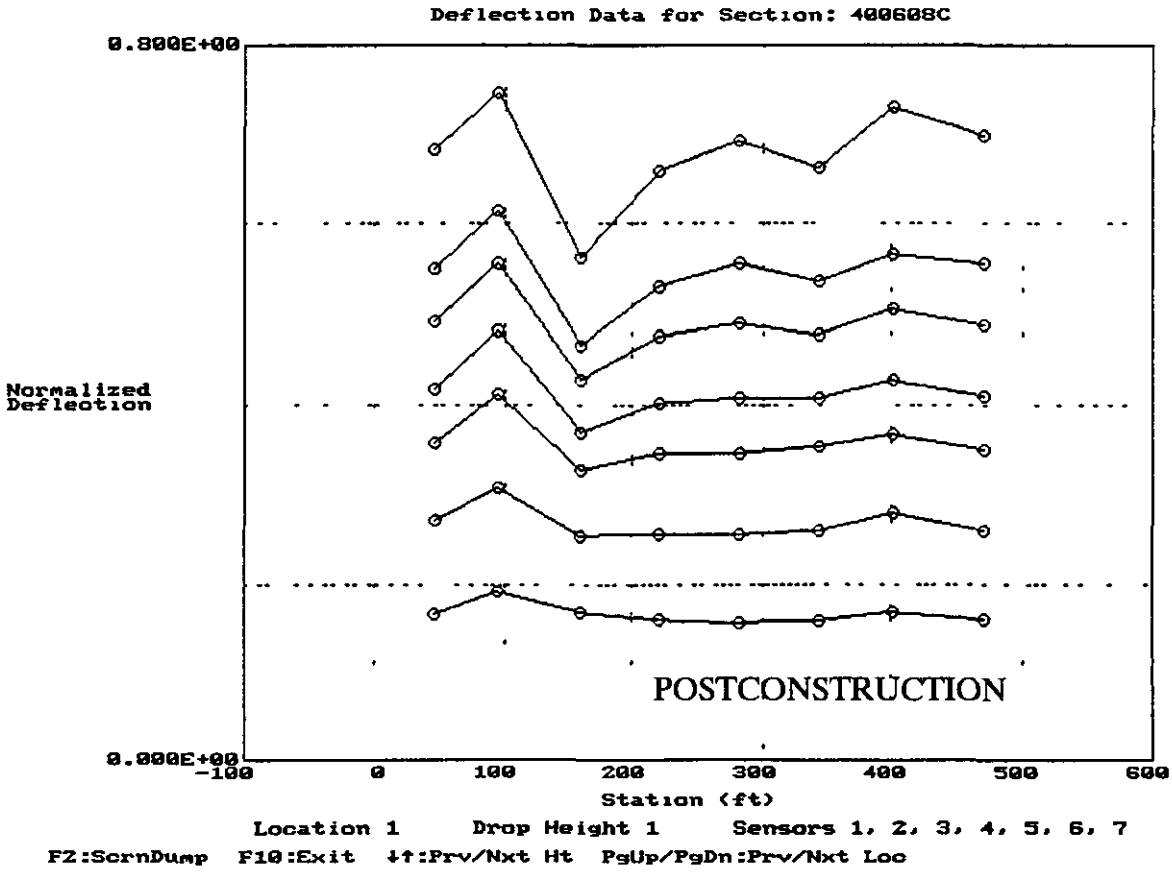
Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	0.1141	0.0751	0.0516	0.0378	0.0316	0.0218	0.0104
	2	0.1024	0.0725	0.0534	0.0415	0.0340	0.0242	0.0111
	3	0.0936	0.0682	0.0511	0.0401	0.0346	0.0233	0.0112
	4	0.0881	0.0654	0.0485	0.0389	0.0337	0.0229	0.0112

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	9.89%	8.57%	7.25%	7.03%	7.44%	7.63%	6.32%
	2	9.25%	8.54%	7.66%	7.76%	7.98%	8.46%	6.89%
	3	8.79%	8.32%	7.55%	7.66%	8.25%	8.24%	7.01%
	4	8.49%	8.22%	7.34%	7.57%	8.17%	8.17%	7.02%


Deflection Data for Section: 400608A
0.600E+00
Normalized Deflection
0.000E+00
-100
0
100
200
300
400
500
600
Station (ft)
PRECONSTRUCTION
Location 1 Drop Height 2 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc


Deflection Data for Section: 400608C
0.800E+00
Normalized Deflection
0.000E+00
-100
0
100
200
300
400
500
600
Station (ft)
POSTCONSTRUCTION
Location 1 Drop Height 1 Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc

PRECONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400608A Mean Values (mils/kip)

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.5099	0.4888	0.4622	0.4301	0.3924	0.3248	0.2106
	3	0.5041	0.4819	0.4565	0.4237	0.3892	0.3210	0.2053
	4	0.4984	0.4750	0.4494	0.4165	0.3824	0.3153	0.2042
1	2	0.4812	0.4651	0.4421	0.4114	0.3795	0.3139	0.1986
	3	0.4789	0.4591	0.4363	0.4069	0.3753	0.3099	0.1969
	4	0.4713	0.4520	0.4295	0.3997	0.3696	0.3045	0.1925

Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	2	0.0183	0.0158	0.0149	0.0128	0.0116	0.0095	0.0055
	3	0.0184	0.0155	0.0140	0.0129	0.0116	0.0091	0.0045
	4	0.0171	0.0135	0.0125	0.0114	0.0102	0.0087	0.0055

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
0	2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	4	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1	2	3.80%	3.40%	3.37%	3.11%	3.06%	3.03%	2.75%
	3	3.83%	3.37%	3.21%	3.18%	3.10%	2.94%	2.31%
	4	3.62%	2.98%	2.90%	2.86%	2.76%	2.84%	2.86%

POSTCONSTRUCTION

UNCORRECTED Deflection Statistics

Data for section 400608C Mean Values (mils/kip)

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	0.6789	0.5471	0.4894	0.4156	0.3576	0.2683	0.1656
	2	0.6840	0.5515	0.4939	0.4212	0.3627	0.2724	0.1635
	3	0.6773	0.5443	0.4876	0.4171	0.3594	0.2687	0.1620
	4	0.6702	0.5354	0.4791	0.4097	0.3531	0.2643	0.1581

Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	0.0561	0.0412	0.0358	0.0317	0.0246	0.0181	0.0118
	2	0.0520	0.0397	0.0350	0.0297	0.0236	0.0184	0.0109
	3	0.0489	0.0386	0.0340	0.0291	0.0223	0.0169	0.0105
	4	0.0449	0.0356	0.0310	0.0264	0.0208	0.0154	0.0101

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	1	8.26%	7.53%	7.31%	7.62%	6.88%	6.76%	7.15%
	2	7.61%	7.19%	7.09%	7.05%	6.50%	6.75%	6.65%
	3	7.22%	7.10%	6.96%	6.98%	6.20%	6.30%	6.50%
	4	6.70%	6.65%	6.47%	6.45%	5.88%	5.85%	6.39%

APPENDIX D

MATERIALS SAMPLING AND TESTING PLAN AND DATA

OKLAHOMA DEPARTMENT OF TRANSPORTATION
Research & Development Division

September 2, 1992

To: Lawrence J. Senkowski

From: David C. Streb

Subject: Post Construction Sampling for IR-35-4(148)214, SPS-6, Item #2155

Greg Middleton, Don Helmick and I travelled to Tonkawa to perform the post construction sampling on August 31. The post construction sampling consisted of extracting 20 4" diameter asphalt cores. Greg and I performed the coring and marking while Don performed the patching. These cores came from the five test sections which have asphalt overlays. (400603, 400604, 400607, 400608, and 400606)

At approximately 2:00 p.m. traffic control was provided by the contractor. We began coring at the north end of section 400603. The first three cores separated at the junction of the two 2" lifts of Type B asphalt. At this time I called Jerry Daleiden of the SHRP SRCO in Austin to verify if a complete core was required or if a split layer core was acceptable. Jerry stated he would like to have complete cores but if it was not possible then we should obtain the split layer core as best we could.

We were able to obtain complete cores for each of the cores that were 4 inches in depth. However, for the four 8" depth cores in section 400608 only one was obtained as a complete core. These cores kept separating at the junction of the two 3" lifts of Type A. The bottom portion of the second 3" lift of type A did not appear to be bound well because loose rock would come out of the core barrel during removal.

In summary it took 32 cores to obtain the required 20 core samples. Three of the 20 samples were broken at the junction of two 3" lifts. These cores will be packaged and shipped to Southwest Labs for testing. The summary sheet concerning these cores which is attached to this memo will be sent to Larry Peirce of the SHRP SRCO so that he can complete the appropriate forms to accompany these cores.

The contractor is scheduled to place the headwalls on the edge drain laterals on September 2 and 3. The roadway is scheduled to be striped before Labor Day. I am planning to observe some headwall installation on September 3 and the SHRP test site will be permanently marked on the pavement next week after the striping is complete.

Enclosure

cc: C. Dwight Hixon
David Ooten
Jerry Daleiden, SHRP SRCO, Austin

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 2
To Jerry Daleiden	From DAVID STREB
Co. SHRP	Co. ODOT, Research
Dept. "	Phone # 2671
Fax # (512) 346-8750	Fax # 405-521-2594

SHRP SPS-6 POST CONSTRUCTION CORE DATA

Sample Area	CORE #	SECTION	STATION	DISTANCE FROM PAVEMENT EDGE	CORE DEPTH	# OF CORES
17	C21	400603	0-25	42"	4.2"	2
17	C22	400603	0-25	24"	4.3"	3
18	C23	400603	5+25	42"	3.8"	1
18	C24	400603	5+25	24"	3.6"	1
19	C25	400604	0-25	42"	4.0"	1
19	C26	400604	0-25	24"	3.9"	2
20	C27	400604	5+35	42"	3.8"	2
20	C28	400604	5+35	24"	3.8"	1
21	C29	400607	0-25	42"	5.3"	1
21	C30	400607	0-25	24"	5.3"	1
22	C31	400607	5+25	42"	4.2"	1
22	C32	400607	5+25	24"	4.0"	1
23	C33	400608	0-25	42"	8.0"	1
23	C34	400608	0-25	24"	7.8"	3
24	C35	400608	5+25	42"	7.8"	3
24	C36	400608	5+25	24"	7.8"	3
25	C37	400606	0-25	42"	4.1"	2
25	C38	400606	0-25	24"	4.3"	1
26	C39	400606	5+25	42"	4.4"	1
26	C40	400606	5+25	24"	4.3"	1
						32

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STRATEGIC HIGHWAY RESEARCH PROGRAM

NATIONAL ACADEMY OF SCIENCES / NATIONAL RESEARCH COUNCIL
818 Connecticut Avenue, N W , 4th Floor, Washington D C 20006
SHRP Telecopier (202) 223-2875 Verification. (202) 334-3774

M E M O R A N D U M

April 16, 1992

TO: Homer Wheeler, Southern Region

FROM: Amir N. Hanna

SUBJECT: Sampling and Testing Plan for SPS-6 Test Site in Oklahoma

We have reviewed the material sampling and field testing plan for the SPS-6 test site on IH-35 in Kay County, Oklahoma, dated August 1991 that was furnished with Mr. Daleiden's letter of March 19, 1992.

The proposed sampling and testing plan meets the requirements stipulated for this experiment as outlined in Operational Memorandum No. SHRP-LTPP-OM-19, dated January 1991. Therefore, this plan is acceptable and should be implemented without changes.

Please let us know if you need clarification of any items pertaining to this or other SPS experiments.

cc: N. F. Hawks
J. F. Daleiden (SRCOC)
P-001 B (S. Tayabji)

D T FORM 7
Rev 10-76

RECEIVED MAR 0 6 1992

Oklahoma Dept. of Transportation

Date March 4, 1992

To R. L. Stringer, Division IV Engineer

From C. Dwight Hixon, Research Division Engineer CDH

Subject IR-35-4(148)214 Supplemental Agreement for SHRP Testing

Attn: Denver Jackson

The above mentioned project will require a Supplemental Agreement to complete the materials testing portion of the SHRP SPS-6 program. The test procedures required by SHRP are beyond the capabilities of ODOT Materials Division. The Supplemental Agreement must include the shipping of all collected samples and the testing of all collected samples. Enclosed is the Materials and Testing Plan developed by SHRP for this project.

Enclosed are the addresses of the two testing laboratories that have been approved to perform the tests required on this project. The two laboratories are Southwestern Laboratories and Law Engineering. The Contractor may choose either of these laboratories to perform the required tests. Both laboratories are familiar with the materials testing required of a SHRP SPS-6 project. The submission of the Materials and Testing Plan should be sufficient for the laboratories to give the Contractor a cost estimate. The cost must include the cost of shipping the samples to the laboratory site.

The Research and Development Division is prepared to perform the materials sampling required for this project. The Research Division coordinated with the Contractor at the Prework Conference to facilitate the sampling process. Research and SHRP personnel will package all samples and prepare them for shipping by the Contractor to a SHRP approved testing laboratory. The shipping will be a part of the Contractors' expense.

If you require additional information or have any questions, contact this office at 521-2671.

CDH:DCS:vc

Enclosures

cc: S. C. (Pete) Byers
Jerry Daleiden, SHRP SRCO

Brent Rauhut Engineering Inc.

March 19, 1992

Dr. Amir N. Hanna
Strategic Highway Research Program
818 Connecticut Avenue NW - 4th Floor
Washington, DC 20006

Subject: Materials Sampling and Testing Plan for 4006 in Kay County, Oklahoma.

Dear Amir,

Enclosed please find the subject plan for your review and approval. This work is scheduled to begin in mid-April. I apologize for not contacting you sooner in this regard. In assisting with the preparation of a similar plan for one of the other SPS sections in our region, I was reminded that I had not yet requested your approval for this particular plan. I hope, however, that you will find everything in order.

The main reason this plan was not sent to you earlier was that I got fairly involved in the coordination with the State on how we might best accomplish this work. The Oklahoma DOT has ultimately decided to conduct the sampling activities themselves (with our assistance). The testing will be subcontracted through the construction contractor for this work. We were fortunate to limit the subcontract to either Southwestern Labs or Law Engineering. We will assist in the packaging and shipping of all of the samples to the winning subcontractor for testing purposes.

Please let me know if you have any questions or comments on the enclosed plan.

Sincerely,

Jerry F. Daleiden, P.E.
Project Engineer, SRCO

JFD:dmj

Enclosure: As stated.

cc.w/Encl: Shiraz Tayabji, PCS/LAW David Ooten, SHRP-DC

8240 Mopac Suite 220 • Austin Texas • (512) 346-0870 • FAX (512) 346-8750

Brent Rauhut Engineering Inc.

September 19, 1991

Mr. C. Dwight Hixon, P E.
Research & Development Engineer
Oklahoma Department of Transportation
200 N E. 21st Street, Room 2A2
Oklahoma City, Oklahoma 73105

Subject: Materials Sampling and Field Testing Plan for the Jointed Concrete Rehabilitation Project (SPS-6) in Kay County, Oklahoma.

Dear Dwight,

In reviewing the files that Gary Fitts left me for the SPS-6 project (400600) on Interstate 35 in Kay County, Oklahoma, I did not see any notes relative to the materials sampling and field testing that will need to be accomplished at this location. In discussing this with Gary, it is my understanding that he did discuss this to some extent with Faria Emanian. He and Faria had discussed in passing the possibility of including materials sampling and field testing in the contract with construction of this project. However, at that time, no formal plan had been developed to identify the specific details for sampling and testing at this location. I understand that this work is to be let for bidding soon, however, to date I am not aware of any detailed plans having been discussed for the accomplishment of this work With this in mind, I have taken the liberty of preparing the attached plan, based on SHRP's Operational Memorandum Nº SHRP-LTPP-OM-019 entitled, "Material Sampling and Testing Requirements for Experiment SPS-6, Rehabilitation of Jointed Portland Cement Concrete Pavements" (also attached)

Completion of this sampling and testing work is considered to be a responsibility of the state, however, we would obviously be more than willing to help in any way possible. The other states that have completed this work to date have contracted with Southwest Labs and/or LAW to accomplish this work for them in a manner consistent with the requirements set forth by SHRP. It is not inconceivable to accomplish this work with state forces, however, this would require a fair amount of coordination to ensure that sampling and testing was accomplished consistent with this same work at other locations.

Please review the information provided in the attached, and assess how you and/or the Oklahoma DOT feel this work might best be accomplished for this particular project. I am hopeful that we might have an opportunity to discuss this work in further details during my visit in early October, and address any questions, comments or concerns that you might have at that time.

9240 Mopac Suite 220 • Austin Texas 78759 • (512) 346-0870 • FAX (512) 346-8750

After the plan has been reviewed and finalized by the appropriate personnel within the Oklahoma DOT, and details for accomplishing this work have been better defined, the plan will need to be forwarded to SHRP-DC for "official approval". This is more of a formality than anything else, but has been requested of us so that they might be able to ensure that all of these sections are being handled in comparable fashion.

I am looking forward to visiting with you in early October (8-17). Please do not hesitate to call me with any questions or requests you might have of me prior to that time. Take care.

Sincerely,

Jerry F Daleiden, P.E.
Project Engineer, SRCO

Enclosures: As stated above.

cc w/o Encl: David Ooten, SHRP-DC
Homer Wheeler, SHRP RE-SRCO

JFD·dmj

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TABLE 1. SCOPE OF MATERIALS SAMPLING AND FIELD TESTING

MATERIAL & SAMPLING DESCRIPTION	NUMBER OF MATERIAL SAMPLES	SAMPLE TYPE DESIGNATION
PRE-CONSTRUCTION SAMPLING		
1. PCC (Original Layer)		
Coring - 4" diameter cores	20	C1-C20
Coring - 6" diameter cores	3	A1-A3
Coring - 12" diameter cores	3	BA1-BA3
2. Unbound Base/Subbase Layers (Per Layer)		
Augering 6" diameter holes	3	A1-A3
Bulk Sampling in 12" diameter holes	3	BA1-BA3
Bulk Sampling in Test Pit	2	TP1-TP2
In Situ Density & Moisture Content (Nuclear Gauge)	2	TP1-TP2
Moisture Content Samples	7	TP1-TP2, BA1-BA3
3. Bound Base/Subbase Layers (Per Layer)		
Coring - 4" diameter cores	3	C5, C11, C19
Coring - 6" diameter cores	3	A1-A3
Coring - 12" diameter cores	3	BA1-BA3
4. Subgrade		
Splitspoon Sampling	4*	A1-A2
Thin-walled Tube Sampling (* 2 tubes or 2 spoons or combination per hole)	4*	A1-A2
Bulk Sampling in 12" diameter holes	3	BA1-BA3
Bulk Sampling in Test Pits	2	TP1-TP2
In Situ Density & Moisture Content (Nuclear Gauge)	2	TP1-TP2
Moisture Content Samples	7	TP1-TP2, BA1-BA3
5. Shoulder Auger Probes	3	S1-S3
POST-CONSTRUCTION SAMPLING		
1. Asphaltic Concrete (Overlay)		
Coring - 4" diameter cores	20	C21-C40
Bulk Samples from Plant	3	BV1-BV3

TABLE 2. BULK MATERIAL SAMPLING DURING CONSTRUCTION

A. MATERIALS REQUIRED FOR TESTING AS PART OF SPS-6 EXPERIMENT

MATERIAL & SAMPLING DESCRIPTION	NUMBER OF MATERIAL SAMPLES	SAMPLE LOCATION
1. Asphalt Concrete Mix 100 lb. bulk sample	3	Mix Plant

B. MATERIALS TO BE SHIPPED TO THE SHRP ASPHALT REFERENCE LIBRARY

MATERIAL & SAMPLING DESCRIPTION	NUMBER OF MATERIAL SAMPLES	SAMPLE LOCATION
1. Asphalt Cement 5 Gallon Containers	11	Mix Plant
2. Aggregate 55 Gallon Drums	1000 lbs.	Mix Plant
3. Finished Asphaltic Concrete Mix 5 Gallon Containers	200 lbs.	Mix Plant

TABLE 3. OK SPS-6 LABORATORY TESTING PLAN (PRECONSTRUCTION)

MATERIAL TYPE AND PROPERTIES	SHRP TEST DESIGNATION	SHRP PROTOCOL	NO. OF TESTS PER LAYER	MATERIAL SOURCE/ TEST LOCATIONS
I PORTLAND CEMENT CONCRETE				
Compressive Strength	PC01	P61	10	C1,C3,C5,C7,C9,C11,C13,C15, C17,C19
Splitting Tensile Strength	PC02	P62	10	C2,C4,C6,C10,C12,C14,C16, C18,C20
PCC Coefficient of Thermal Expansion	PC03	P63	3	A1, A2, A3
Static Modulus of Elasticity	PC04	P64	6	C3,C5,C7,C11,C15,C17
PCC Unit Weight	PC05	P65	10	C1,C3,C5,C7,C9,C11,C13,C17,C19
Core Examination/Thickness	PC06	P66	23	C1-C20, A1, A2, A3
II BOUND (TREATED) BASE AND SUBBASE				
Type and Classification of Material and Treatment	TB01	P31	3	C5, C11, C19
Pozzolanic/Cementitious: Compressive Strength	TB02	P32	3	C5, C11, C19
Asphalt Treated: Dynamic Modulus (77F)	TB03	P33	3	C5, C11, C19
HMAC. Resilient Modulus	AC07	P07	3	C5, C11, C19
III UNBOUND GRANULAR BASE AND SUBBASE				
Particle Size Analysis	UG01	P41	3	TP1, [BA1-BA3], TP2
Sieve Analysis (Washed)	UG02	P41	3	TP1, [BA1-BA3], TP2
Atterberg Limits	UG04	P43	3	TP1, [BA1-BA3], TP2
Moisture-Density Relations	UG05	P44	3	TP1, [BA1-BA3], TP2
Resilient Modulus	UG07	P46	3	TP1, [BA1-BA3], TP2
Classification	UG08	P47	3	TP1, [BA1-BA3], TP2
Permeability	UG09	P48	3	TP1, [BA1-BA3], TP2
Natural Moisture Content	UG10	P49	3	TP1, [BA1-BA3], TP2
IV. SUBGRADE				
Sieve Analysis Hydrometer to 0.001mm	SS01	P51	3	TP1, [BA1-BA3], TP2
Atterberg Limits	SS02	P42	3	TP1, [BA1-BA3], TP2
Classification	SS03	P43	3	TP1, [BA1-BA3], TP2
Moisture-Density Relations	SS04	P52	6	TP1, [BA1-BA3], TP2, A1, A2, A3
Resilient Modulus	SS05	P55	3	TP1, [BA1-BA3], TP2
Unit Weight	SS07	P46	3	A1, A2, A3
Natural Moisture Content	SS08	P56	6	TP1, [BA1-BA3], TP2, A1, A2, A3
Depth to Rigid Layer	SS09	P49	3	TP1, [BA1-BA3], TP2
			3	S1, S2, S3

NOTE 1: Samples within brackets are from the same sampling location

TABLE 4. OK SPS-6 LABORATORY TESTING PLAN (POSTCONSTRUCTION)

MATERIAL TYPE AND PROPERTIES	SHRP TEST DESIGNATION	SHRP PROTOCOL	NO. OF TESTS PER LAYER	MATERIAL SOURCE/[1] TEST LOCATIONS
A. ASPHALTIC CONCRETE:				
Core Examination/Thickness	AC01	P01	20	All Cores
Bulk Specific Gravity	AC02	P02	20	All Cores
Maximum Specific Gravity	AC03	P03	3	BV1, BV2, BV3
Asphalt Content (Extraction)	AC04	P04	3	BV1, BV2, BV3
Moisture Susceptibility	AC05	P05	3	BV1, BV2, BV3
Creep Compliance	AC06	P06	3	C28, C32, C38
Resilient Modulus	AC07	P07	3	[C23,C24,C25], [C29,C30,C31], [C34,C35,C36]
Tensile Strength	AC07	P07	3	C27, C33, C39
B. EXTRACTED AGGREGATE:				
Bulk Specific Gravity:				
Coarse Aggregate	AG01	P11	3	From Uncompacted Mix
Fine Aggregate	AG02	P12	3	From Uncompacted Mix
Type and Classification:				
Coarse Aggregate	AG03	P13	3	From Uncompacted Mix
Fine Aggregate	AG03		3	From Uncompacted Mix
Gradation of Aggregate	AG04	P14	3	From Uncompacted Mix
Roundness Index of Coarse Aggregate	AG06	P14B	3	From Uncompacted Mix
NAA Test for Fine Aggregate Particle Shape	AG05	P14A	3	From Uncompacted Mix
C. ASPHALT CEMENT (FROM MIX):				
Abson Recovery	AE01	P21	3	From Uncompacted Mix
Penetration at 50F, 77F & 90F	AE02	P22	3	From Uncompacted Mix
Specific Gravity (60F)	AE03	P23	3	From Uncompacted Mix
Viscosity at 77F	AE04	P24	3	From Uncompacted Mix
Viscosity at 140F & 275F	AE05	P25	3	From Uncompacted Mix

NOTES: 1. Samples within brackets are from the sample sampling location.

TABLE 5. WEIGHT REQUIREMENTS FOR BULK SAMPLES OF UNBOUND BASE, SUBBASE AND SUBGRADE LAYERS

LAYER	BULK SAMPLES FROM THREE 12" AUGER HOLES (BA1, BA2, AND BA3)	BULK SAMPLES FROM TEST PIT
Unbound Base	Maximum 200 lbs. (100 lbs. Minimum)	200 lbs.
Unbound Subbase	Maximum 200 lbs. (100 lbs. Minimum)	200 lbs.
Subgrade	• Coarse Grain 200 lbs. • Find Grain 150 lbs.	200 lbs. 150 lbs.

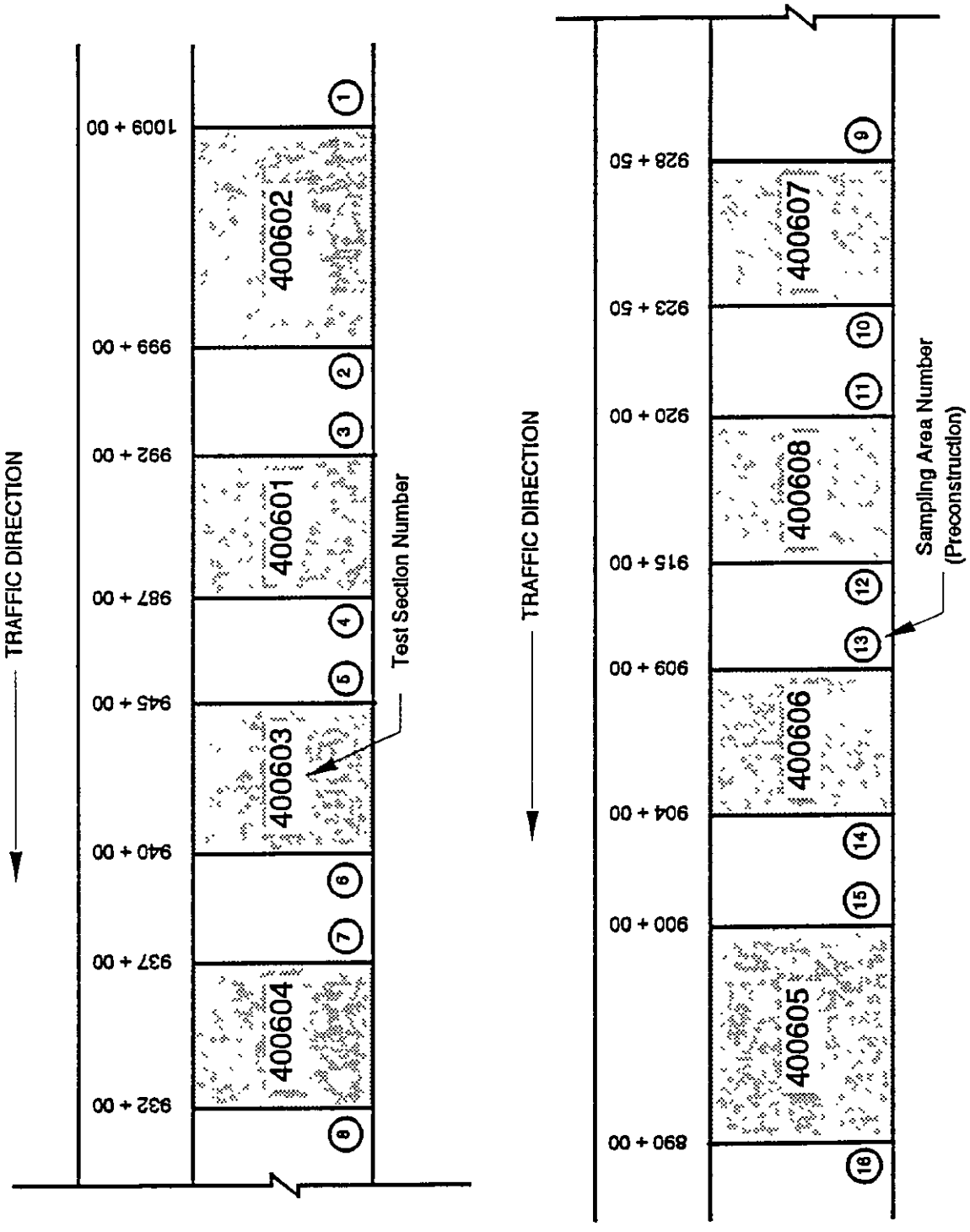

Figure 1. Preconstruction Sampling Area Plan for Oklahoma SPS-6

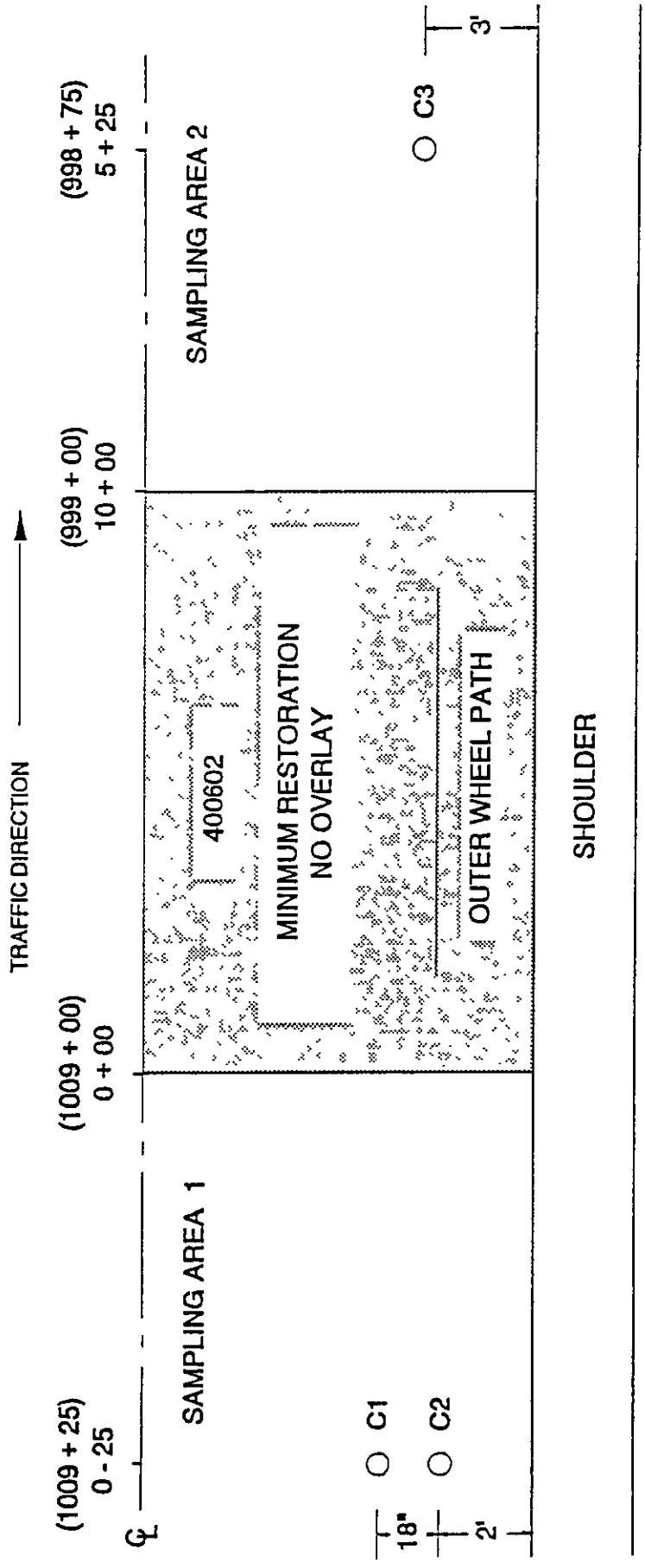

Figure 1.A Preconstruction Sampling Plan for Test Section 400602

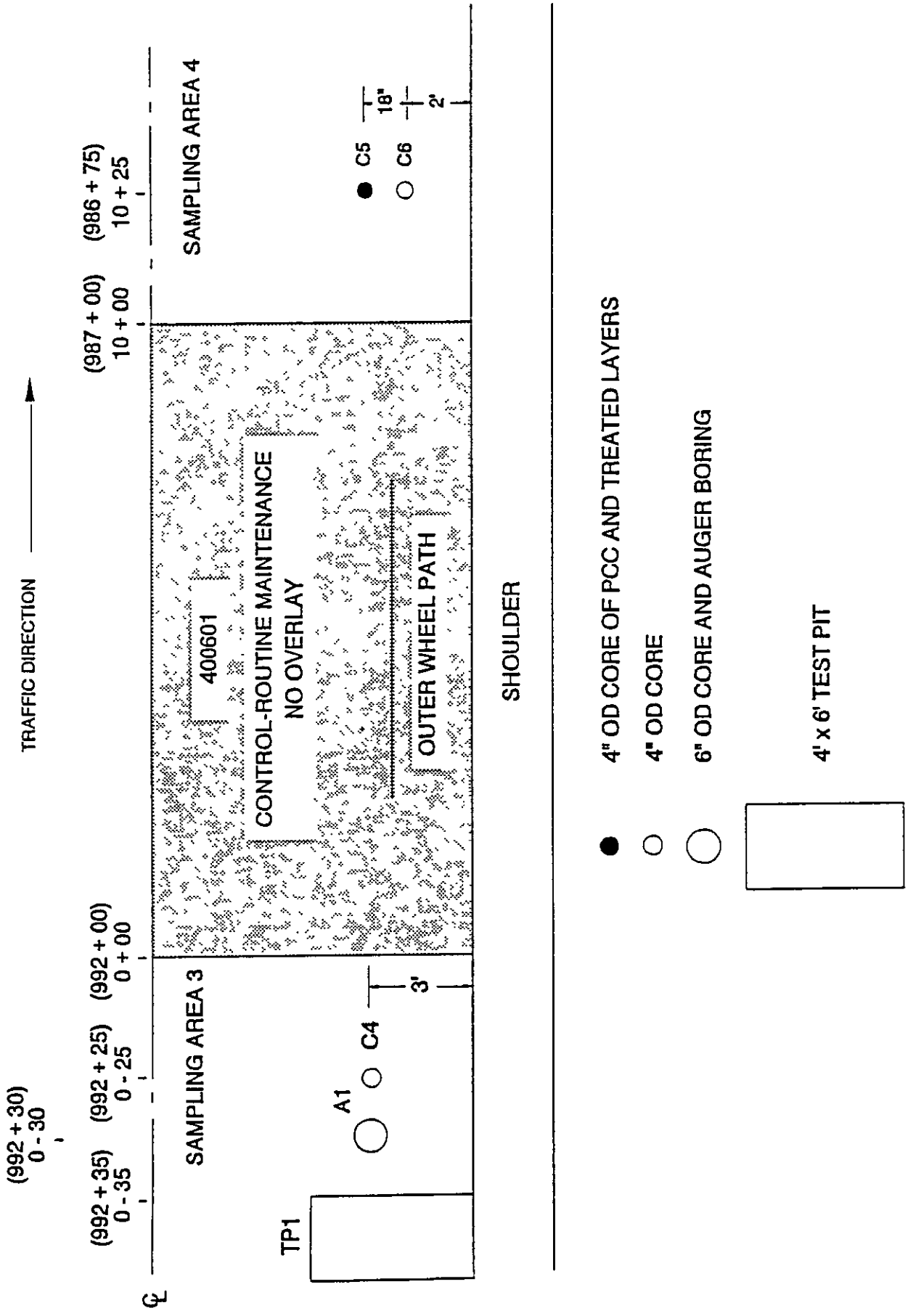

Figure 1.B Preconstruction Sampling Plan for Test Section 400601

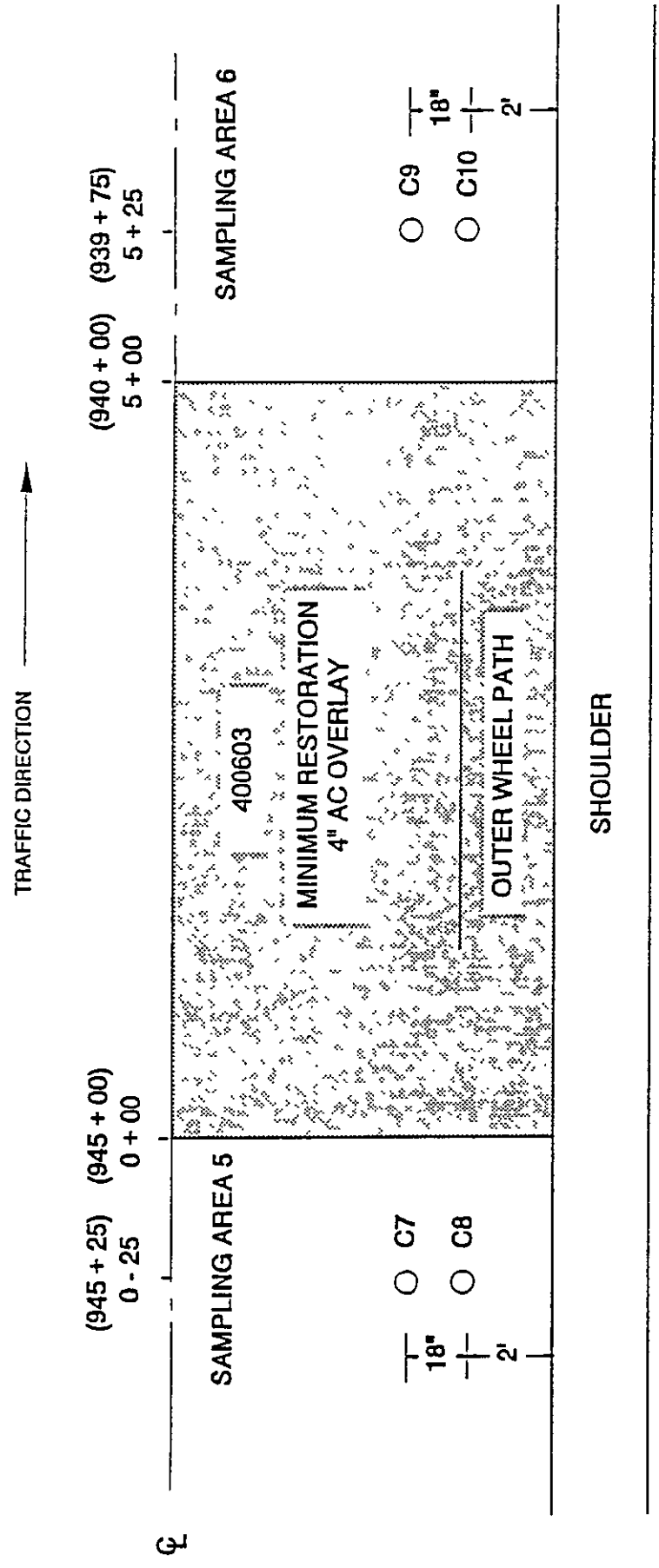

Figure 1.C Preconstruction Sampling Plan for Test Section 400603

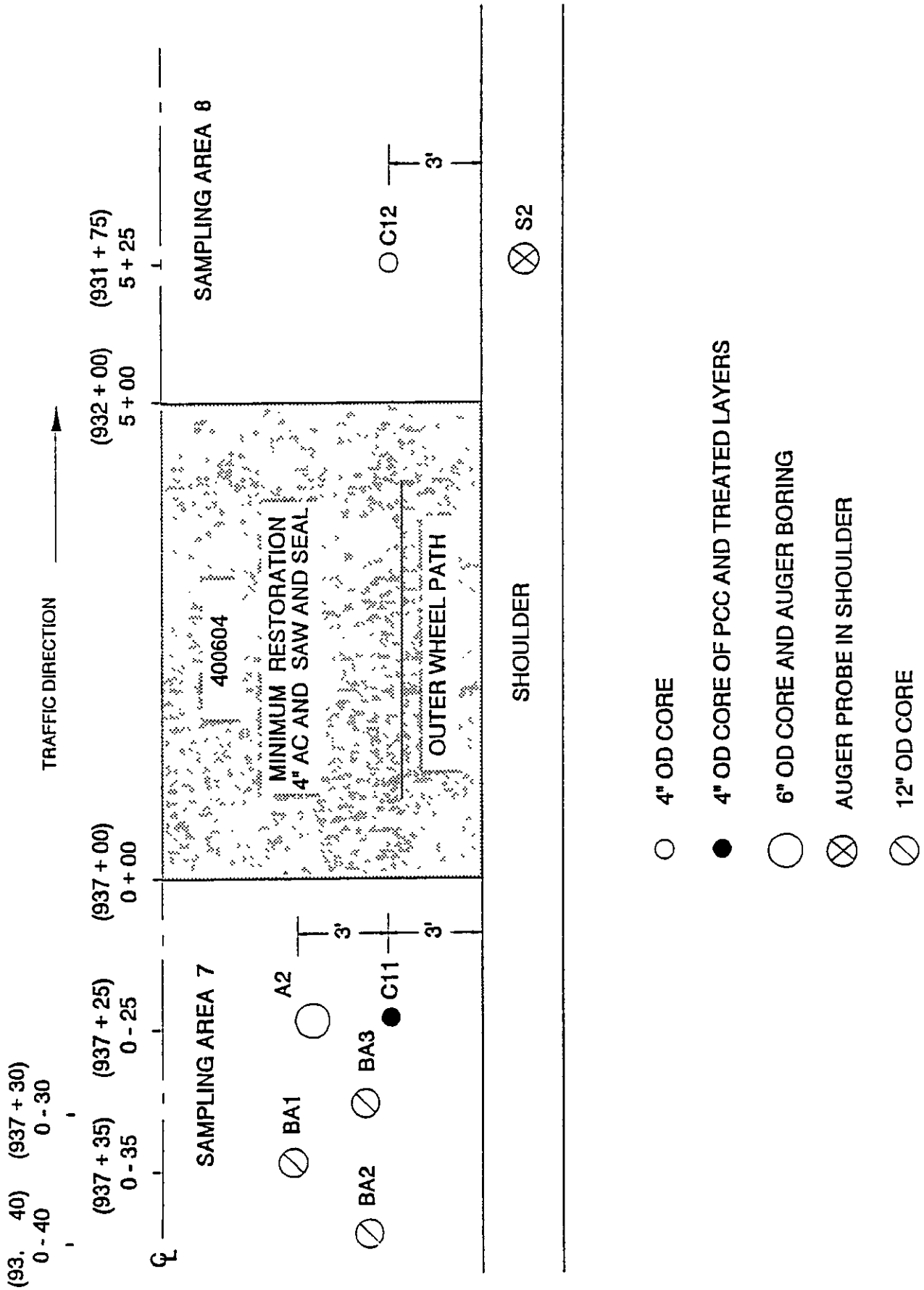

Figure 1.D Preconstruction Sampling Plan for Test Section 400604

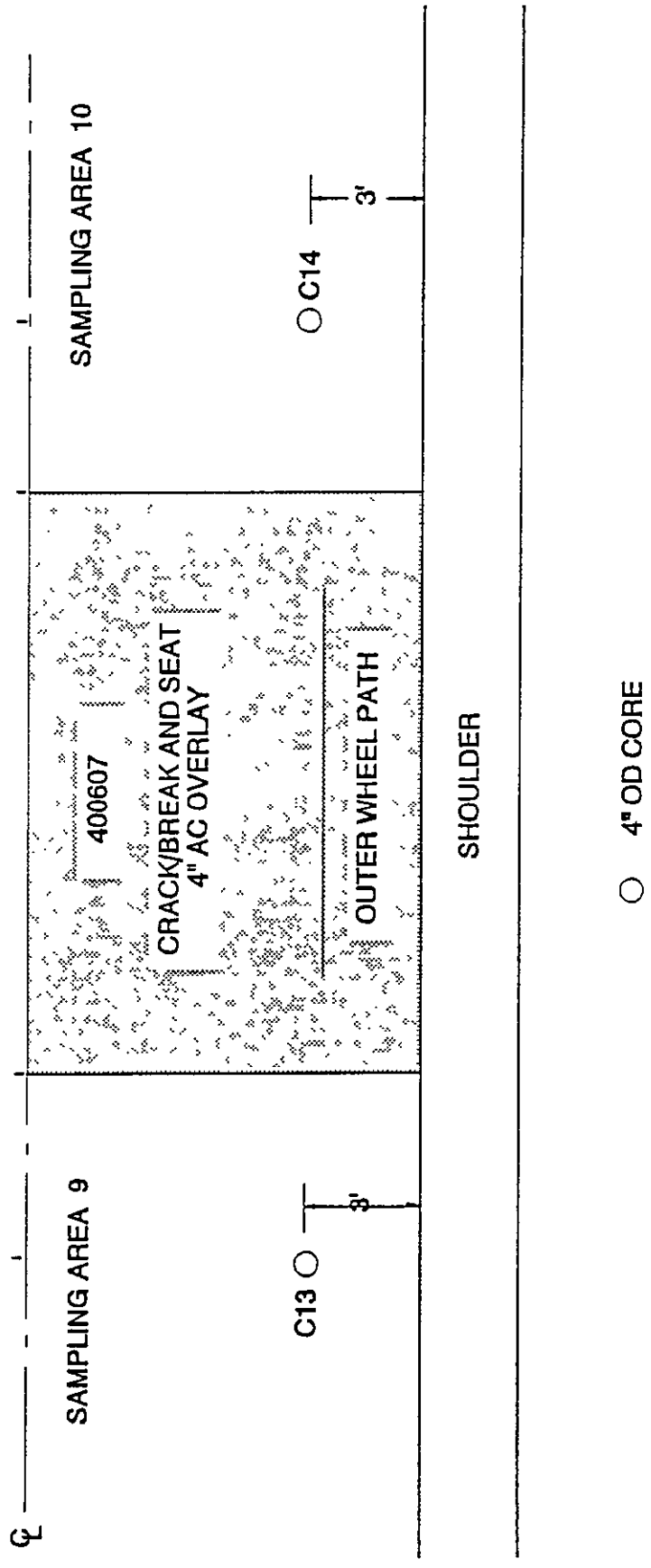

Figure 1.E Preconstruction Sampling Plan for Test Section 400607

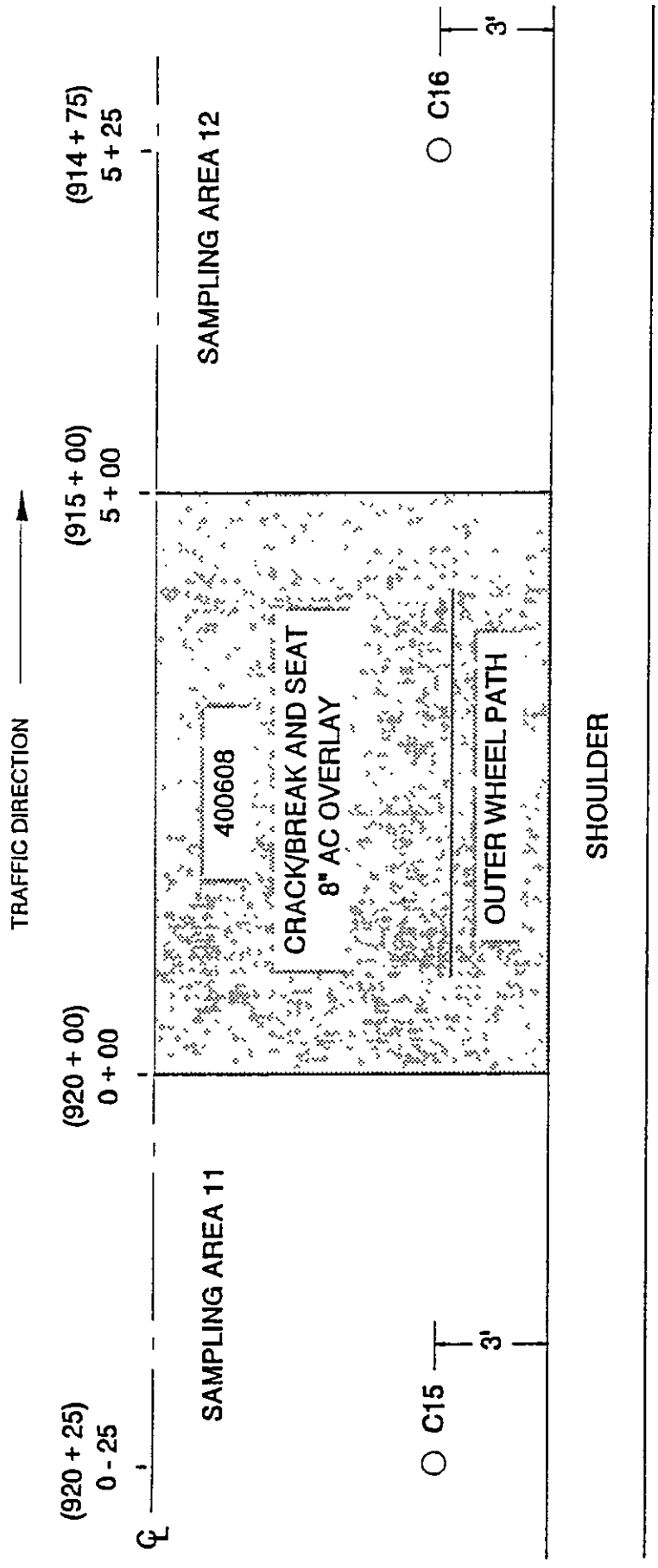

Figure 1 F Preconstruction Sampling Plan for Test Section 400608

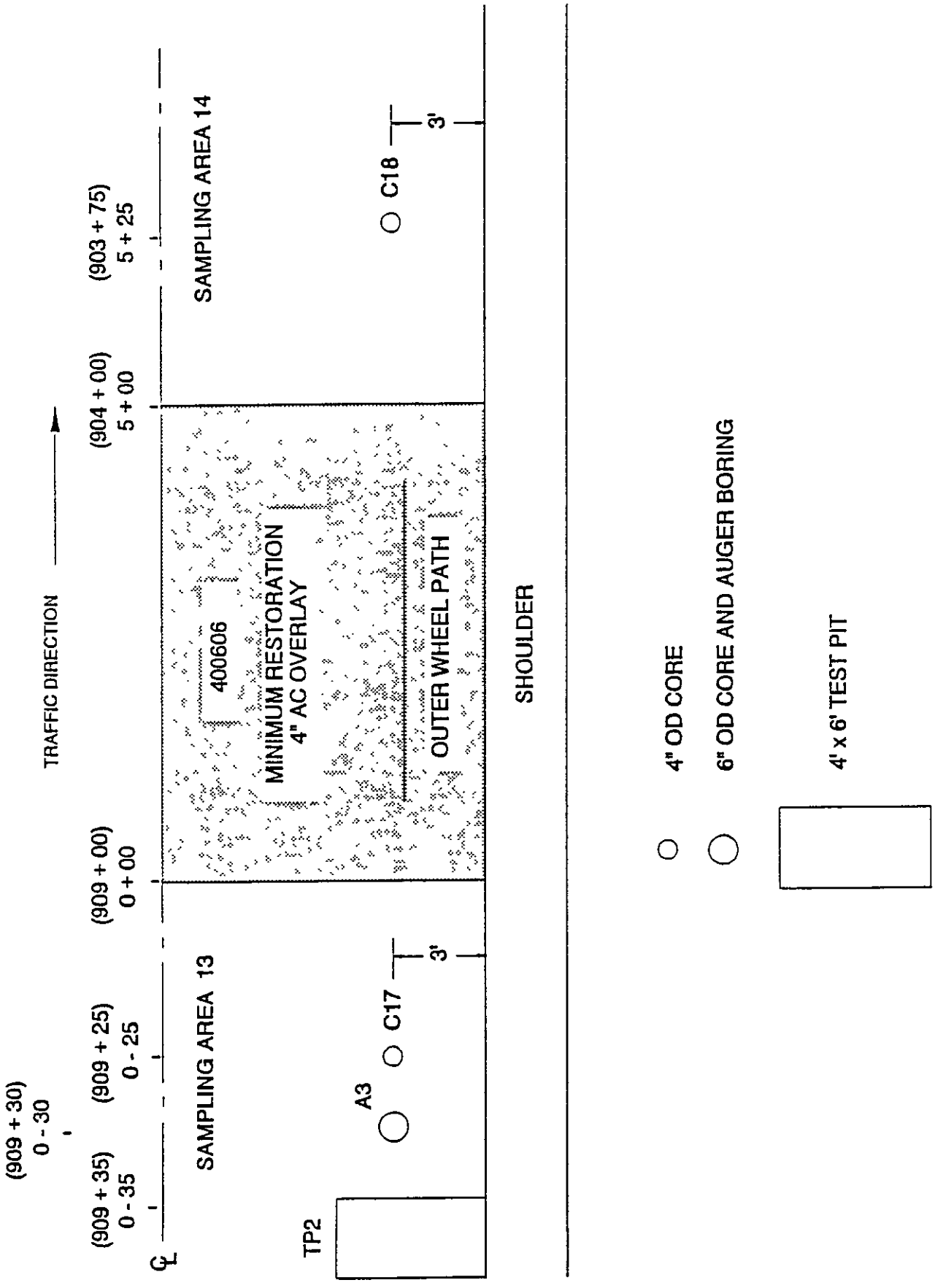

Figure 1 G Preconstruction Sampling Plan for Test Section 400606

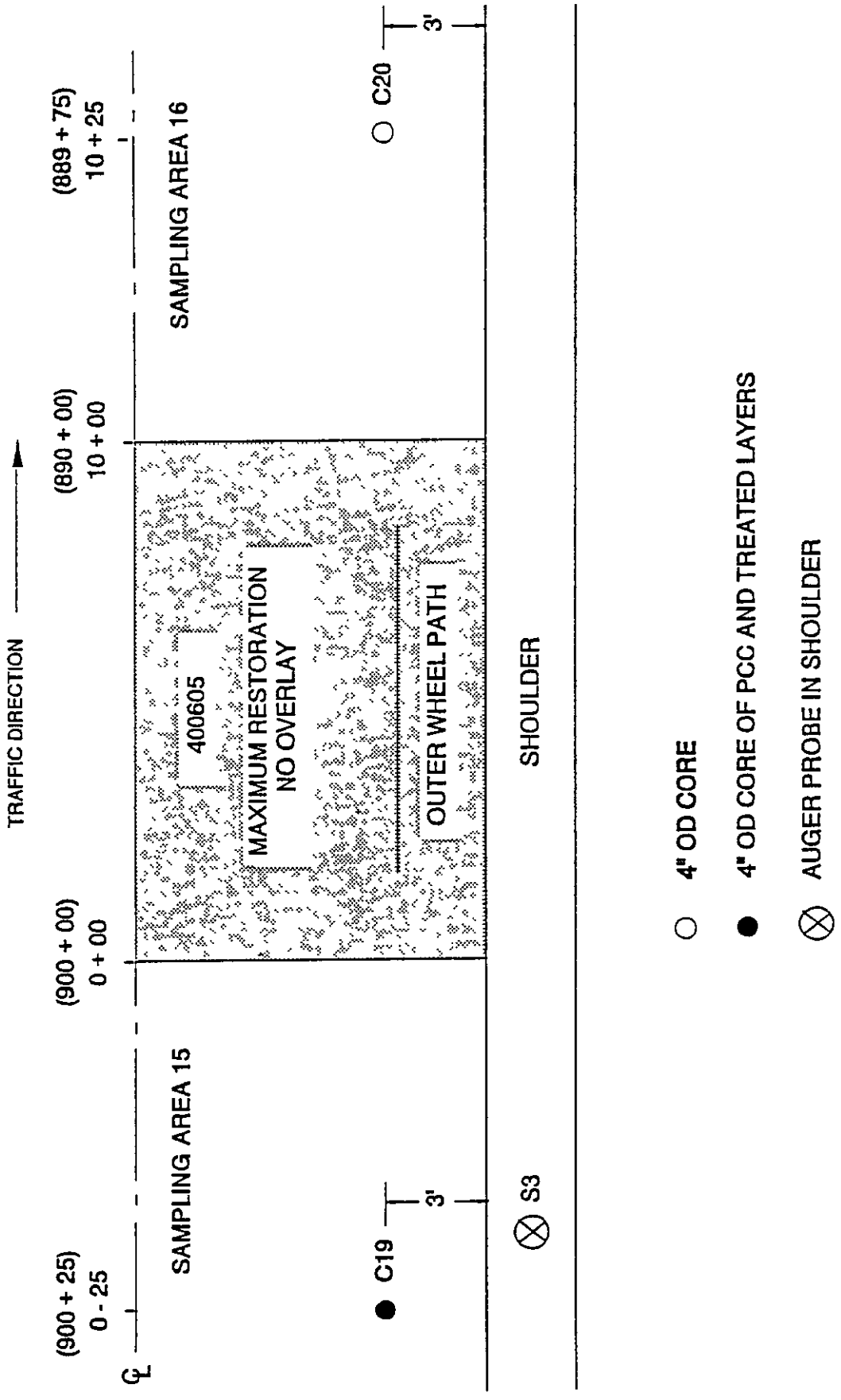

Figure 1.H Preconstruction Sampling Plan for Test Section 400605

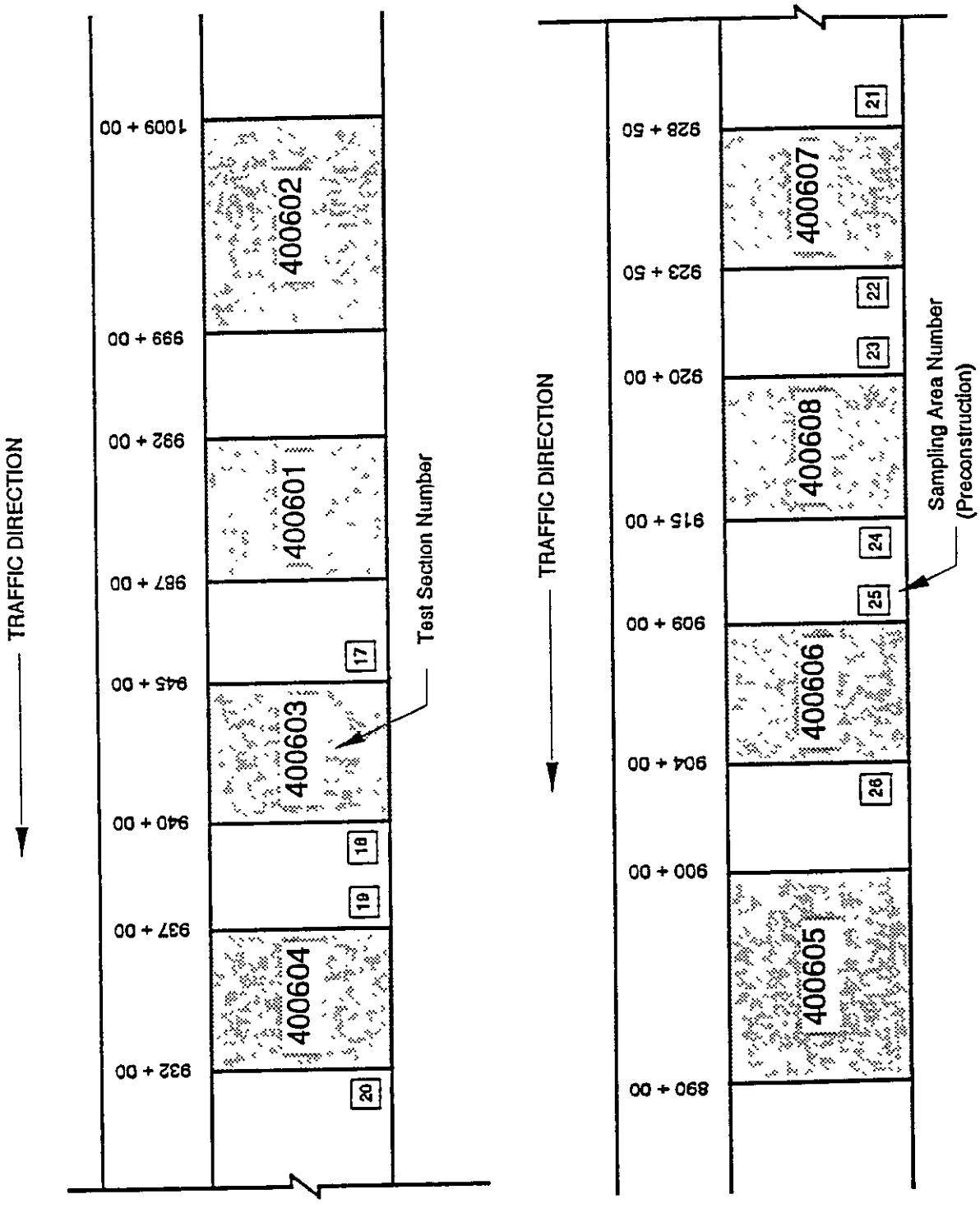

Figure 2. Postconstruction Sampling Area Plan for Oklahoma SPS-6

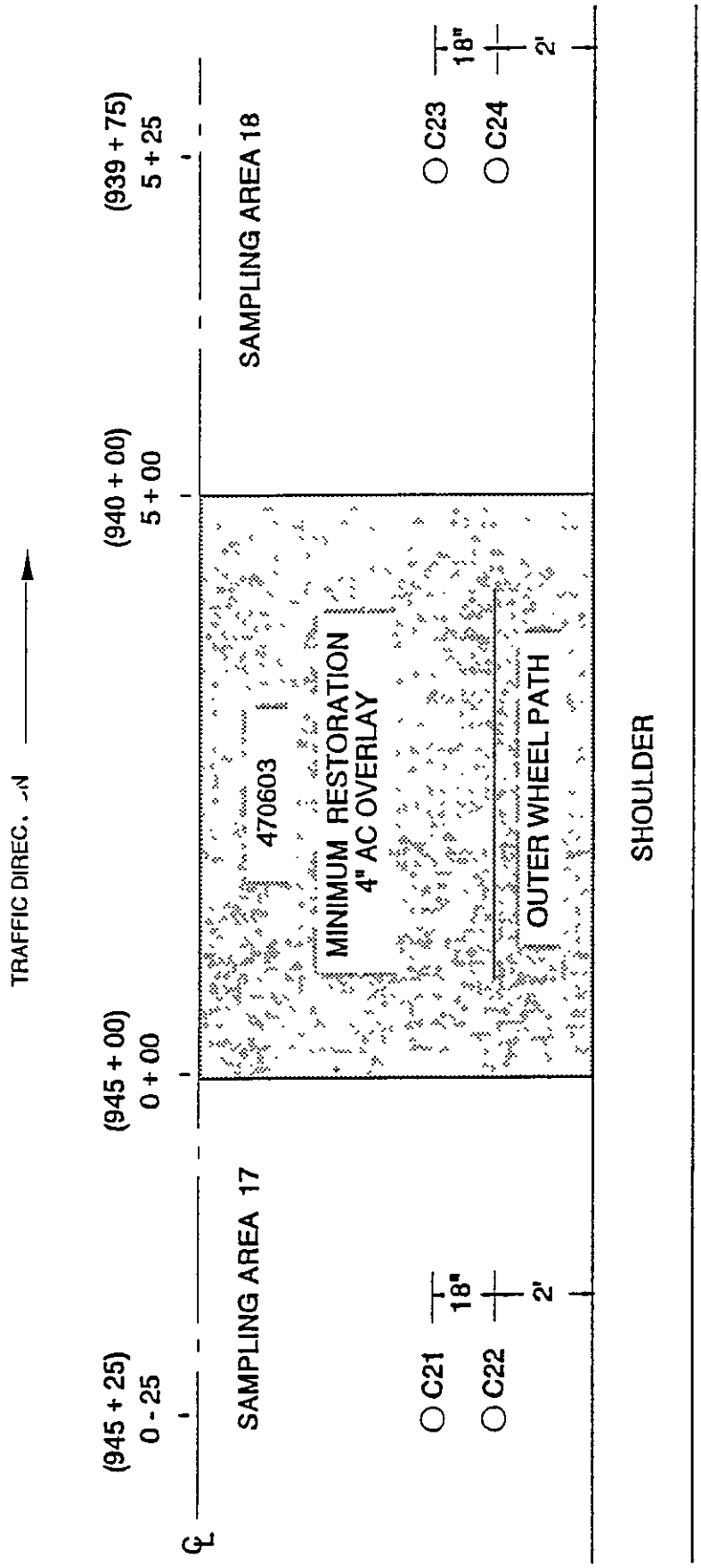

Figure 2.A Postconstruction Sampling Plan for Test Section 400603

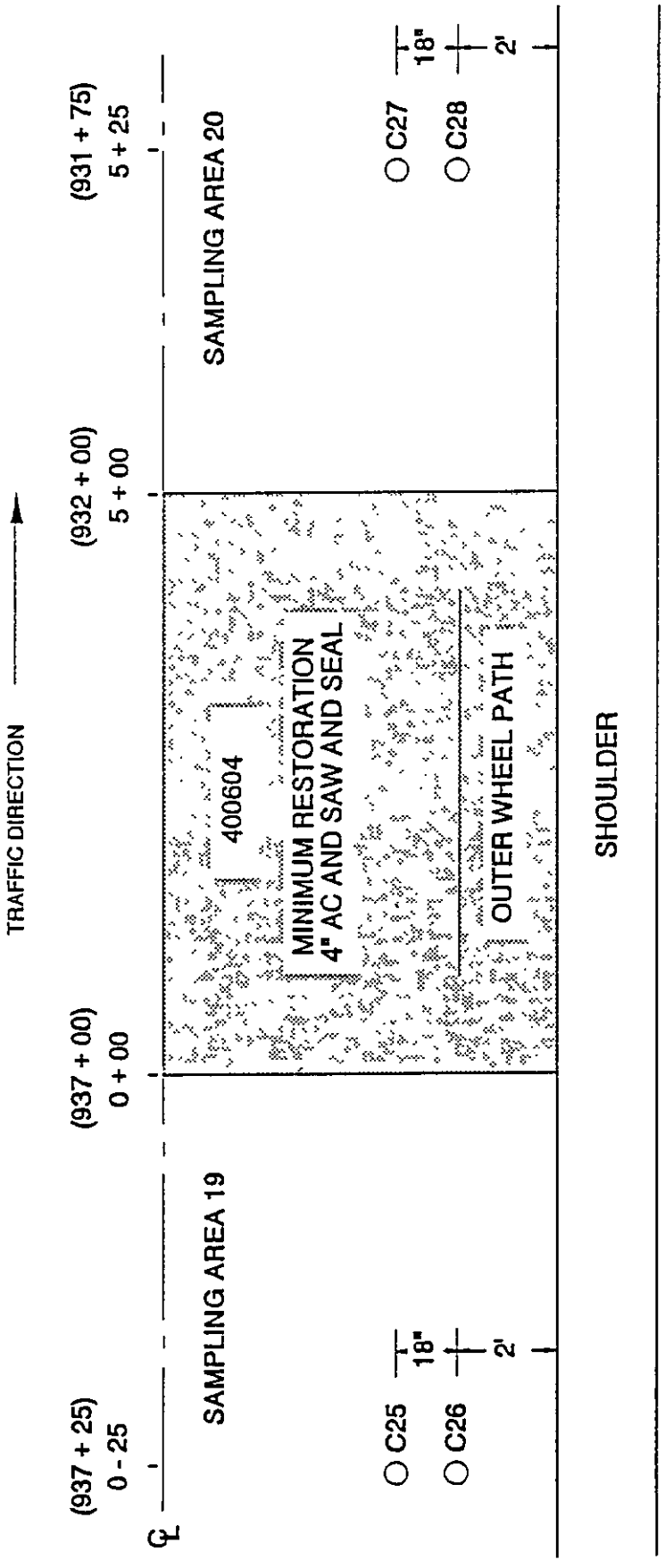

Figure 2 B Postconstruction Sampling Plan for Test Section 400604

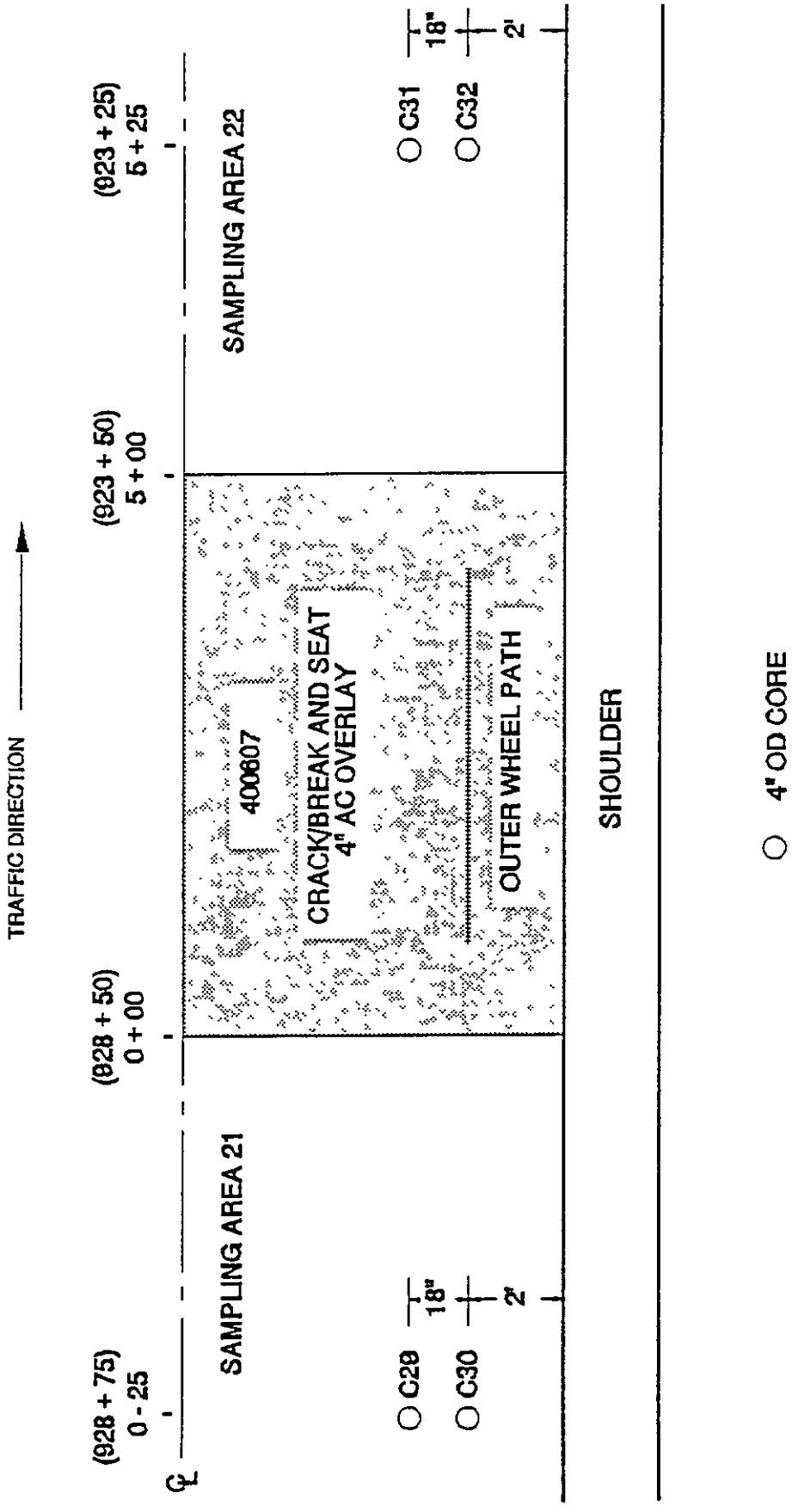

Figure 2.C Postconstruction Sampling Plan for Test Section 400607

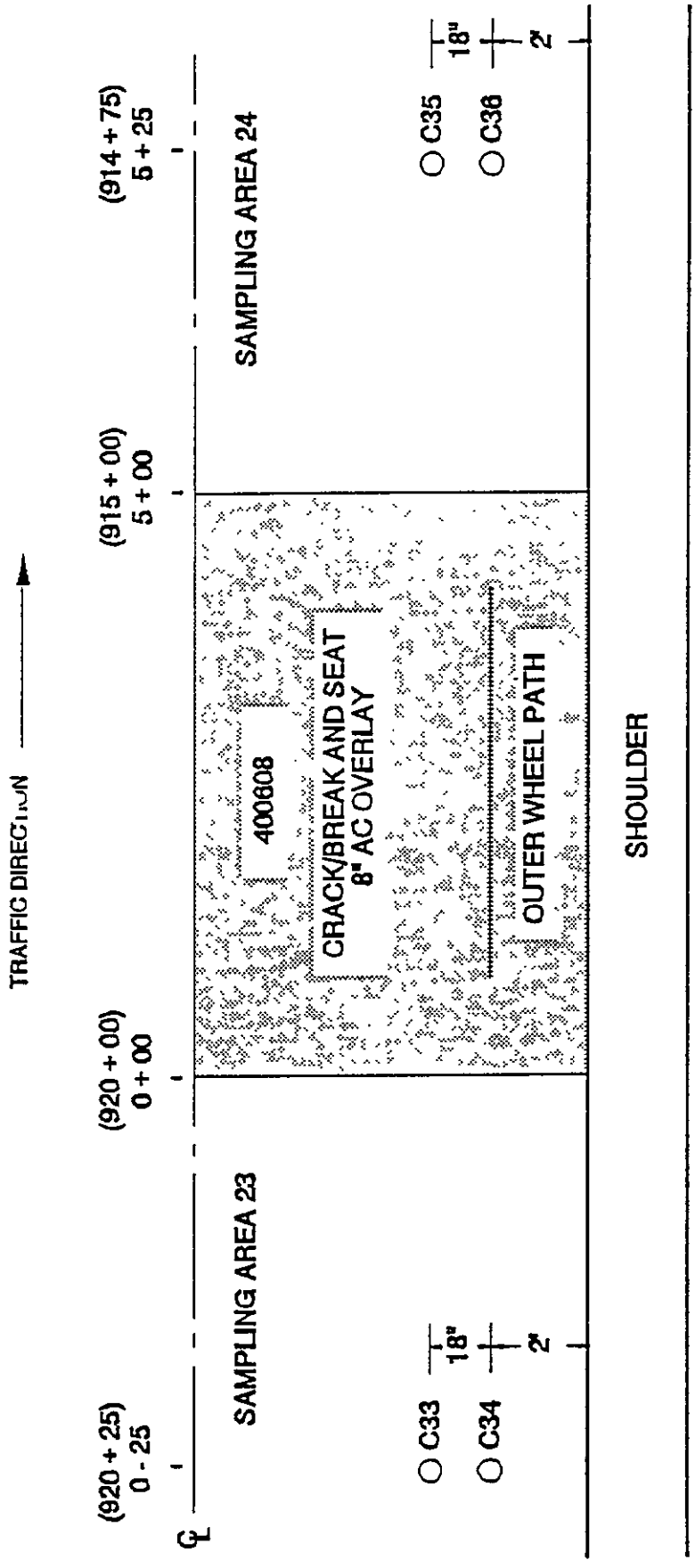

Figure 2 E Postconstruction Sampling Plan for Test Section 470608

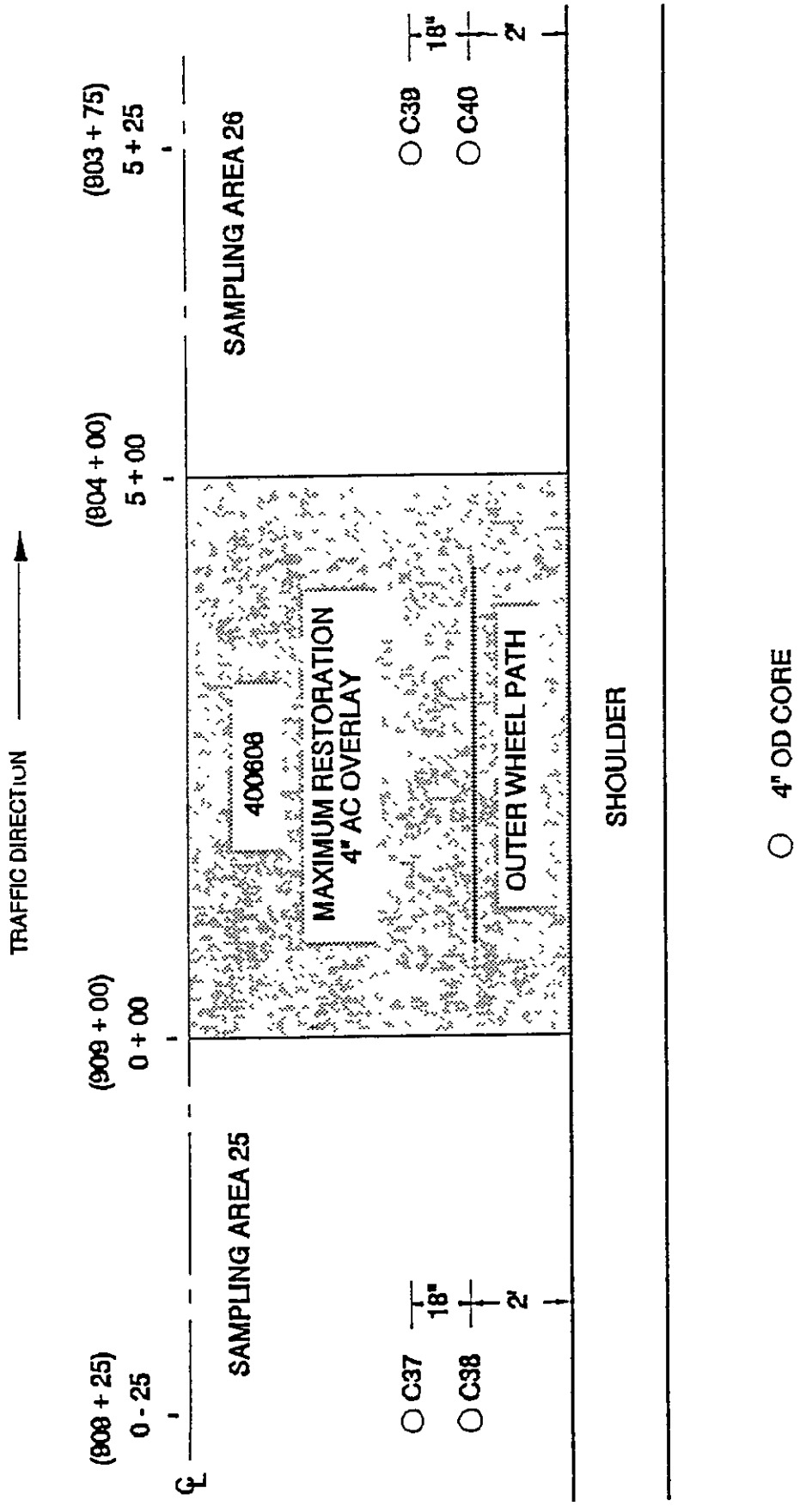

Figure 2.E Postconstruction Sampling Plan for Test Section 400608

APPENDIX E

PAGE

CONSTRUCTION DATA SHEETS FOR SECTIONS.

400601 . . . . . E 2

400602 . . E 12

400603 . . . . . E 24

400604 . . . . . E 34

400605 . . . . . E. 44

400606 . . . . . E 56

400607 . . . . . E 66

400608 . . . . . E. 74

REHABILITATION DATA SHEETS

ASPHALT PAVEMENT SURFACE COURSE (TYPE B MIX) USED ON

- 400603, 400604, 400606, 400607 and 400608 . . . E 86
- ORIGINAL MIX DESIGN . . . . . E. 92

ASPHALT BINDER COURSE USED ON

- 400608 . . . . . E 97
- ORIGINAL MIX DESIGN E.103

SHOULDER RESTORATION . . . . . E 107

- 400602 and 400605 . . . . . E.108
- 400603, 400604, 400606 and 400607 . . . . . E.109
- 400608 . . . . . E.110

CONSTRUCTION DATA

LTPP-SPS CONSTRUCTION DATA
LAYER THICKNESS MEASUREMENTS
CONSTRUCTION DATA SHEET 10-1

* STATE CODE [4 0]
* SPS PROJECT CODE [0 6]
* TEST SECTION NO [0 1]

1 DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2 DATE MEASUREMENTS COMPLETED [0 6-0 3-9 2]

SHEET 1 OF 2

LAYER THICKNESS MEASUREMENTS (Inches)

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	ORIGINAL CONC SURFACE
0-0 0	0 6		101.27
	3 6		101.30
	7 2		101.34
	1 0 8		101.38
	1 4 4		101.44
0-5 0	0 6		101.14
	3 6		101.17
	7 2		101.22
	1 0 8		101.26
	1 4 4		101.30
1-0 0	0 6		100.97
	3 6		101.00
	7 2		101.05
	1 0 8		101.09
	1 4 4		101.15
1-5 0	0 6		100.77
	3 6		100.81
	7 2		100.87
	1 0 8		100.93
	1 4 4		100.99
2-0 0	0 6		100.64
	3 6		100.66
	7 2		100.72
	1 0 8		100.77
	1 4 4		100.84
2-5 0	0 6		100.53
	3 6		100.55
	7 2		100.59
	1 0 8		100.63
	1 4 4		100.67
+			T.B.M. PAINTED DOT ON CONC. PAD OF WEIGHSTATION SIGN
			ASSUMED ELEV 100.00
LAYER NUMBER			

PREPARER Jon Pearson EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA LAYER THICKNESS MEASUREMENTS CONSTRUCTION DATA SHEET 10-1	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 1]

1 DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2 DATE MEASUREMENTS COMPLETED [0 6-0 3-9 2]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	ORIGINAL CONC SURFACE
3-0 0	1 2		100.36
	3 6		100.38
	7 2		100.42
	1 0 8		100.46
	1 4 4		100.50
3-5 0	0 6		100.18
	3 6		100.20
	7 2		100.24
	1 0 8		100.28
	1 4 4		100.33
4-0 0	0 6		100.03
	3 6		100.06
	7 2		100.11
	1 0 8		100.15
	1 4 4		100.19
4-5 0	0 8		99.87
	3 6		99.90
	7 2		99.95
	1 0 8		99.99
	1 4 4		100.04
5-0 0	0 6		99.66
	3 6		99.70
	7 2		99.76
	1 0 8		99.81
	1 4 4		99.86
+			
+			
LAYER NUMBER			

PREPARER Jon Pencak EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS CONSTRUCTION DATA SHEET 11	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [01]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections Also include any quality control measurements or data for which space is not provided on other forms Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation

3 FULL DEPTH PATCHES PLACED IN AREAS OF SEVERE EXISTING DETERIORATION. SHEETS 20-23 HAVE BEEN COMPLETED AND ATTACHED TO DOCUMENT THIS PATCH WORK

PREPARER Jerome F. Dell EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA JOINT RESEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES - CONSTRUCTION DATA SHEET 15	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [01]

1 DATE JOINT SEALANT OPERATIONS BEGAN (Month-Day-Year) [08-27-92]

2 DATE JOINT SEALANT OPERATIONS COMPLETED [08-29-92]

3 METHOD OF REMOVING OLD SEALANT [5]
Not Removed. 1 Joint Plow - V-Shaped 2 Joint Plow - Rectangular 3
High Pressure Water Blasting 4 Diamond Blade Saw 5
Carbide Blade Saw 6 Pull-Out of Old Compression Sealant 7
Not Previously Sealed. 8
Other (Specify) 9 _____

4 NEW SEALANT RESERVOIR DIMENSIONS, INCHES
Width [05]
Depth (From Top of Slab to Top of Backer Rod or Tape) [05]

5 BOND BREAKER UNDER SEALANT [3]
None 1 Nonreactive Adhesive Backed Tape . 2 Backer Rod 3
Other (Specify) 4 _____

6 WERE JOINT SIDEWALLS REFACED? 4
No 1 Yes - One-Blade 2 Yes - Two-Blade 3
Other (Specify) 4 SAWED TWICE

7 CLEANING OF SIDEWALLS [5]
None . 1 Air Blast 2 Sand Blast 3 Water Blast 4
Other (Specify) 4 WATER BLASTED IMMEDIATELY AFTER SEALING
5 SAND BLASTED JUST BEFORE SEALING

SAWED 2:30 – 3:00 ON 8/27/92
SEALED 8/29/92

PREPARER [signature] EMPLOYER BRS DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA JOINT RESEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 16	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [01]

[7]

1 TYPE OF CONTRACTION JOINT SEALANT
(AASHTO OR ASTM SPECIFICATIONS)

D1850 (ASTM) Concrete Joint Sealer, Cold-Application Type 1
D1190 (ASTM) - M173 (AASHTO) Concrete Joint Sealer, Hot-Poured Elastic Type 2
D3406 (ASTM) - M282 (AASHTO) Joint Sealants, Hot-Poured, Elastomeric-Type, for PCC Pavements 3
D3405 (ASTM) - M301 (AASHTO) Joint Sealants, Hot-Poured for Concrete and Asphalt Pavements 4
D3542 (ASTM) Preformed Polychloroprene Elastomeric Joint Seals for Bridges . 5
D2628 (ASTM) Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements 6
Other (Describe - if Silicone Material is Used Federal Spec TT-S-001543A, Georgia D O T Spec 833 06, or Equal Applies 7
DOW CORNING 890 SL

Manufacturer Information on Type of Pressure Relief Joint Sealant
Manufacturer Name [DOW CORNING]
Manufacturer Sealant Name [890 - SL]

2 AVERAGE DEPTH OF TOP OF SEALANT PLACEMENT BELOW PAVEMENT SURFACE, INCHES [0 3]

3 ARE EXPANSION JOINTS SEALED DIFFERENTLY THAN CONTRACTION JOINTS? [2]
Yes. . 1 No 2

If Yes, Enter the code from Item 1, or describe below [ ]

Other [ ]

4 TOTAL LINEAR FEET OF JOINTS SEALED (9 JOINTS @ 12' EACH)
Transverse Joints [1 0 8 0]
Longitudinal Joints [5 0 0 0]

NOTE IF DIFFERENT MATERIALS OR METHODS ARE USED REPEAT SHEETS 15 AND 16 FOR EACH RECORDING THEIR LENGTHS IN ITEM NO 4

PREPARER Jerre R. Dill EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 20	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [01]

1. DATE PATCHING OPERATIONS BEGAN (Month-Day-Year) [07-10-92]

2 DATE PATCHING OPERATIONS COMPLETED [07-10-92]

3 PRIMARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB [ ]
(See Table A 22 for Type Codes)
Other (Specify) _____

4 SECONDARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB [ ]
(See Table A.22 for Type Codes)
Other (Specify) _____

5 PATCHES

	NUMBER	SQ FEET
SLAB ONLY	[3]	[228]
SLAB AND BASE	[ ]	[ ]

6 PATCH MATERIAL USED [1]
Portland Cement Concrete 1 Polymer Concrete . 2 Epoxy Mortar . 4
Other (Specify) . 5 _____

7 SLABS REPLACED

	NUMBER	SQ FEET
SLAB ONLY	[0]	[0]
SLAB AND BASE	[ ]	[ ]

8 METHOD FOR PATCH BOUNDARY DETERMINATION [1]
Visual 1 Coring 2 Deflection 3
State Standard or Specification 4
Other (Specify) 5 _____

9 CUTTING INSTRUMENT [1]
Diamond Blade Saw 1 Carbide Blade Saw 2 Wheel Saw 3
Air Hammer. 4
Other (Specify).. 5 _____

PREPARER [signature] EMPLOYER BRE DATE 8/21/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 21	* STATE CODE [04] * SPS PROJECT CODE [06] * TEST SECTION NO [2 1]

1. SECURING LOAD TRANSFER DEVICES [3]
   None. 1 Grout Filler 2 Epoxy filler 3
   Other 4 _____

2. REINFORCING STEEL PLACED IN PATCH [1]
   No 1 Yes 2

	TEMPERATURE STEEL Transverse	TEMPERATURE STEEL Longitudinal	Dowel Bars	Tie Bars
3 REBAR NUMBER	[ ]	[ ]	[ ]	[ ]
4 BAR LENGTHS, INCHES	[ ]	[ ]	[ ]	[ ]
5 BAR SPACING INCHES	[ ]	[ ]	[ ]	[ ]

6. DOWEL COATINGS [7]
   None 1 Paint and/or Grease 2 Plastic 3
   Monel 4 Stainless Steel 5 Epoxy 6
   Other (Specify) 7 GREASE & CAPS

7. NUMBER OF SAW CUTS PER PATCH (If Sawed) [4]

8. DEPTH OF TYPICAL BOUNDARY SAW CUT, INCHES [2]

9. CONCRETE BREAKUP [1]
   None 1 Pneumatic Air Hammer 2 Gravity Drop Hammer 3
   Sawing 4
   Other (Specify) 5 _____

10. REMOVAL OF CONCRETE [2]
    Concrete Breakup and Cleanout . 1 Lift Out Intact Slab Section... 2
    Other (Specify) 3 _____

PREPARER Tom E Dill EMPLOYER BRE DATE 8/21/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 22	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [21]

1 METHOD OF REINFORCING STEEL PLACEMENT
Chairs. . 1 Between Layers of Concrete 2 N/A [_]

2 MIXTURE DESIGN FOR PATCH MATERIAL, LB /CUBIC YARD
Coarse Aggregate [1820]
Fine Aggregate [1095]
Cement [705]
Water (Gallons/Cubic Yard) [37]

3 CEMENT TYPE USED Type I [4]
(See Type Codes, Table A 11)

4 AIR CONTENT, PERCENT BY VOLUME
Mean
Range [_ _ _] to [6 0]

5 ADMIXTURES Master Builders AEA 3% [08]
(See Cement additive Codes, Table A 12) [_ _]

6 SLUMP, INCHES
Mean
Range [_ _] to [3]

7 FLEXURAL STRENGTH (MODULUS OF RUPTURE), PSI [_ _ _ _]
(Based on 3rd Point Loading) Curing Time Days [_ _]
If Unavailable and Other Strength Test Conducted,
Enter Alternate Test [COMPRESSIVE STRENGTH]
Type of Loading [AXIAL COMPRESSION]
Age, Days [7], Strength, PSI [2830]

8 AMBIENT CONDITIONS AT TIME OF PATCHING
Air Temperature °F LOW [_ _] HIGH [72]
Surface Moisture - Dry = 1, Wet = 2 [_]

9 MAXIMUM SIZE OF COARSE AGGREGATE, INCHES [1.5]

10 CONSOLIDATION OF MATERIALS [1]
Internal Vibrators 1 Vibrating Screeds 2 Troweling 3
Rolling . 4 Tamping 5
Other (Specify) 6 _____

12. FINISHING [1]
Screeding 1 Hand-Troweling 2 Machine-Troweling 3
Other (Specify) 4 _____

PREPARER Terry F Dill EMPLOYER BRE DATE 8/21/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 23	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [2 1]

1 JOINT FORMING METHOD — SHOULDER [1] — TRANSVERSE [4] — LONGITUDINAL [4]

None 1 Polyethylene Strip Insert 2 Styrofoam Insert . 3
Fiberboard Insert 4 Sawing 5 Forms. 6
Other (Specify) 7 _____

2 WAS BOND BREAKER USED BETWEEN ADJACENT LANES? [1]
Yes .. 1 No 2

3 CURING METHOD — METHOD 1 [2] METHOD 2 [ ]

None 1 Memorane Curing Compound 2 Burlap Curing Blankets 3
Waterproof Paper Blankets 4 White Polyethylene Sheeting 6
Burlap-Polyethylene Blankets 6 Insulating Layers . 7
Cotton Mat Curing 8 Hay 9
Other (Specify) . 10 _____

4 APPROXIMATE TYPICAL TIME BETWEEN PATCHING AND OPENING TO TRAFFIC, HOURS [2 4]

5 TYPE OF TRANSVERSE JOINTS IN PATCHES 4 OR SLABS 2
None 1 All Expansion Joints All Contraction Joints 3
Mixture of ~~Expansion~~ Construction and Contraction Joints . 4

6 WERE OLD JOINTS MATCHED? [1]
Yes 1 No 2

PREPARER Renee Dell EMPLOYER BRE DATE 8/21/92

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LTPP-SPS CONSTRUCTION DATA
LAYER THICKNESS MEASUREMENTS
CONSTRUCTION DATA SHEET 10-1

* STATE CODE [4 0]
* SPS PROJECT CODE [0 6]
* TEST SECTION NO [0 2]

1 DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2 DATE MEASUREMENTS COMPLETED [0 8-2 7-9 2]

SHEET 1 OF 4

LAYER THICKNESS MEASUREMENTS (Inches)

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	DIAMOND GROUND	ORIGINAL CONC. SURFACE
0+00	03		103.36	103.39
	36		103.39	103.42
	72		103.43	103.45
	108		103.46	103.49
	144		103.51	103.54
0+50	03		103.13	103.15
	36		103.17	103.20
	72		103.23	103.25
	108		103.27	103.30
	144		103.31	103.35
1+00	03		102.94	102.95
	36		102.98	102.99
	72		103.04	103.06
	108		103.09	103.11
	144		103.15	103.17
1+50	06		102.77	102.79
	36		102.80	102.83
	72		102.87	102.89
	108		102.91	102.94
	144		102.98	103.00
2+00	06		102.65	102.66
	36		102.65	102.69
	72		102.72	102.74
	108		102.76	102.77
	144		102.80	102.82
2+50	06		102.45	102.47
	36		102.50	102.52
	72		102.54	102.57
	108		102.59	102.61
	144		102.64	102.65
			T.B.M. PAINT DOT ON BOLT S.W CORNER BLACKWELL EXIT SIGN ON EAST SIDE OF TH 35. STA ++70= ASSUMED ELEV. 100.00	
LAYER NUMBER				

PREPARER [signature] EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA LAYER THICKNESS MEASUREMENTS CONSTRUCTION DATA SHEET 10-1	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 2]

1. DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2. DATE MEASUREMENTS COMPLETED [0 8-2 7-9 2]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 2 OF 4

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	DIAMOND GROUND	ORIGINAL CONC. SURFACE
3+0 0	0 6		102.27	102.29
	3 6		102.31	102.33
	7 2		102.36	102.38
	1 0 8		102.42	102.44
	1 4 4		102.47	102.50
3-5 0	0 6		102.12	102.14
	3 6		102.15	102.18
	7 2		102.20	102.22
	1 0 8		102.25	102.26
	1 4 4		102.30	102.32
4-0 0	0 6		101.95	101.95
	3 6		101.97	101.99
	7 2		102.02	102.04
	1 0 8		102.08	102.09
	1 4 4		102.13	102.14
4-5 0	0 6		101.79	101.79
	3 6		101.80	101.82
	7 2		101.86	101.87
	1 0 8		101.90	101.90
	1 4 4		101.95	101.95
5-0 0	0 6		101.63	101.64
	3 6		101.65	101.68
	7 2		101.72	101.74
	1 0 8		101.77	101.78
	1 4 4		101.84	101.85
5-5 0	0 6		101.47	101.47
	3 6		101.50	101.50
	7 2		101.56	101.56
	1 0 8		101.59	101.60
	1 4 4		101.67	101.67
6+0 0	0 6		101.34	101.35
	3 6		101.38	101.40
	7 2		101.44	101.46
	1 0 8		101.49	101.50
	1 4 4		101.55	101.56
LAYER NUMBER				

PREPARER Jon Peck EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA
LAYER THICKNESS MEASUREMENTS
CONSTRUCTION DATA SHEET 10-1

* STATE CODE [4 0]
* SPS PROJECT CODE [0 6]
* TEST SECTION NO [0 2]

1 DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2 DATE MEASUREMENTS COMPLETED [0 8-2 7-9 2]

SHEET 3 OF 4

LAYER THICKNESS MEASUREMENTS (Inches)

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	DIAMOND GROUND	ORIGINAL CONC SURFACE
6+5 0	0 6	— — —	101.19	101.20
	3 6	— — —	101.21	101.23
	7 2	— — —	101.27	101.28
	1 0 8	— — —	101.31	101.33
	1 4 4	— — —	101.37	101.38
7-0 0	0 6	— — —	101.05	101.06
	3 6	— — —	101.08	101.09
	7 2	— — —	101.12	101.13
	1 0 8	— — —	101.19	101.19
	1 4 4	— — —	101.25	101.26
7+5 0	0 6	— — —	100.93	100.94
	3 6	— — —	100.96	100.97
	7 2	— — —	100.99	101.01
	1 0 8	— — —	101.03	101.04
	1 4 4	— — —	101.08	101.08
8+0 0	0 6	— — —	100.77	100.77
	3 6	— — —	100.80	100.82
	7 2	— — —	100.86	100.86
	1 0 8	— — —	100.88	100.90
	1 4 4	— — —	100.93	100.94
8+5 0	0 8	— — —	100.64	100.65
	3 6	— — —	100.66	100.68
	7 2	— — —	100.71	100.72
	1 0 8	— — —	100.74	100.75
	1 4 4	— — —	100.78	100.78
9+0 0	0 8	— — —	100.49	100.50
	3 6	— — —	100.51	100.51
	7 2	— — —	100.57	100.56
	1 0 8	— — —	100.60	100.60
	1 4 4	— — —	100.65	100.65
9+5 0	0 6	— — —	100.32	100.34
	3 6	— — —	100.35	100.37
	7 2	— — —	100.40	100.42
	1 0 8	— — —	100.44	100.45
	1 4 4	— — —	100.50	100.50
LAYER NUMBER		— —		

PREPARER Jon Perrot EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA
LAYER THICKNESS MEASUREMENTS
CONSTRUCTION DATA SHEET 10-1

* STATE CODE [4 0]
* SPS PROJECT CODE [0 6]
* TEST SECTION NO [0 2]

1. DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2. DATE MEASUREMENTS COMPLETED [0 8-2 7-9 2]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 4 OF 4

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	DIAMOND GROUND	ORIGINAL CONC SURFACE
10+00	12		100.11	100.13
	36		100.14	100.16
	72		100.21	100.22
	108		100.25	100.26
	144		100.32	100.32
+				
+				
+				
+				
+				
+				
LAYER NUMBER				

PREPARER Jon Perick EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS CONSTRUCTION DATA SHEET 11	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [02]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

- NO PARTIAL DEPTH PATCHING PERFORMED

- 2 OR 3 ISOLATED AREAS 6" SQUARE IN SIZE EXPOSED REINFORCING STEEL WHICH EVIDENTLY FLOATED TO THE SURFACE DURING ORIGINAL PLACEMENT.

PREPARER Jane E. Dell EMPLOYER BRE DATE 8/31/92

May 1991

LTPP-SPS CONSTRUCTION DATA JOINT RESEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 15	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [02]

1 DATE JOINT SEALANT OPERATIONS BEGAN (Month-Day-Year) [08-27-92]

2. DATE JOINT SEALANT OPERATIONS COMPLETED [08-27-92]

3 METHOD OF REMOVING OLD SEALANT [5]
Not Removed 1 Joint Plow - V-Shaped 2 Joint Plow - Rectangular . 3
High Pressure Water Blasting 4 Diamond Blade Saw 5
Carbide Blade Saw 6 Full-Out of Old Compression Sealant 7
Not Previously Sealed 8
Other (Specify) 9 _____

4 NEW SEALANT RESERVOIR DIMENSIONS, INCHES
Width [05]
Depth (From Top of Slab to Top of Backer Rod or Tape) [05]

5 BOND BREAKER UNDER SEALANT [3]
None 1 Nonreactive Adhesive Backed Tape 2 Backer Rod 3
Other (Specify) . 4 _____

6 WERE JOINT SIDEWALLS REFACED? 4
No 1 Yes - One-Blade 2 Yes - Two-Blade 3
Other (Specify) . 4 SAWED TWICE

7 CLEANING OF SIDEWALLS [5]
None 1 Air Blast 2 Sand Blast 3 Water Blast .. 4
Other (Specify).. ~~4~~ WATER BLASTED IMMEDIATELY AFTER SAWING
5 SAND BLASTED JUST BEFORE SEALING

SAWED 1:00 TO 2:00 ON 8/27/92
SEALED 3:00 TO 4:00 ON 8/27/92

PREPARER [signature] EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA JOINT RESEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 16	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [02]

[7]

1. TYPE OF CONTRACTION JOINT SEALANT
(AASHTO OR ASTM SPECIFICATIONS)

D1850 (ASTM) Concrete Joint Sealer, Cold-Application Type 1
D1190 (ASTM) - M173 (AASHTO) Concrete Joint Sealer, Hot-Poured Elastic Type 2
D3406 (ASTM) - M282 (AASHTO) Joint Sealants, Hot-Poured, Elastomeric-Type, for PCC Pavements 3
D3405 (ASTM) - M301 (AASHTO) Joint Sealants, Hot-Poured for Concrete and Asphalt Pavements 4
D3542 (ASTM) Preformed Polychloroprene Elastomeric Joint Seals for Bridges 5
D2628 (ASTM) Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements 6
Other (Describe - if Silicone Material is Used Federal Spec TT-S-001543A, Georgia D O T Spec 833 06, or Equal Applies 7
DOW CORNING 890-SL

Manufacturer Information on Type of Pressure Relief Joint Sealant
Manufacturer Name [DOW CORNING]
Manufacturer Sealant Name [890-SL]

2 AVERAGE DEPTH OF TOP OF SEALANT PLACEMENT BELOW PAVEMENT SURFACE, INCHES [0 3]

3 ARE EXPANSION JOINTS SEALED DIFFERENTLY THAN CONTRACTION JOINTS? [2]
Yes... 1 No .. 2

If Yes, Enter the code from Item 1, or describe below [ ]

Other [ ]

4 TOTAL LINEAR FEET OF JOINTS SEALED
Transverse Joints (17 JOINTS @ 12' EACH) [2 0 4 0]
Longitudinal Joints [0 0 0 0]

NOTE. IF DIFFERENT MATERIALS OR METHODS ARE USED REPEAT SHEETS 15 AND 16 FOR EACH RECORDING THEIR LENGTHS IN ITEM NO 4

PREPARER Jerome V. Dill EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA DIAMOND GRINDING FOR PORTLAND CEMENT CONCRETE PAVEMENT SURFACES CONSTRUCTION DATA SHEET 19	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [02]

1 DATE DIAMOND GRINDING OPERATIONS BEGAN (Month-Day-Year) [08-20-92]

2 DATE DIAMOND GRINDING OPERATIONS COMPLETED [08-21-92]

3 REASON FOR GRINDING [5]
Elimination of Faulting 1 Elimination of Slab Warping 2
Improve Skid Resistance 3
Restoration of Transverse Drainage Slope 4
Other (Specify) 5 IMPROVE RIDE

4 AVERAGE DEPTH OF CUT, INCHES [0 25]

5 CUTTING HEAD WIDTH, INCHES [37 5]

6 AVERAGE GROOVE WIDTH, INCHES [0 1]

7 AVERAGE SPACING BETWEEN BLADES, INCHES [0 1]

168 BLADES
9 BLADES / 2 INCHES
CUSHION CUT DIAMOND GRINDER
4 PASSES

1ST PASS	8-20	10:15 (@ 2+00) – 1:00 (@ 2+10)
2ND PASS	8-20	3:45 (@ 2+00) – 6:15 (@ 2+10)
3RD PASS	8-21	8:30 (@ 2+00) – 11:15 (@ 2+10)
4TH PASS	8-21	1:45 (@ 2+00) – 4:00 (@ 2+10)

PREPARER [signature] EMPLOYER BRE DATE 8/21/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 20	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [02]

1 DATE PATCHING OPERATIONS BEGAN (Month-Day-Year) [07-10-92]

2 DATE PATCHING OPERATIONS COMPLETED [07-10-92]

3 PRIMARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB [ ]
(See Table A.22 for Type Codes)
Other (Specify) _____

4 SECONDARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB [ ]
(See Table A 22 for Type Codes)
Other (Specify) _____

5 PATCHES — NUMBER — SQ FEET
SLAB ONLY [10] [576]
SLAB AND BASE [ ] [ ]
[1]

6 PATCH MATERIAL USED
Portland Cement Concrete 1 Polymer Concrete 2 Epoxy Mortar 4
Other (Specify) 5 _____

7 SLABS REPLACED — NUMBER — SQ FEET
SLAB ONLY [0] [0]
SLAB AND BASE [ ] [ ]
[1]

8 METHOD FOR PATCH BOUNDARY DETERMINATION
Visual 1 Coring 2 Deflection 3
State Standard or Specification. 4
Other (Specify) . 5 _____
[1]

9 CUTTING INSTRUMENT
Diamond Blade Saw . 1 Carbide Blade Saw . 2 Wheel Saw 3
Air Hammer.. 4
Other (Specify) 5 _____

PREPARER [signature] EMPLOYER BRC DATE 8/21/92

LTPP-SPS CONSTRUCTION DATA
FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONTINUED
CONSTRUCTION DATA SHEET 21

* STATE CODE [40]
* SPS PROJECT CODE [06]
* TEST SECTION NO [02]

1. SECURING LOAD TRANSFER DEVICES
None 1 Grout Filler 2 Epoxy filler 3
Other 4 _____ [3]

2 REINFORCING STEEL PLACED IN PATCH
No. 1 Yes 2 [1]

	TEMPERATURE STEEL Transverse	TEMPERATURE STEEL Longitudinal	Dowel Bars	Tie Bars
3 REBAR NUMBER	[__ __]	[__ __]	[__ __]	[__ __]
4 BAR LENGTHS, INCHES	[__ __ __]	[__ __ __]	[__ __ __]	[__ __ __]
5 BAR SPACING, INCHES	[__ __ __]	[__ __ __]	[__ __ __]	[__ __ __]

6 DOWEL COATINGS
None 1 Paint and/or Grease 2 Plastic 3
Monel 4 Stainless Steel 5 Epoxy 6
Other (Specify) 7 GREASE & CAPS [7]

7 NUMBER OF SAW CUTS PER PATCH (If Sawed) [4]

8 DEPTH OF TYPICAL BOUNDARY SAW CUT, INCHES [21]

9 CONCRETE BREAKUP
None. 1 Pneumatic Air Hammer 2 Gravity Drop Hammer 3
Sawing 4
Other (Specify) 5 _____ [1]

10 REMOVAL OF CONCRETE
Concrete Breakup and Cleanout 1 Lift Out Intact Slab Section 2
Other (Specify) 3 _____ [2]

PREPARER James R. Dill EMPLOYER BRE DATE 8/21/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 22	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [02]

1 METHOD OF REINFORCING STEEL PLACEMENT [ ]
Chairs 1 Between Layers of Concrete 2 N/A

2 MIXTURE DESIGN FOR PATCH MATERIAL, LB /CUBIC YARD
Coarse Aggregate [1820]
Fine Aggregate [1095]
Cement [705]
Water (Gallons/Cubic Yard) [37]
[41]

3 CEMENT TYPE USED Type I
(See Type Codes, Tables A 11)

4 AIR CONTENT, PERCENT BY VOLUME
Mean [6.0]
Range [ ] to [ ]

5 ADMIXTURES Master Builders AEA 3%
(See Cement Additive Codes, Table A 12) [08]
[ ]

6 SLUMP, INCHES
Mean [3]
Range [ ] to [ ]

7 FLEXURAL STRENGTH (MODULUS OF RUPTURE), PSI [ ]
(Based on 3rd Point Loading) Curing Time, Days [ ]
If Unavailable, and Other Strength Test Conducted,
Enter Alternate Test [COMPRESSIVE STRENGTH]
Type of Loading [AXIAL COMPRESSION]
Age, Days [7], Strength, PSI [2830]

8 AMBIENT CONDITIONS AT TIME OF PATCHING
Air Temperature °F LOW [ ] HIGH [92]
Surface Moisture - Dry = 1, Wet = 2 [ ]

9 MAXIMUM SIZE OF COARSE AGGREGATE, INCHES [1.5]

10 CONSOLIDATION OF MATERIALS [1]
Internal Vibrators 1 Vibrating Screeds . 2 Troweling 3
Rolling 4 Tamping . 5
Other (Specify) . 6

12 FINISHING
Screeding. 1 Hand-Troweling 2 Machine-Troweling . 3
Other (Specify) 4

PREPARER Jerome F. Dell EMPLOYER BRE DATE 8/21/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 23	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [22]

1 JOINT FORMING METHOD

SHOULDER [1] TRANSVERSE [4] LONGITUDINAL [4]

None 1 Polyethylene Strip Insert. . 2 Styrofoam Insert . 3
Fiberboard Insert. 4 Sawing 5 Forms 6
Other (Specify) . 7 _____

2. WAS BOND BREAKER USED BETWEEN ADJACENT LANES?
Yes 1 No 2 [1]

3 CURING METHOD

METHOD 1 [2]
METHOD 2 [ ]

None 1 Memorane Curing Compound 2 Burlap Curing Blankets 3
Waterproof Paper Blankets 4 White Polyethylene Sheeting 6
Burlap-Polyethylene Blankets 6 Insulating Layers 7
Cotton Mat Curing 8 Hay 9
Other (Specify). 10 _____

4 APPROXIMATE TYPICAL TIME BETWEEN PATCHING AND OPENING TO TRAFFIC, HOURS [24]

5 TYPE OF TRANSVERSE JOINTS IN PATCHES 4 OR SLABS __
None 1 All Expansion Joints 2 All Contraction Joints 3
Mixture of ~~Expansion~~ Construction and Contraction Joints 4

6 WERE OLD JOINTS MATCHED?
Yes 1 No 2 [1]

PREPARER [signature] EMPLOYER BRE DATE 8/21/92

LTPP-SPS CONSTRUCTION DATA REVISED LAYER DESCRIPTIONS CONSTRUCTION DATA SHEET 2	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [03]

1 LAYER NUMBER	2 LAYER DESCRIPTION	3 MATERIAL TYPE CLASS	4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD DEV
1	SUBGRADE(7)	[5 3]	[redacted]	[redacted]	[redacted]	[redacted]
2	[0 6]	[2 6]	[8 0]	- - - -	- - - -	- - - -
3	[0 5]	[2 4]	[4 0]	- - - -	- - - -	- - - -
4	[0 3]	[0 5]	[9 1]	8 8	9 8	0 2
5	[0 1]	[0 1]	[3 9]	3 4	4 2	0 2
6	[ ]	[ ]	[ ]	- - - -	- - - -	- - - -
7	[ ]	[ ]	[ ]	- - - -	- - - -	- - - -
8	[ ]	[ ]	[ ]	- - - -	- - - -	- - - -
9	[ ]	[ ]	[ ]	- - - -	- - - -	- - - -
10	[ ]	[ ]	[ ]	- - - -	- - - -	- - - -
11	[ ]	[ ]	[ ]	- - - -	- - - -	- - - -
12	[ ]	[ ]	[ ]	- - - -	- - - -	- - - -
13	[ ]	[ ]	[ ]	- - - -	- - - -	- - - -
14	[ ]	[ ]	[ ]	- - - -	- - - -	- - - -
15	[ ]	[ ]	[ ]	- - - -	- - - -	- - - -

NOTES

1 Layer 1 is subgrade soil, the highest numbered layer is the pavement surface

2 Layer description codes

Overlay	01	Base Layer	05	Porous Friction Course	09
Seal/Tack Coat w/overlay	02	Subbase Layer	06	Surface Treatment	10
Original Surface	03	Subgrade	07	Embankment (Fill)	11
HMAC Layer (Subsurface)	04	Interlayer	08		

If milling was performed, the layers which were milled shall be assigned their previous layer number and material type If the layer was completely removed by milling, it shall still be shown as a layer with a zero thickness

3 Enter the material type classification codes from Tables A 5, A 6, A.7 and A 8 which best describes the material in each layer If the layer was milled, enter the material classification code corresponding to the type material which was removed.

4 Enter the average thickness of each layer and the maximum, minimum, and standard deviation of the thickness measurements, if known. If a layer was partially milled, the remaining thickness of the layer shall be indicated.

PREPARER [signature] EMPLOYER BRE DATE 8/31/92

October 1990

LTPP-SPS CONSTRUCTION DATA OVERLAY PLACEMENT OPERATIONS CONSTRUCTION DATA SHEET 7	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [03]

1 DATE SURFACE PREPARATION BEGAN (Month-Day-Year) [08-09-92]
2. DATE SURFACE PREPARATION COMPLETED [08-09-92]

3 SURFACE PREPARATION PRIOR TO PLACEMENT OF OVERLAY [3]
None. . 1 Broomed . 2 Broomed + Asphaltic Tack Coat 3
Asphaltic Tack Coat (only) . 4

4 TACK COAT
Layer Numbers [__ __] [__ __]
Material Type None 1 SS-1. 2 SS-1H 3 CRS-1 4
CRS-2 5 CMS-2. 6 CMS-2H 7 CSS-1.. 8 CSS-1H 9 [__ 2]
Other 10 (Specify) _____

5 TACK COAT DILUTION
(Percent) [50]
Mixing Rate Parts Diluent 1 TO Parts Asphalt 1

6 TACK COAT APPLICATION RATE (Gal/Sq Yd) [__ __ __]

7 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers
Plant 1	[2]	CATERPILLAR-2000	[007]	[07]	[__] [__] [__]
Plant 2	[__]	_____	[__ __ __]	[__ __]	[__] [__] [__]
Plant 3	[__]	_____	[__ __ __]	[__ __]	[__] [__] [__]

Plant Type Batch . 1 Drum Mix 2 Other 3 Specify _____

8 MANUFACTURER OF ASPHALT CONCRETE PAVER CEDARAPIDS

9 MODEL DESIGNATION OF ASPHALT CONCRETE PAVER CR461 "GREYHOUND"

10 SINGLE PASS LAYDOWN WIDTH (Feet) [12]

11. AC BINDER COURSE
Layer Number
Nominal First Lift Placement Thickness - Uncompacted (Inches) [__ __]
Nominal Second Lift Placement Thickness - Uncompacted (Inches) [__ __]

12 AC SURFACE COURSE
Layer Number [5]
Nominal First Lift Placement Thickness - Uncompacted (Inches) [27]
Nominal Second Lift Placement Thickness - Uncompacted (Inches) [27]

13 SURFACE FRICTION COURSE
Layer Number [__ __]
Nominal Placement Thickness - Uncompacted (Inches) [__ __]

14 TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
Binder Course [__ + __ __]
Surface Course [__ + __ __]
Surface Friction Course [__ + __ __]

15 LOCATION OF LONGITUDINAL SURFACE JOINT [1]
Between lanes . 1 Within lane 2
(specify offset from outside edge of lane in feet) [__ __ __]

16 SIGNIFICANT EVENTS DURING CONSTRUCTION(disruptions, rain, equip problems, etc)

PREPARER Jerome F. Dill EMPLOYER SRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA OVERLAY COMPACTION DATA CONSTRUCTION DATA SHEET 8	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [03]

1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [08-09-92]
2. DATE PAVING OPERATIONS COMPLETED [08-10-92]
3. LAYER NUMBER [5]
4. MIXING TEMPERATURE (°F) [___]
5. LAYDOWN TEMPERATURES (°F)
   - Mean . . 303
   - Minimum 300
   - Standard Deviation. ___
   - Number of Tests 12
   - Maximum . . 310

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press (psi)	Frequency (Vibr /Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	135				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	140				
11	F	Pneumatic-Tired					
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr	100				
15	J	Single-Drum Vibr					
16	K	Single-Drum Vibr					
17	L	Single-Drum Vibr					
18	M	Double-Drum Vibr					
19	N	Double-Drum Vibr					
20	O	Double-Drum Vibr					
21	P	Double-Drum Vibr					
22	Q	Other					

	COMPACTION DATA	First Lift	Second Lift	Third Lift	Fourth Lift
	BREAKDOWN – HYSTER				
23	Roller Code (A-Q)	I	I		
24	Coverages	4	4		
	INTERMEDIATE – BOMAG				
25	Roller Code (A-Q)	E	E		
26	Coverages	10	10		
	FINAL – HYSTER				
27	Roller Code (A-Q)	A	A		
28	Coverages	4	4		
29	Air Temperature (°F)	90	90		
30	Compacted Thickness (In)	2.0	1.9		
31	Curing Period (Days)	14	01		

PREPARER [signature] EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA LAYER THICKNESS MEASUREMENTS CONSTRUCTION DATA SHEET 10-1	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 3]

1 DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 1-9 2]
2 DATE MEASUREMENTS COMPLETED [0 8-2 7-9 2]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	A C OVERLAY	ORIGINAL CONC. SURFACE
0-0 0	0 4		101.11	100.78
	3 6		101.15	100.81
	7 2		101.19	100.85
	1 0 8		101.22	100.88
	1 4 4		101.25	100.93
0-5 0	0 7		101.36	101.02
	3 6		101.41	101.06
	7 2		101.45	101.10
	1 0 8		101.48	101.14
	1 4 4		101.51	101.18
1-0 0	0 4		101.56	101.26
	3 6		101.61	101.28
	7 2		101.67	101.32
	1 0 8		101.70	101.37
	1 4 4		101.76	101.41
1-5 0	0 4		101.77	101.47
	3 6		101.83	101.50
	7 2		101.87	101.54
	1 0 8		101.91	101.58
	1 4 4		101.96	101.63
2-0 0	0 4		101.99	101.68
	3 6		102.04	101.72
	7 2		102.10	101.76
	1 0 8		102.14	101.80
	1 4 4		102.18	101.86
2-5 0	0 4		102.15	101.86
	3 6		102.21	101.89
	7 2		102.26	101.93
	1 0 8		102.28	101.97
	1 4 4		102.33	102.01
			TBM PAINTED DOT ON EAST SIDE OF THE WEST CONC. PAD FOR EXIT 214, HWY 60 SIGN, STA 3+88± ASSUMED ELEV 100.00	
LAYER NUMBER				

PREPARER Jon Pecak EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA
LAYER THICKNESS MEASUREMENTS
CONSTRUCTION DATA SHEET 10-1

* STATE CODE [4 0]
* SPS PROJECT CODE [0 6]
* TEST SECTION NO. [0 3]

1 DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 1-9 2]
2 DATE MEASUREMENTS COMPLETED [0 8-2 7-9 2]

SHEET 2 OF 2

LAYER THICKNESS MEASUREMENTS (Inches)

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	A C OVERLAY	ORIGINAL CONC SURFACE
3-0 0	0 4		102.33	102.01
	3 6		102.37	102.04
	7 2		102.42	102.09
	1 0 8		102.46	102.12
	1 4 4		102.50	102.17
3-5 0	0 4		102.44	102.13
	3 6		102.50	102.15
	7 2		102.55	102.20
	1 0 8		102.59	102.25
	1 4 4		102.64	102.31
4-0 0	0 4		102.53	102.21
	3 6		102.58	102.25
	7 2		102.63	102.29
	1 0 8		102.66	102.33
	1 4 4		102.71	102.38
4-5 0	0 4		102.58	102.29
	3 6		102.62	102.32
	7 2		102.67	102.35
	1 0 8		102.71	102.40
	1 4 4		102.77	102.44
5-0 0	0 4		102.62	102.34
	3 6		102.66	102.35
	7 2		102.71	102.39
	1 0 8		102.75	102.43
	1 4 4		102.80	102.48
+				
+				
LAYER NUMBER				

PREPARER Jon Peach EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS CONSTRUCTION DATA SHEET 11	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [03]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

— NO PARTIAL DEPTH PATCHING PERFORMED

FIRST LIFT OF TYPE B MIX PLACED 8/9/92
BEGAN @ 3-0 @ 9:15
FINISHED @ 3-5 @ 9:45
(PAVED TYPE B FROM 948 TO 931+75)

SECOND LIFT OF TYPE B MIX PLACED 8/10/92
BEGAN @ 3-0 @ 6:00
FINISHED @ 3-5 @ 6:30
(PAVED TYPE B FROM 948 TO 931)

PREPARER Jerome F. Dill EMPLOYER BOE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 20	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [03]

1 DATE PATCHING OPERATIONS BEGAN (Month-Day-Year) [07-13-92]

2 DATE PATCHING OPERATIONS COMPLETED [07-13-92]

3 PRIMARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB [ ]
(See Table A 22 for Type Codes)
Other (Specify) _____

4 SECONDARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB [ ]
(See Table A 22 for Type Codes)
Other (Specify) _____

5 PATCHES

	NUMBER	SQ FEET
SLAB ONLY	[2]	[96]
SLAB AND BASE	[0]	[0]

6 PATCH MATERIAL USED [1]
Portland Cement Concrete 1 Polymer Concrete. 2 Epoxy Mortar 4
Other (Specify) 5 _____

7 SLABS REPLACED

	NUMBER	SQ FEET
SLAB ONLY	[0]	[0]
SLAB AND BASE	[ ]	[ ]

8 METHOD FOR PATCH BOUNDARY DETERMINATION [1]
Visual 1 Coring 2 Deflection 3
State Standard or Specification. 4
Other (Specify) 5 _____

9 CUTTING INSTRUMENT [1]
Diamond Blade Saw . 1 Carbide Blade Saw 2 Wheel Saw 3
Air Hammer. . 4
Other (Specify) . 5 _____

PREPARER [signature] EMPLOYER BRE DATE 8/21/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 21	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [03]

1 SECURING LOAD TRANSFER DEVICES [3]
None. 1 Grout Filler 2 Epoxy filler 3
Other. . 4 _____

2 REINFORCING STEEL PLACED IN PATCH [1]
No 1 Yes 2

	TEMPERATURE STEEL Transverse	TEMPERATURE STEEL Longitudinal	Dowel Bars	Tie Bars
3 REBAR NUMBER	[ ]	[ ]	[ ]	[ ]
4 BAR LENGTHS, INCHES	[ ]	[ ]	[ ]	[ ]
5 BAR SPACING, INCHES	[ ]	[ ]	[ ]	[ ]

6 DOWEL COATINGS [7]
None 1 Paint and/or Grease 2 Plastic 3
Monel . 4 Stainless Steel 5 Epoxy . 6
Other (Specify) 7 GREASE & CAPS

7 NUMBER OF SAW CUTS PER PATCH (If Sawed) [4]

8 DEPTH OF TYPICAL BOUNDARY SAW CUT, INCHES [9 1]

9 CONCRETE BREAKUP [1]
None . 1 Pneumatic Air Hammer 2 Gravity Drop Hammer 3
Sawing 4
Other (Specify) 5 _____

10 REMOVAL OF CONCRETE [2]
Concrete Breakup and Cleanout. 1 Lift Out Intact Slab Section 2
Other (Specify) 3 _____

PREPARER [signature] EMPLOYER BRC DATE 2/21/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 22	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [03]

1 METHOD OF REINFORCING STEEL PLACEMENT N/A
Chairs 1 Between Layers of Concrete 2 [ ]

2 MIXTURE DESIGN FOR PATCH MATERIAL, LB /CUBIC YARD
Coarse Aggregate [1820]
Fine Aggregate [1095]
Cement [705]
Water (Gallons/Cubic Yard) [32]
[41]

3 CEMENT TYPE USED TYPE I
(See Type Codes, Tables A 11)

4 AIR CONTENT, PERCENT BY VOLUME
Mean [6.0]
Range [ ] to [ ]

5 ADMIXTURES [08]
(See Cement Additive Codes, Table A 12) MASTER BUILDERS AEA 3% [ ]

6 SLUMP, INCHES
Mean [3]
Range [ ] to [ ]

7 FLEXURAL STRENGTH (MODULUS OF RUPTURE), PSI [ ]
(Based on 3rd Point Loading) Curing Time, Days [ ]
If Unavailable, and Other Strength Test Conducted
Enter Alternate Test [COMPRESSIVE STRENGTH]
Type of Loading [AXIAL COMPRESSION]
Age, Days [7]. Strength, PSI [3680]

8 AMBIENT CONDITIONS AT TIME OF PATCHING LOW [ ] HIGH [86]
Air Temperature °F
Surface Moisture - Dry = 1, Wet = 2 [1]

9 MAXIMUM SIZE OF COARSE AGGREGATE, INCHES [1.5]

10 CONSOLIDATION OF MATERIALS [1]
Internal Vibrators 1 Vibrating Screeds . 2 Troweling . 3
Rolling 4 Tamping 5
Other (Specify) 6 ____

12. FINISHING [1]
Screeding 1 Hand-Troweling 2 Machine-Troweling .. 3
Other (Specify) . 4 ____

PREPARER [signature] EMPLOYER BRC DATE 8/21/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 23	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [03]

1. JOINT FORMING METHOD — SHOULDER [1] — TRANSVERSE [4] — LONGITUDINAL [4]

   None . 1 Polyethylene Strip Insert 2 Styrofoam Insert . 3
   Fiberboard Insert 4 Sawing 5 Forms 6
   Other (Specify) 7 _____

2. WAS BOND BREAKER USED BETWEEN ADJACENT LANES? [1]
   Yes 1 No 2

3. CURING METHOD — METHOD 1 [2] — METHOD 2 [ ]

   None 1 Membrane Curing Compound 2 Burlap Curing Blankets 3
   Waterproof Paper Blankets 4 White Polyethylene Sheeting 6
   Burlap-Polyethylene Blankets 6 Insulating Layers 7
   Cotton Mat Curing 8 Hay 9
   Other (Specify) 10 _____

4. APPROXIMATE TYPICAL TIME BETWEEN PATCHING AND OPENING TO TRAFFIC, HOURS [24]

5. TYPE OF TRANSVERSE JOINTS IN PATCHES 4 OR SLABS ___
   None 1 All Expansion Joints 2 All Contraction Joints 3
   Mixture of ~~Expansion~~ Contraction and Contraction Joints 4

6. WERE OLD JOINTS MATCHED? [2]
   Yes 1 No 2

PREPARER [signature] EMPLOYER BRE DATE 8/21/92

LTPP-SPS CONSTRUCTION DATA REVISED LAYER DESCRIPTIONS CONSTRUCTION DATA SHEET 2	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [04]

1 LAYER NUMBER	2. LAYER DESCRIPTION	3 MATERIAL TYPE CLASS	4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD DEV
1	SUBGRADE(7)	[53]				
2	[06]	[26]	[80]	----	----	----
3	[05]	[24]	[40]	----	----	----
4	[03]	[05]	[91]	88	98	02
5	[01]	[01]	[40]	34	46	02
6	[ ]	[ ]	[ ]	----	----	----
7	[ ]	[ ]	[ ]	----	----	----
8	[ ]	[ ]	[ ]	----	----	----
9	[ ]	[ ]	[ ]	----	----	----
10	[ ]	[ ]	[ ]	----	----	----
11	[ ]	[ ]	[ ]	----	----	----
12	[ ]	[ ]	[ ]	----	----	----
13	[ ]	[ ]	[ ]	----	----	----
14	[ ]	[ ]	[ ]	----	----	----
15	[ ]	[ ]	[ ]	----	----	----

NOTES

1 Layer 1 is subgrade soil, the highest numbered layer is the pavement surface

2 Layer description codes

Overlay	01	Base Layer	05	Porous Friction Course	09
Seal/Tack Coat w/overlay	02	Subbase Layer	06	Surface Treatment.	10
Original Surface	03	Subgrade	07	Embankment (Fill)	11
HMAC Layer (Subsurface)	04	Interlayer	08		

If milling was performed, the layers which were milled shall be assigned their previous layer number and material type If the layer was completely removed by milling, it shall still be shown as a layer with a zero thickness

3 Enter the material type classification codes from Tables A 5, A.6, A.7 and A 8 which best describes the material in each layer. If the layer was milled, enter the material classification code corresponding to the type material which was removed

4 Enter the average thickness of each layer and the maximum, minimum, and standard deviation of the thickness measurements if known. If a layer was partially milled, the remaining thickness of the layer shall be indicated.

PREPARER Jane S. [illegible] EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA OVERLAY PLACEMENT OPERATIONS CONSTRUCTION DATA SHEET 7	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [24]

1 DATE SURFACE PREPARATION BEGAN (Month-Day-Year) [08-09-92]
2 DATE SURFACE PREPARATION COMPLETED [08-09-92]

3 SURFACE PREPARATION PRIOR TO PLACEMENT OF OVERLAY [3]
None 1 Broomed 2 Broomed + Asphaltic Tack Coat.. 3
Asphaltic Tack Coat (only) 4

4 TACK COAT
Layer Numbers [__ __] [__ __]
Material Type None 1 SS-1. 2 SS-1H 3 CRS-1 4 [__ 2]
CRS-2 5 CMS-2 . 6 CMS-2H 7 CSS-1 8 CSS-1H. 9
Other 10 (Specify) _____

5 TACK COAT DILUTION
(Percent) [50]
Mixing Rate Parts Diluent 1 TO Parts Asphalt 1

6 TACK COAT APPLICATION RATE (Gal/Sq Yd) [__ __]

7 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers
Plant 1	[2]	CATERPILLAR-2000	[__ 7]	[__ 7]	[__] [__] [__]
Plant 2	[__]	_____	[__ __]	[__ __]	[__] [__] [__]
Plant 3	[__]	_____	[__ __]	[__ __]	[__] [__] [__]

Plant Type Batch 1 Drum Mix 2 Other 3 Specify_____

8 MANUFACTURER OF ASPHALT CONCRETE PAVER CEDARAPIDS

9 MODEL DESIGNATION OF ASPHALT CONCRETE PAVER CR461 "GREYHOUND"

10 SINGLE PASS LAYDOWN WIDTH (Feet) [12]

11. AC BINDER COURSE
Layer Number [__ __]
Nominal First Lift Placement Thickness - Uncompacted (Inches) [__ __]
Nominal Second Lift Placement Thickness - Uncompacted (Inches) [__ __]

12 AC SURFACE COURSE
Layer Number [5]
Nominal First Lift Placement Thickness - Uncompacted (Inches) [2 7]
Nominal Second Lift Placement Thickness - Uncompacted (Inches) [2 7]

13 SURFACE FRICTION COURSE
Layer Number [__ __]
Nominal Placement Thickness - Uncompacted (Inches) [__ __]

14 TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
Binder Course [__ + __ __]
Surface Course [__ + __ __]
Surface Friction Course [__ + __ __]

15 LOCATION OF LONGITUDINAL SURFACE JOINT [1]
Between lanes . 1 Within lane. 2 [__ __ __]
(specify offset from outside edge of lane in feet)

16 SIGNIFICANT EVENTS DURING CONSTRUCTION(disruptions, rain, equip problems, etc.)

PREPARER [signature] EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA OVERLAY COMPACTION DATA CONSTRUCTION DATA SHEET 8	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [04]

1 DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [08-09-92]
2 DATE PAVING OPERATIONS COMPLETED [08-10-92]

3 LAYER NUMBER [5]

4 MIXING TEMPERATURE (°F) [___]
5 LAYDOWN TEMPERATURES (°F)
Mean . . . 303
Minimum . . . 300
Standard Deviation ___

Number of Tests 12
Maximum . 310

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press (psi)	Frequency (Vibr /Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	13.5				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	14.0				
11	F	Pneumatic-Tired					
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr	10.0				
15	J	Single-Drum Vibr					
16	K	Single-Drum Vibr					
17	L	Single-Drum Vibr					
18	M	Double-Drum Vibr					
19	N	Double-Drum Vibr					
20	O	Double-Drum Vibr					
21	P	Double-Drum Vibr					
22	Q	Other					

	COMPACTION DATA	First Lift	Second Lift	Third Lift	Fourth Lift
	BREAKDOWN — HYSTER				
23	Roller Code (A-Q)	I	I		
24	Coverages	4	4		
	INTERMEDIATE — BOMAG				
25	Roller Code (A-Q)	E	E		
26	Coverages	10	10		
	FINAL — HYSTER				
27	Roller Code (A-Q)	A	A		
28	Coverages	4	4		
29	Air Temperature (°F)	90	90		
30	Compacted Thickness (In)	2.0	2.0		
31	Curing Period (Days)	14	01		

PREPARER [signature] EMPLOYER BRS DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA LAYER THICKNESS MEASUREMENTS CONSTRUCTION DATA SHEET 10-1	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 4]

1 DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2 DATE MEASUREMENTS COMPLETED [0 8-2 7-9 2]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	AC OVERLAY	ORIGINAL CONC SURFACE
0-00	08		101.73	101.40
	36		101.77	101.43
	72		101.93	101.48
	108		101.86	101.53
	144		101.91	101.58
0-50	04		101.60	101.29
	36		101.64	101.32
	72		101.69	101.36
	108		101.72	101.40
	144		101.76	101.44
1-00	04		101.40	101.08
	36		101.45	101.12
	72		101.50	101.16
	108		101.54	101.20
	144		101.58	101.26
1-50	04		101.19	100.91
	36		101.24	100.93
	72		101.29	100.97
	108		101.33	101.00
	144		101.39	101.06
2-00	04		100.99	100.67
	36		101.03	100.70
	72		101.08	100.75
	108		101.11	100.79
	144		101.16	100.84
2-50	04		100.77	100.45
	36		100.81	100.48
	72		100.85	100.53
	108		100.88	100.57
	144		100.93	100.62
			T.B.M. PAINTED DOT ON EAST END OF HEADWALL @ OVERPASS, STA. 4+70± 10± RIGHT OF GUARDRAIL ASSUMED ELEV 100.00	
LAYER NUMBER				

PREPARER Jon Perrault EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA
LAYER THICKNESS MEASUREMENTS
CONSTRUCTION DATA SHEET 10-1

* STATE CODE [4 0]
* SPS PROJECT CODE [0 6]
* TEST SECTION NO [0 1]

1 DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2 DATE MEASUREMENTS COMPLETED [0 8-2 7-9 2]

SHEET 2 OF 2

LAYER THICKNESS MEASUREMENTS (Inches)

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	A C OVERLAY	ORIGINAL CONC SURFACE
3-0 0	16		100.52	100.17
	32		100.56	100.22
	72		100.61	100.27
	108		100.64	100.31
	144		100.69	100.36
3-5 0			100.34	100.00
	16		100.39	100.03
	32		100.42	100.08
	72		100.45	100.12
	108		100.50	100.16
	144			
4-0 0			100.10	99.74
	16		100.14	99.78
	32		100.19	99.83
	72		100.23	99.88
	108		100.27	99.94
	144			
4-5 0			99.95	99.59
	16		99.97	99.62
	32		100.02	99.67
	72		100.05	99.71
	108		100.09	99.75
	144			
5-0 0			99.78	99.41
	16		99.81	99.43
	32		99.85	99.48
	72		99.87	99.53
	108		99.92	99.59
	144			
LAYER NUMBER				

PREPARER: Jon Pierce MONITOR: BRE DATE: 3/26/93

LTPP-SPS CONSTRUCTION DATA MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS CONSTRUCTION DATA SHEET 11	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [04]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

THE JOINTS IN THE EXISTING PAVEMENT WERE ORIGINALLY MARKED WITH PINS OFF IN THE SHOULDER AND MEDIAN TO FACILITATE SAWING AND SEALING AFTER OVERLAY. SOME OF THESE PINS WERE DISPLACED HOWEVER BY THE CONSTRUCTION CREW. THIS REQUIRED US TO GO BACK AFTER THE OVERLAY WAS COMPLETED AND LOCATE THE JOINTS (AS BEST AS POSSIBLE) BY DRIVING A 6" NAIL THROUGH THE 4" AC OVERLAY AND INTO THE EXISTING JOINTS BELOW. THIS PROVED REASONABLY SUCCESSFUL EXCEPT WHERE PATCHES HAD BEEN PLACED. IN THESE LOCATIONS, JOINTS BETWEEN THE PATCHES AND ADJACENT ORIGINAL SLABS WERE PLACED WITH MINIMAL OPENINGS.

NO PARTIAL DEPTH PATCHING WAS PERFORMED

FIRST LIFT OF TYPE B MIX PLACED 8/9/92
BEGAN @ 4-0 @ 10:00
FINISHED @ 4-5 @ 10:30
(PAVED TYPE B FROM 948 TO 931)

SECOND LIFT OF TYPE B MIX PLACED 8/10/92
BEGAN @ 4-0 @ 6:45
FINISHED @ 4-5 @ 7:15
(PAVED TYPE B FROM 948 TO 931)

PREPARER [signature] EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 20	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [24]

1 DATE PATCHING OPERATIONS BEGAN (Month-Day-Year) [07-13-92]

2 DATE PATCHING OPERATIONS COMPLETED [07-13-92]

3 PRIMARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB [ ]
(See Table A.22 for Type Codes)
Other (Specify) _____

4 SECONDARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB [ ]
(See Table A 22 for Type Codes)
Other (Specify) _____

5 PATCHES

	NUMBER	SQ FEET
SLAB ONLY	[04]	[384]
SLAB AND BASE	[0]	[0]

[1]

6 PATCH MATERIAL USED
Portland Cement Concrete 1 Polymer Concrete 2 Epoxy Mortar 4
Other (Specify) . 5 _____

[1]

7 SLABS REPLACED

	NUMBER	SQ FEET
SLAB ONLY	[0]	[0]
SLAB AND BASE	[ ]	[ ]

[1]

8 METHOD FOR PATCH BOUNDARY DETERMINATION
Visual . 1 Coring 2 Deflection . 3
State Standard or Specification. 4
Other (Specify) . 5 _____

[1]

9 CUTTING INSTRUMENT
Diamond Blade Saw 1 Carbide Blade Saw . 2 Wheel Saw 3
Air Hammer 4
Other (Specify) 5 _____

PREPARER Jane S. Dill EMPLOYER BRE DATE 8/24/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 21	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [04]

1 SECURING LOAD TRANSFER DEVICES
None . 1 Grout Filler . 2 Epoxy filler 3 [3]
Other... 4 _____

2 REINFORCING STEEL PLACED IN PATCH
No 1 Yes 2 [1]

	TEMPERATURE STEEL Transverse	TEMPERATURE STEEL Longitudinal	Dowel Bars	Tie Bars
3 REBAR NUMBER	[ ]	[ ]	[ ]	[ ]
4 BAR LENGTHS, INCHES	[ ]	[ ]	[ ]	[ ]
5 BAR SPACING, INCHES	[ ]	[ ]	[ ]	[ ]

6 DOWEL COATINGS
None . 1 Paint and/or Grease 2 Plastic .. 3 [7]
Monel 4 Stainless Steel 5 Epoxy 6
Other (Specify) 7 GREASE & CAPS

7 NUMBER OF SAW CUTS PER PATCH (If Sawed) [4]

8 DEPTH OF TYPICAL BOUNDARY SAW CUT, INCHES [9 1]

9 CONCRETE BREAKUP
None 1 Pneumatic Air Hammer 2 Gravity Drop Hammer 3 [1]
Sawing .. 4
Other (Specify). 5 _____

10 REMOVAL OF CONCRETE
Concrete Breakup and Cleanout 1 Lift Out Intact Slab Section 2 [2]
Other (Specify) . 3 _____

PREPARER [signature] EMPLOYER BRE DATE 8/24/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 22	* STATE CODE [46] * SPS PROJECT CODE [06] * TEST SECTION NO [04]

1 METHOD OF REINFORCING STEEL PLACEMENT N/A
Chairs 1 Between Layers of Concrete 2

2 MIXTURE DESIGN FOR PATCH MATERIAL, LB /CUBIC YARD
Coarse Aggregate [1820]
Fine Aggregate [1095]
Cement [705]
Water (Gallons/Cubic Yard) [37]
[41]

3 CEMENT TYPE USED TYPE I
(See Type Codes, Tables A 11)

4 AIR CONTENT, PERCENT BY VOLUME
Mean [6.0]
Range [___] to [___]

5 ADMIXTURES MASTER BUILDERS AEA 3%
(See Cement Additive Codes, Table A 12) [08]
[__]

6 SLUMP, INCHES
Mean [3]
Range [___] to [___]

7 FLEXURAL STRENGTH (MODULUS OF RUPTURE), PSI [____]
(Based on 3rd Point Loading) Curing Time Days [____]
If Unavailable, and Other Strength Test Conducted,
Enter Alternate Test [COMPRESSIVE STRENGTH]
Type of Loading [AXIAL COMPRESSION]
Age, Days [7], Strength, PSI [3680]

8 AMBIENT CONDITIONS AT TIME OF PATCHING LOW [__] HIGH [36]
Air Temperature °F [__]
Surface Moisture - Dry = 1, Wet = 2 [1 5]

9 MAXIMUM SIZE OF COARSE AGGREGATE, INCHES [1]

10 CONSOLIDATION OF MATERIALS
Internal Vibrators 1 Vibrating Screeds .. 2 Troweling 3
Rolling 4 Tamping 5
Other (Specify) 6 [1]

12 FINISHING
Screeding 1 Hand-Troweling 2 Machine-Troweling 3
Other (Specify) 4

PREPARER [signature] EMPLOYER BRE DATE 8/24/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 23	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [04]

1 JOINT FORMING METHOD

SHOULDER [1] TRANSVERSE [4] LONGITUDINAL [4]

None . 1 Polyethylene Strip Insert 2 Styrofoam Insert 3
Fiberboard Insert 4 Sawing 5 Forms 6
Other (Specify) 7 _____

2 WAS BOND BREAKER USED BETWEEN ADJACENT LANES?
Yes 1 No 2 [1]

3 CURING METHOD

METHOD 1 [2]
METHOD 2 [ ]

None. 1 Memorane Curing Compound 2 Burlap Curing Blankets 3
Waterproof Paper Blankets 4 White Polyethylene Sheeting 6
Burlap-Polyethylene Blankets 6 Insulating Layers 7
Cotton Mat Curing 8 Hay 9
Other (Specify) 10 _____

4 APPROXIMATE TYPICAL TIME BETWEEN PATCHING AND OPENING TO TRAFFIC, HOURS [24]

5 TYPE OF TRANSVERSE JOINTS IN PATCHES 4 OR SLABS ___
None 1 All Expansion Joints 2 All Contraction Joints 3
Mixture of ~~Expansion~~ Construction and Contraction Joints 4

6 WERE OLD JOINTS MATCHED?
Yes 1 No 2 [1]

PREPARER Duane R. Ell EMPLOYER BRE DATE 8/24/92

LTPP-SPS CONSTRUCTION DATA SAW AND SEAL DATA FOR PORTLAND CEMENT CONCRETE SURFACES WITH ASPHALT CONCRETE OVERLAYS CONSTRUCTION DATA SHEET 30	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 4]

1 DATE SAW AND SEAL OPERATION BEGAN (Month-Day-Year) [0 8-2 8-9 2]

2 DATE SAW AND SEAL OPERATION COMPLETED [0 8-2 8-9 2]

3 NUMBER OF JOINTS SAWED [8]

4 NUMBER OF DAYS AFTER PLACEMENT OF OVERLAY BEFORE SAWING AND SEALING OPERATION BEGAN [1 8]

5 AVERAGE EXTENT OF SAW CUT INTO SHOULDER, INCHES [1 2 0]

6 AVERAGE DEPTH OF SAW CUT INCHES [1 5 0]

7 AVERAGE WIDTH OF SAW CUT, INCHES [0 3 0]

8 AVERAGE SHAPE FACTOR OF JOINT $1.5/0.3 = 5$ [5 0 0]

SAWED FROM 4:30 TO 5:00

SEALED FROM 5:00 TO 5:15

SEALED WITH CRAFCO ROADSAVER 222
ASTM D-3405

PREPARER [signature] EMPLOYER BRE DATE 8/31/92

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LTPP-SPS CONSTRUCTION DATA
LAYER THICKNESS MEASUREMENTS
CONSTRUCTION DATA SHEET 10-

* STATE CODE [4 0]
* SPS PROJECT CODE [0 6]
* TEST SECTION NO [0 5]

1 DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2 DATE MEASUREMENTS COMPLETED [0 8-2 8-9 2]

SHEET 1 OF 4

LAYER THICKNESS MEASUREMENTS (Inches)

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	DIAMOND GROUND	ORIGINAL CONC SURFACE
0-0 0	0 6		103.63	103.65
	3 6		103.68	103.69
	7 2		103.72	103.74
	1 0 8		103.77	103.78
	1 4 4		103.82	103.83
0-5 0	0 6		103.48	103.49
	3 6		103.51	103.53
	7 2		103.56	103.57
	1 0 8		103.62	103.62
	1 4 4		103.65	103.66
1-0 0	0 6		103.31	103.32
	3 6		103.33	103.35
	7 2		103.38	103.40
	1 0 8		103.42	103.44
	1 4 4		103.47	103.48
1-5 0	0 6		103.08	103.09
	3 6		103.12	103.14
	7 2		103.16	103.18
	1 0 8		103.21	103.22
	1 4 4		103.26	103.27
2-0 0	0 6		102.93	102.94
	3 6		102.97	102.98
	7 2		103.01	103.02
	1 0 8		103.05	103.06
	1 4 4		103.10	103.11
2-5 0	0 6		102.77	102.79
	3 6		102.80	102.82
	7 2		102.84	102.86
	1 0 8		102.88	102.90
	1 4 4		102.94	102.95
			T.B.M. POINT DOT ON OUTSIDE CONC BASE FOR EXIT 214 SIGN STA. 3+75= ASSUMED ELEV. 100.00	
LAYER NUMBER				

PREPARER Jon Peard EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA LAYER THICKNESS MEASUREMENTS CONSTRUCTION DATA SHEET 10-1	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 5]

1. DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2. DATE MEASUREMENTS COMPLETED [0 8-2 8-9 2]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 4

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	DIAMOND GROUND	ORIGINAL CONC SURFACE
3-0 0	0 6		102.58	102.58
	3 6		102.60	102.62
	7 2		102.65	102.67
	1 0 8		102.69	102.71
	1 4 4		102.75	102.76
3-5 0	0 6		102.39	102.41
	3 6		102.41	102.43
	7 2		102.47	102.48
	1 0 8		102.52	102.53
	1 4 4		102.57	102.58
4-0 0	0 6		102.17	102.19
	3 6		102.21	102.22
	7 2		102.25	102.27
	1 0 8		102.30	102.32
	1 4 4		102.35	102.36
4-5 0	0 6		101.96	101.97
	3 6		102.00	102.01
	7 2		102.05	102.05
	1 0 8		102.09	102.09
	1 4 4		102.14	102.14
5-0 0	0 6		101.78	101.79
	3 6		101.82	101.82
	7 2		101.86	101.87
	1 0 8		101.90	101.91
	1 4 4		101.95	101.95
5-5 0	0 6		101.56	101.56
	3 6		101.59	101.59
	7 2		101.65	101.65
	1 0 8		101.69	101.69
	1 4 4		101.74	101.74
6-0 0	0 6		101.39	101.40
	3 6		101.42	101.43
	7 2		101.47	101.47
	1 0 8		101.51	101.51
	1 4 4		101.56	101.56
LAYER NUMBER				

PREPARER Jon Perrot EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA
LAYER THICKNESS MEASUREMENTS
CONSTRUCTION DATA SHEET 10-1

* STATE CODE [4 0]
* SPS PROJECT CODE [0 6]
* TEST SECTION NO [0 5]

1. DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2. DATE MEASUREMENTS COMPLETED [0 8-2 8-9 2]

SHEET 3 OF 4

LAYER THICKNESS MEASUREMENTS (Inches)

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	DIAMOND GROUND	ORIGINAL CONC SURFACE
6-5 0	0 6	— — —	101.17	101.17
	3 6	— — —	101.21	101.21
	7 2	— — —	101.26	101.26
	1 0 8	— — —	101.31	101.31
	1 4 4	— — —	101.36	101.36
7-0 0	0 6	— — —	100.96	100.96
	3 6	— — —	101.00	101.00
	7 2	— — —	101.05	101.04
	1 0 8	— — —	101.09	101.09
	1 4 4	— — —	101.16	101.16
7-5 0	0 6	— — —	100.79	100.79
	3 6	— — —	100.82	100.83
	7 2	— — —	100.87	100.87
	1 0 8	— — —	100.91	100.91
	1 4 4	— — —	100.96	100.96
8-0 0	0 6	— — —	100.57	100.57
	3 6	— — —	100.59	100.60
	7 2	— — —	100.64	100.65
	1 0 8	— — —	100.69	100.69
	1 4 4	— — —	100.75	100.75
8-5 0	0 6	— — —	100.36	100.36
	3 6	— — —	100.38	100.38
	7 2	— — —	100.43	100.43
	1 0 8	— — —	100.47	100.47
	1 4 4	— — —	100.52	100.52
9-0 0	0 6	— — —	100.15	100.15
	3 6	— — —	100.19	100.19
	7 2	— — —	100.24	100.24
	1 0 8	— — —	100.28	100.28
	1 4 4	— — —	100.34	100.34
9-5 0	0 6	— — —	99.98	99.98
	3 6	— — —	100.02	100.02
	7 2	— — —	100.06	100.07
	1 0 8	— — —	100.11	100.11
	1 4 4	— — —	100.15	100.16
LAYER NUMBER		— —		

PREPARER [signature] EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA LAYER THICKNESS MEASUREMENTS CONSTRUCTION DATA SHEET 10-1	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 5]

1. DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2. DATE MEASUREMENTS COMPLETED [0 8-2 8-9 2]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 4 OF 4

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	DIAMOND GROUND	ORIGINAL CONC. SURFACE
10+00	006	— — —	99.86	99.86
	036	— — —	99.89	99.89
	072	— — —	99.93	99.93
	108	— — —	99.98	99.98
	144	— — —	100.03	100.03
— + — —				
— + — —				
— + — —				
— + — —				
— + — —				
— + — —				
LAYER NUMBER		— —		

PREPARER [signature] EMPLOYER BRE DATE 3/24/93

LTPP-SPS CONSTRUCTION DATA MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS CONSTRUCTION DATA SHEET 11	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [05]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections Also include any quality control measurements or data for which space is not provided on other forms Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation

NO PRIOR DEPTH PATCHING WAS PERFORMED

THE LAST 45' OF THE TEST SECTION WAS INADVERTENTLY OVERLAYED AS PART OF THE TAPER TO THE EXIT RAMP FOR US 60. THIS AC MATERIAL WAS LATER MILLED UP DURING THE DIAMOND GRINDING OPERATION

LOAD TRANSFER RESTORATION AND UNDERSEALING WERE NOT PERFORMED. THESE TREATMENTS WERE NOT CONSIDERED WARRANTED BASED ON DEFLECTION RESULTS AND FAULTMET READINGS.

PREPARER Jerome G. Dell EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA JOINT RESEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 15	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [05]

1 DATE JOINT SEALANT OPERATIONS BEGAN (Month-Day-Year) [08-27-92]

2. DATE JOINT SEALANT OPERATIONS COMPLETED [08-29-92]

3 METHOD OF REMOVING OLD SEALANT [5]
Not Removed 1 Joint Plow - V-Shaped 2 Joint Plow - Rectangular 3
High Pressure Water Blasting 4 Diamond Blade Saw 5
Carbide Blade Saw 6 Pull-Out of Old Compression Sealant 7
Not Previously Sealed 8
Other (Specify) 9 _____

4 NEW SEALANT RESERVOIR DIMENSIONS, INCHES
Width [05]
Depth (From Top of Slab to Top of Backer Rod or Tape) [05]

5 BOND BREAKER UNDER SEALANT [3]
None 1 Nonreactive Adhesive Backed Tape . 2 Backer Rod 3
Other (Specify) 4 _____

6 WERE JOINT SIDEWALLS REFACED? 4
No 1 Yes - One-Blade 2 Yes - Two-Blade 3
Other (Specify).. 4 SAWED TWICE

7 CLEANING OF SIDEWALLS [5]
None . 1 Air Blast 2 Sand Blast 3 Water Blast 4
Other (Specify). 4 WATER BLASTED IMMEDIATELY AFTER SAWING
5 SAND BLASTED JUST BEFORE SEALING

SAWED 3.30 TO 4:30 ON 8/27/92
SEALED 8/29/92

PREPARER [signature] EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA JOINT RESEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 16	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [05]

1 TYPE OF CONTRACTION JOINT SEALANT [7]
(AASHTO OR ASTM SPECIFICATIONS)

D1850 (ASTM) Concrete Joint Sealer, Cold-Application Type .. 1
D1190 (ASTM) - M173 (AASHTO) Concrete Joint Sealer, Hot-Poured Elastic Type 2
D3406 (ASTM) - M282 (AASHTO) Joint Sealants, Hot-Poured, Elastomeric-Type, for PCC Pavements 3
D3405 (ASTM) - M301 (AASHTO) Joint Sealants, Hot-Poured for Concrete and Asphalt Pavements 4
D3542 (ASTM) Preformed Polychloroprene Elastomeric Joint Seals for Bridges 5
D2628 (ASTM) Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements 6
Other (Describe - if Silicone Material is Used Federal Spec TT-S-001543A, Georgia D O T Spec 833 06 or Equal Applies 7
DOW CORNING 890-SL

Manufacturer Information on Type of Pressure Relief Joint Sealant
Manufacturer Name [DOW CORNING]
Manufacturer Sealant Name [890-SL]

2 AVERAGE DEPTH OF TOP OF SEALANT PLACEMENT BELOW PAVEMENT SURFACE, INCHES [0 3]

3 ARE EXPANSION JOINTS SEALED DIFFERENTLY THAN CONTRACTION JOINTS? [2]
Yes. 1 No . 2

If Yes, Enter the code from Item 1, or describe below [ ]

Other [ ]

4 TOTAL LINEAR FEET OF JOINTS SEALED
Transverse Joints (19 JOINTS @ 12' EACH) [2 2 8 0]
Longitudinal Joints [1 0 0 0 0]

NOTE IF DIFFERENT MATERIALS OR METHODS ARE USED REPEAT SHEETS 15 AND 16 FOR EACH RECORDING THEIR LENGTHS IN ITEM NO 4

PREPARER [signature] EMPLOYER BRC DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA DIAMOND GRINDING FOR PORTLAND CEMENT CONCRETE PAVEMENT SURFACES CONSTRUCTION DATA SHEET 19	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [25]

1 DATE DIAMOND GRINDING OPERATIONS BEGAN (Month-Day-Year) [08-24-92]

2 DATE DIAMOND GRINDING OPERATIONS COMPLETED [08-27-92]

3 REASON FOR GRINDING [5]
Elimination of Faulting 1 Elimination of Slab Warping 2
Improve Skid Resistance 3
Restoration of Transverse Drainage Slope 4
Other (Specify) 5 IMPROVE RIDE

4 AVERAGE DEPTH OF CUT, INCHES [0 25]

5 CUTTING HEAD WIDTH, INCHES [37 5]

6 AVERAGE GROOVE WIDTH, INCHES [0 1]

7 AVERAGE SPACING BETWEEN BLADES, INCHES [0 1]

168 BLADES
9 BLADES/2 INCHES
CUSHION CUT DIAMOND GRINDER

4 PASSES
1st PASS 8/24 1:45 (@ 5+00) – 4:00 (5+9.5)
2nd PASS 8/25 9:00 (@ 5+00) – 10:00 (5+9.5)
3rd PASS 8/25 11:00 (@ 5+00) – 12:30 (5+9.5)
4th PASS 8/25 2:00 (@ 5+00) – 3:30 (5+9.5)

LAST 45' (9+55 TO 10+00)
- HAD BEEN COVERED BY AC TAPER
- BLADED OFF & DIAMOND GROUND 8/27/92

PREPARER [signature] EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 20	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO. [25]

1. DATE PATCHING OPERATIONS BEGAN (Month-Day-Year) [07-14-92]

2. DATE PATCHING OPERATIONS COMPLETED [07-14-92]

3. PRIMARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB [ ]
(See Table A.22 for Type Codes)
Other (Specify) _____

4. SECONDARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB [ ]
(See Table A.22 for Type Codes)
Other (Specify) _____

5. PATCHES

	NUMBER	SQ FEET
SLAB ONLY	[07]	[384]
SLAB AND BASE	[0]	[0]

[1]

6. PATCH MATERIAL USED
Portland Cement Concrete... 1 Polymer Concrete... 2 Epoxy Mortar... 4
Other (Specify)... 5 _____ [1]

7. SLABS REPLACED

	NUMBER	SQ. FEET
SLAB ONLY	[0]	[0]
SLAB AND BASE	[ ]	[ ]

[1]

8. METHOD FOR PATCH BOUNDARY DETERMINATION
Visual... 1 Coring... 2 Deflection... 3
State Standard or Specification... 4
Other (Specify)... 5 _____ [1]

9. CUTTING INSTRUMENT
Diamond Blade Saw... 1 Carbide Blade Saw . 2 Wheel Saw... 3
Air Hammer... 4
Other (Specify)... 5 _____

PREPARER [signature] EMPLOYER BRE DATE 8/24/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 21	* STATE CODE [48] * SPS PROJECT CODE [06] * TEST SECTION NO [05]

1. SECURING LOAD TRANSFER DEVICES
   None... 1 Grout Filler... 2 Epoxy filler...3 [3]
   Other... 4 _____

2. REINFORCING STEEL PLACED IN PATCH
   No... 1 Yes... 2 [1]

	TEMPERATURE STEEL Transverse	TEMPERATURE STEEL Longitudinal	Dowel Bars	Tie Bars
3 REBAR NUMBER	[ ]	[ ]	[ ]	[ ]
4 BAR LENGTHS, INCHES	[ ]	[ ]	[ ]	[ ]
5. BAR SPACING, INCHES	[ ]	[ ]	[ ]	[ ]

6. DOWEL COATINGS
   None... 1 Paint and/or Grease.. 2 Plastic... 3 [7]
   Monel... 4 Stainless Steel... 5 Epoxy . 6
   Other (Specify)... 7 GREASE & CAPS

7. NUMBER OF SAW CUTS PER PATCH (If Sawed) [4]

8. DEPTH OF TYPICAL BOUNDARY SAW CUT, INCHES [9 1]

9. CONCRETE BREAKUP
   None... 1 Pneumatic Air Hammer... 2 Gravity Drop Hammer... 3 [1]
   Sawing... 4
   Other (Specify)... 5 _____

10. REMOVAL OF CONCRETE
    Concrete Breakup and Cleanout.. 1 Lift Out Intact Slab Section... 2 [2]
    Other (Specify).. 3 _____

PREPARER [signature] EMPLOYER BRE DATE 8/24/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 22	* STATE CODE [48] * SPS PROJECT CODE [06] * TEST SECTION NO [05]

1. METHOD OF REINFORCING STEEL PLACEMENT [ ]
   Chairs... 1 Between Layers of Concrete .. 2 N/A

2. MIXTURE DESIGN FOR PATCH MATERIAL, LB /CUBIC YARD
   Coarse Aggregate [1820]
   Fine Aggregate [1095]
   Cement [705]
   Water (Gallons/Cubic Yard) [37]
   [41]

3. CEMENT TYPE USED TYPE I
   (See Type Codes, Tables A.11)

4. AIR CONTENT, PERCENT BY VOLUME
   Mean [6.0]
   Range [.] to [ ]

5. ADMIXTURES MASTER BUILDERS AEA 3% [08]
   (See Cement Additive Codes, Table A 12) [ ]

6. SLUMP, INCHES
   Mean [3]
   Range [ ] to [.]

7. FLEXURAL STRENGTH (MODULUS OF RUPTURE), PSI [ ]
   (Based on 3rd Point Loading) Curing Time, Days [ ]
   If Unavailable, and Other Strength Test Conducted,
   Enter Alternate Test [COMPRESSIVE STRENGTH]
   Type of Loading [AXIAL COMPRESSION]
   Age, Days [07], Strength, PSI [3610]

8. AMBIENT CONDITIONS AT TIME OF PATCHING LOW [.] HIGH [84]
   Air Temperature °F [ ]
   Surface Moisture - Dry = 1, Wet = 2 [1]

9. MAXIMUM SIZE OF COARSE AGGREGATE, INCHES [5]

10. CONSOLIDATION OF MATERIALS [1]
    Internal Vibrators . 1 Vibrating Screeds... 2 Troweling. . 3
    Rolling... 4 Tamping .. 5
    Other (Specify).. 6 _____

12. FINISHING [1]
    Screeding... 1 Hand-Troweling . 2 Machine-Troweling 3
    Other (Specify)... 4 _____

PREPARER [signature] EMPLOYER BTRC DATE 8/24/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 23	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO. [05]

1. JOINT FORMING METHOD — SHOULDER [1] TRANSVERSE [4] LONGITUDINAL [4]

   None... 1 Polyethylene Strip Insert... 2 Styrofoam Insert... 3
   Fiberboard Insert.. 4 Sawing... 5 Forms... 6
   Other (Specify). 7 _____

2. WAS BOND BREAKER USED BETWEEN ADJACENT LANES? [1]
   Yes. . 1 No . 2

3. CURING METHOD
   METHOD 1 [2]
   METHOD 2 [ ]

   None... 1 Memorane Curing Compound 2 Burlap Curing Blankets.. 3
   Waterproof Paper Blankets 4 White Polyethylene Sheeting 6
   Burlap-Polyethylene Blankets . 6 Insulating Layers... 7
   Cotton Mat Curing . 8 Hay .. 9
   Other (Specify).. 10 _____

4. APPROXIMATE TYPICAL TIME BETWEEN PATCHING AND OPENING TO TRAFFIC, HOURS [24]

5. TYPE OF TRANSVERSE JOINTS IN PATCHES 4 OR SLABS ___
   None... 1 All Expansion Joints .. 2 All Contraction Joints... 3
   Mixture of ~~Expansion~~ Construction and Contraction Joints 4

6. WERE OLD JOINTS MATCHED? [1]
   Yes... 1 No .. 2

PREPARER [signature] EMPLOYER BRE DATE 8/24/92

LTPP-SPS CONSTRUCTION DATA SUBDRAINAGE RETROFIT FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 28	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO. [05]

1. DATE SUBDRAINAGE PLACEMENT BEGAN (Month-Day-Year) [07-31-92]
   @ 2:00 @ 5+0
2. DATE SUBDRAINAGE PLACEMENT COMPLETED [08-03-92]
   EDGEDRAIN PLACEMENT COMPLETED 7/31/92 @ 6:00 @ 5+10
   LATERALS PLACED 8/3/92
3. TYPE OF DRAINAGE PIPE [8]
   Clay Tile . 1 Concrete Tile. . 2 Vitrified Clay . 3
   Perforated Plastic Bituminous Fiber . 4 Perforated Corrugated Metal... 5
   Corrugated Plastic Tubing .. 6 Drainage Mat .. 7
   Other (Specify).. 8 2" X 18" CORRUGATED PLASTIC CHANNEL, ADVANEDGE®
   (SEE BROCHURE ATTACHED)
   None.. 9

4 DIAMETER OF PIPE (INCHES) N/A [ ]

5 DEPTH OF PIPE BELOW TOP OF PAVEMENT SURFACE (INCHES) [1 0]
   1" BELOW PCC SLAB SURFACE

6 HORIZONTAL PLACEMENT OF PIPE FROM OUTER EDGE OF PAVEMENT (INCHES) [3 0]

7. TYPE OF PRIMARY FILTER USED [ ]
   Graded Aggregate.. 1 Uniformly Graded Aggregate (One Size). 2
   Woven Fabric . 3 Non-Woven Fabric . 4 Porous PCC. . 5
   Porous Bituminous Concrete . 6
   Other (Specify)... 7 HIGH MODULUS GEOTEXTILE WRAP, TYPAR®

8. MAXIMUM PARTICLE SIZE OF PRIMARY FILTER MATERIAL (INCHES) N/A [ ]

9. GRADATION OF PRIMARY FILTER MATERIAL
   % Passing #4 Sieve [.] % Passing #40 Sieve [ ]
   % Passing #10 Sieve [.] % Passing #100 Sieve [ ]

10 PERMEABILITY OF PRIMARY FILTER MATERIAL (FT/DAY) [ ]

11 TYPE AND LOCATION OF SECONDARY FILTER MATERIAL [ ]
   Fabric Encapsulating the Primary Filter Material 1
   Fabric Encapsulating the Drainage Pipe 2
   Other (Specify) . 3 _____

12. AVERAGE OUTLET INTERVAL (FEET) 3 [00.0]

13. PRIMARY PURPOSE OF SUBDRAINAGE INSTALLATION [1]
   Remove Free Water From Pavement Layers. 1
   Cut Off Side-Hill/Through Hill Seepage 2
   Lower Water Table... 3
   Other (Specify). 4 _____

PREPARER [signature] EMPLOYER BRE DATE 8/25/92

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LTPP-SPS CONSTRUCTION DATA REVISED LAYER DESCRIPTIONS CONSTRUCTION DATA SHEET 2	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO. [01]

1. LAYER NUMBER	2. LAYER DESCRIPTION	3 MATERIAL TYPE CLASS	4. LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD DEV.
1	SUBGRADE(7)	[53]				
2	[06]	[26]	[80]	----	----	----
3	[05]	[24]	[40]	----	----	----
4	[03]	[05]	[91]	88	98	02
5	[01]	[01]	[41]	36	47	02
6	[ ]	[ ]	[ ]	----	----	----
7	[ ]	[ ]	[ ]	----	----	----
8	[ ]	[ ]	[ ]	----	----	----
9	[ ]	[ ]	[ ]	----	----	----
10	[ ]	[ ]	[ ]	----	----	----
11	[ ]	[ ]	[ ]	----	----	----
12	[ ]	[ ]	[ ]	----	----	----
13	[ ]	[ ]	[ ]	----	----	----
14	[ ]	[ ]	[ ]	----	----	----
15	[ ]	[ ]	[ ]	----	----	----

NOTES:

1 Layer 1 is subgrade soil, the highest numbered layer is the pavement surface.

2. Layer description codes

Overlay 01	Base Layer. 05	Porous Friction Course..09
Seal/Tack Coat w/overlay02	Subbase Layer 06	Surface Treatment..... 10
Original Surface..... ..03	Subgrade 07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer 08	

If milling was performed, the layers which were milled shall be assigned their previous layer number and material type. If the layer was completely removed by milling, it shall still be shown as a layer with a zero thickness.

3. Enter the material type classification codes from Tables A.5, A.6, A.7 and A.8 which best describes the material in each layer. If the layer was milled, enter the material classification code corresponding to the type material which was removed.

4. Enter the average thickness of each layer and the maximum, minimum, and standard deviation of the thickness measurements, if known. If a layer was partially milled, the remaining thickness of the layer shall be indicated.

PREPARER Jane F. Dill EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA OVERLAY PLACEMENT OPERATIONS CONSTRUCTION DATA SHEET 7	* STATE CODE [40] * SPS PROJECT CODE [04] * TEST SECTION NO [06]

1. DATE SURFACE PREPARATION BEGAN (Month-Day-Year) [08-09-92]
2. DATE SURFACE PREPARATION COMPLETED [08-09-92]

3 SURFACE PREPARATION PRIOR TO PLACEMENT OF OVERLAY [3]
None..... 1 Broomed..... .. 2 Broomed + Asphaltic Tack Coat... 3
Asphaltic Tack Coat (only) ... 4

4 TACK COAT
Layer Numbers [__ __] [__ __]
Material Type None..... 1 SS-1.. . 2 SS-1H.. . 3 CRS-1 . . 4 [__ 2]
CRS-2.... 5 CMS-2.... 6 CMS-2H . 7 CSS-1. .. 8 CSS-1H .. 9
Other .. 10 (Specify) _____

5 TACK COAT DILUTION
(Percent) [50]
Mixing Rate Parts Diluent 1 TO Parts Asphalt 1

6 TACK COAT APPLICATION RATE (Gal/Sq. Yd.) [__ __ __]

7 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers
Plant 1	[2]	CATERPILLAR-2000	[__ __ 8]	[__ 8]	[__] [__] [__]
Plant 2	[__]	_____	[__ __ __]	[__ __]	[__] [__] [__]
Plant 3	[__]	_____	[__ __ __]	[__ __]	[__] [__] [__]

Plant Type. Batch ... 1 Drum Mix. 2 Other ..3 Specify_____

8. MANUFACTURER OF ASPHALT CONCRETE PAVER CEDARAPIDS

9. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER CR 461 "GREYHOUND"

10. SINGLE PASS LAYDOWN WIDTH (Feet) [12]

11. AC BINDER COURSE
Layer Number [__ __]
Nominal First Lift Placement Thickness - Uncompacted (Inches) [__ __]
Nominal Second Lift Placement Thickness - Uncompacted (Inches) [__ __]

12. AC SURFACE COURSE
Layer Number [5]
Nominal First Lift Placement Thickness - Uncompacted (Inches) [2 7]
Nominal Second Lift Placement Thickness - Uncompacted (Inches) [2 7]

13. SURFACE FRICTION COURSE
Layer Number [__ __]
Nominal Placement Thickness - Uncompacted (Inches) [__.__]

14. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
Binder Course [__ + __ __]
Surface Course [4 + 6 0]
Surface Friction Course [__ + __ __]

15. LOCATION OF LONGITUDINAL SURFACE JOINT [1]
Between lanes.. 1 Within lane.. 2 [__ __ __]
(specify offset from outside edge of lane in feet)

16. SIGNIFICANT EVENTS DURING CONSTRUCTION(disruptions, rain, equip. problems, etc.)

_____

_____

PREPARER Jerome C. Dill EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA OVERLAY COMPACTION DATA CONSTRUCTION DATA SHEET 8	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO. [06]

1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [08-09-92]
2. DATE PAVING OPERATIONS COMPLETED [08-12-92]
3. LAYER NUMBER [5]
4. MIXING TEMPERATURE (°F) [___]
5. LAYDOWN TEMPERATURES (°F)
   - Mean..... 301.
   - Minimum 300
   - Standard Deviation. ___
   - Number of Tests 10
   - Maximum..... 305.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	135				
7	B	Steel-Whl Tandem	___				
8	C	Steel-Whl Tandem	___				
9	D	Steel-Whl Tandem	___				
10	E	Pneumatic-Tired	140	____.			
11	F	Pneumatic-Tired	___	____			
12	G	Pneumatic-Tired	___.___	____			
13	H	Pneumatic-Tired	___				
14	I	Single-Drum Vibr.	10.0		____	.___	___
15	J	Single-Drum Vibr	___		____	.___	___
16	K	Single-Drum Vibr.	___.___		____.	___	___
17	L	Single-Drum Vibr.	___		____	.___	___
18	M	Double-Drum Vibr.	___.___		____.	.___	___
19	N	Double-Drum Vibr.	___		____	.___	___
20	O	Double-Drum Vibr.	___.___		____.	.___	___
21	P	Double-Drum Vibr.	___		____	.___	___
22	Q	Other					

	COMPACTION DATA	First Lift	Second Lift	Third Lift	Fourth Lift
	BREAKDOWN — HYSTER				
23	Roller Code (A-Q)	I	I	___	___
24	Coverages	4	4	___.	___
	INTERMEDIATE — BOMAG				
25	Roller Code (A-Q)	E	E	___	___
26	Coverages	10.	10.	___.	___
	FINAL — HYSTER				
27	Roller Code (A-Q)	A	A	___	___
28	Coverages	4	4	___.	___
29	Air Temperature (°F)	90.	85	___.	___
30	Compacted Thickness (In)	2.0	2.1	___	___.___
31	Curing Period (Days)	2.9	0.1	___	___

PREPARER Jerome F. Fall EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA LAYER THICKNESS MEASUREMENTS CONSTRUCTION DATA SHEET 10-1	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO. [0 6]

1. DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2. DATE MEASUREMENTS COMPLETED [0 8-2 7-9 2]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	A.C. OVERLAY	ORIGINAL CONC. SURFACE
0-0 0	0 6		101.59	101.22
	3 6		101.63	101.26
	7 2		101.66	101.30
	1 0 8		101.69	101.34
	1 4 4		101.73	101.38
0-5 0	0 6		101.38	101.04
	3 6		101.41	101.07
	7 2		101.45	101.11
	1 0 8		101.48	101.15
	1 4 4		101.52	101.20
1-0 0	0 6		101.16	100.83
	3 6		101.20	100.87
	7 2		101.24	100.92
	1 0 8		101.26	100.96
	1 4 4		101.31	101.01
1-5 0	0 6		100.98	100.62
	3 6		101.01	100.66
	7 2		101.04	100.70
	1 0 8		101.07	100.75
	1 4 4		101.11	100.79
2-0 0	0 6		100.77	100.44
	3 6		100.80	100.46
	7 2		100.83	100.50
	1 0 8		100.85	100.53
	1 4 4		100.89	100.57
2-5 0	0 6		100.58	100.25
	3 6		100.61	100.28
	7 2		100.64	100.32
	1 0 8		100.67	100.36
	1 4 4		100.71	100.40
			T.B.M. PAINT DOT ON SOUTH END OF HEADWALL STA. -1+45± WEST SIDE +4.35 ASSUMED ELEV. 100.00	
LAYER NUMBER				

PREPARER [signature] EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA
LAYER THICKNESS MEASUREMENTS
CONSTRUCTION DATA SHEET 10-1

* STATE CODE [4 0]
* SPS PROJECT CODE [0 6]
* TEST SECTION NO. [0 0]

1. DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2. DATE MEASUREMENTS COMPLETED [0 8-2 7-9 2]

SHEET 2 OF 2

LAYER THICKNESS MEASUREMENTS (Inches)

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	A.C. OVERLAY	ORIGINAL CONC. SURFACE
3-0 0	0 6		100.40	100.06
	3 6		100.43	100.08
	7 2		100.46	100.13
	1 0 8		100.49	100.17
	1 4 4		100.54	100.22
3-5 0	0 6		100.22	99.83
	3 6		100.25	99.87
	7 2		100.28	99.91
	1 0 8		100.31	99.95
	1 4 4		100.34	100.00
4-0 0	0 6		100.01	99.63
	3 6		100.04	99.67
	7 2		100.07	99.72
	1 0 8		100.10	99.76
	1 4 4		100.15	99.81
4-5 0	0 6		99.77	99.43
	3 6		99.81	99.46
	7 2		99.85	99.50
	1 0 8		99.87	99.54
	1 4 4		99.91	99.59
5-0 0	0 6		99.56	99.22
	3 6		99.60	99.26
	7 2		99.64	99.30
	1 0 8		99.67	99.34
	1 4 4		99.72	99.39
LAYER NUMBER				

PREPARER [signature] EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS CONSTRUCTION DATA SHEET 11	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO. [216]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

NO PARTIAL DEPTH PATCHING WAS PERFORMED

LOAD TRANSFER RESTORATION AND UNDERSEALING WERE NOT PERFORMED. THESE TREATMENTS WERE NOT CONSIDERED WARRANTED BASED ON DEFLECTION RESULTS AND FAULTMETER READINGS.

FIRST LIFT OF TYPE B MIX PLACED 8/9/92
BEGAN @ 6-0 @ 12:15
FINISHED @ 6-5 @ 12:45
(PAVED TYPE B FROM STA 911 TO 901)

SECOND LIFT OF TYPE B MIX PLACED 8/12/92
BEGAN @ 6-0 @ 9:00
FINISHED @ 6-5 @ 9:30
(PAVED TYPE B FROM STA 911 TO 901)

PREPARER [signature] EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 20	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 6]

1 DATE PATCHING OPERATIONS BEGAN (Month-Day-Year) [0 7-1 4-9 2]

2 DATE PATCHING OPERATIONS COMPLETED [0 7-1 4-9 2]

3 PRIMARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB [_ _]
(See Table A.22 for Type Codes)
Other (Specify) _____

4 SECONDARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB [_ _]
(See Table A 22 for Type Codes)
Other (Specify) _____

5 PATCHES

	NUMBER	SQ FEET
SLAB ONLY	[0 5]	[_ 2 4 0]
SLAB AND BASE	[_ 0]	[_ _ _ 0]

[1]

6 PATCH MATERIAL USED
Portland Cement Concrete. . 1 Polymer Concrete . 2 Epoxy Mortar.. 4
Other (Specify). . 5 _____

7 SLABS REPLACED

	NUMBER	SQ FEET
SLAB ONLY	[_ 0]	[_ _ _ 0]
SLAB AND BASE	[_ _]	[_ _ _ _]

[1]

8 METHOD FOR PATCH BOUNDARY DETERMINATION
Visual... 1 Coring . 2 Deflection. . 3
State Standard or Specification. 4
Other (Specify). . 5 _____

[1]

9 CUTTING INSTRUMENT
Diamond Blade Saw 1 Carbide Blade Saw . 2 Wheel Saw . 3
Air Hammer . 4
Other (Specify) . 5 _____

PREPARER [signature] EMPLOYER BRE DATE 8/25/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 21	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 6]

1 SECURING LOAD TRANSFER DEVICES
None 1 Grout Filler 2 Epoxy filler 3 [3]
Other . 4 _____

2 REINFORCING STEEL PLACED IN PATCH
No 1 Yes 2 [1]

	TEMPERATURE STEEL Transverse	TEMPERATURE STEEL Longitudinal	Dowel Bars	Tie Bars
3 REBAR NUMBER	[ ]	[ ]	[ ]	[ ]
4 BAR LENGTHS, INCHES	[ ]	[ ]	[ ]	[ ]
5 BAR SPACING, INCHES	[ ]	[ ]	[ ]	[ ]

6 DOWEL COATINGS
None 1 Paint and/or Grease 2 Plastic 3 [7]
Monel 4 Stainless Steel 5 Epoxy . 6
Other (Specify) 7 GREASE & CAPS

7 NUMBER OF SAW CUTS PER PATCH (If Sawed) [4]

8 DEPTH OF TYPICAL BOUNDARY SAW CUT, INCHES [9.1]

9 CONCRETE BREAKUP
None. 1 Pneumatic Air Hammer 2 Gravity Drop Hammer . 3 [1]
Sawing 4
Other (Specify) . 5 _____

10 REMOVAL OF CONCRETE
Concrete Breakup and Cleanout. 1 Lift Out Intact Slab Section. 2 [2]
Other (Specify) .. 3 _____

PREPARER Jerre V. Dill EMPLOYER BRE DATE 8/25/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 22	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 4]

1. METHOD OF REINFORCING STEEL PLACEMENT [ ]
   Chairs. . 1 Between Layers of Concrete . 2 N/A

2 MIXTURE DESIGN FOR PATCH MATERIAL, LB /CUBIC YARD
   Coarse Aggregate [1 8 2 0]
   Fine Aggregate [1 0 9 5]
   Cement [7 0 5]
   Water (Gallons/Cubic Yard) [3 7]
   [4 1]

3 CEMENT TYPE USED TYPE I
   (See Type Codes, Tables A.11)

4 AIR CONTENT, PERCENT BY VOLUME
   Mean [6 0]
   Range [ ] to [ ]

5 ADMIXTURES MASTER BUILDERS AEA 3% [0 8]
   (See Cement Additive Codes, Table A.12) [ ]

6 SLUMP, INCHES
   Mean [3 .]
   Range [ ] to [ ]

7 FLEXURAL STRENGTH (MODULUS OF RUPTURE), PSI [ ]
   (Based on 3rd Point Loading) Curing Time, Days [ ]
   If Unavailable, and Other Strength Test Conducted,
   Enter Alternate Test [COMPRESSIVE STRENGTH]
   Type of Loading [AXIAL COMPRESSION]
   Age, Days [0 7], Strength, PSI [3 6 1 0]

8 AMBIENT CONDITIONS AT TIME OF PATCHING
   Air Temperature °F LOW [ ] HIGH [8 4]
   Surface Moisture - Dry = 1, Wet = 2 [ ]

9 MAXIMUM SIZE OF COARSE AGGREGATE, INCHES [1 5]

10 CONSOLIDATION OF MATERIALS [1]
   Internal Vibrators . 1 Vibrating Screeds. 2 Troweling . 3
   Rolling .. 4 Tamping 5
   Other (Specify)... 6 ____

12 FINISHING [1]
   Screeding . 1 Hand-Troweling... 2 Machine-Troweling . 3
   Other (Specify). . 4 ____

PREPARER Jerome P. Dell EMPLOYER BRE DATE 8/25/92

LTPP-SPS CONSTRUCTION DATA FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED CONSTRUCTION DATA SHEET 23	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [06]

1. JOINT FORMING METHOD — SHOULDER [1] — TRANSVERSE [4] — LONGITUDINAL [4]

None . 1 Polyethylene Strip Insert 2 Styrofoam Insert. 3
Fiberboard Insert 4 Sawing 5 Forms 6
Other (Specify) . 7 _____

2 WAS BOND BREAKER USED BETWEEN ADJACENT LANES? [1]
Yes. . 1 No 2

3 CURING METHOD — METHOD 1 [Z] — METHOD 2 [ ]

None 1 Membrane Curing Compound 2 Burlap Curing Blankets 3
Waterproof Paper Blankets 4 White Polyethylene Sheeting 6
Burlap-Polyethylene Blankets 6 Insulating Layers 7
Cotton Mat Curing.. 8 Hay 9
Other (Specify) . 10 _____

4 APPROXIMATE TYPICAL TIME BETWEEN PATCHING AND OPENING TO TRAFFIC, HOURS [24]

5 TYPE OF TRANSVERSE JOINTS IN PATCHES 4 OR SLABS ___
None . 1 All Expansion Joints 2 All Contraction Joints . 3
Mixture of ~~Expansion~~ Construction and Contraction Joints. 4

6 WERE OLD JOINTS MATCHED? [1]
Yes .. 1 No 2

PREPARER [signature] EMPLOYER BRE DATE 8/25/92

LTPP-SPS CONSTRUCTION DATA SUBDRAINAGE RETROFIT FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 28	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 6]

1 DATE SUBDRAINAGE PLACEMENT BEGAN (Month-Day-Year) [07-31-92]
@ 12:00 @ 6+0

2 DATE SUBDRAINAGE PLACEMENT COMPLETED [08-03-92]
EDGEDRAIN PLACEMENT COMPLETED 7/31/92 @ 1:00 @ 6+5
LATERALS PLACED 8/3/92

3 TYPE OF DRAINAGE PIPE [8]
Clay Tile 1 Concrete Tile 2 Vitrified Clay 3
Perforated Plastic Bituminous Fiber 4 Perforated Corrugated Metal 5
Corrugated Plastic Tubing 6 Drainage Mat 7
Other (Specify) 8 2" X 18" CORRUGATED PLASTIC CHANNEL, ADVANEDGE®
(SEE BROCHURE)
ATTACHED TO 400605 SHEET 28
None 9

4 DIAMETER OF PIPE (INCHES) N/A [___]

5 DEPTH OF PIPE BELOW TOP OF PAVEMENT SURFACE (INCHES) [5 0]
1" BELOW PCC SLAB SURFACE

6 HORIZONTAL PLACEMENT OF PIPE FROM OUTER EDGE OF PAVEMENT (INCHES) [3 0]

7 TYPE OF PRIMARY FILTER USED [7]
Graded Aggregate 1 Uniformly Graded Aggregate (One Size) 2
Woven Fabric 3 Non-Woven Fabric 4 Porous PCC 5
Porous Bituminous Concrete 6
Other (Specify) 7 HIGH MODULUS GEOTEXTILE WRAP, TYPAR®

8 MAXIMUM PARTICLE SIZE OF PRIMARY FILTER MATERIAL (INCHES) N/A [___]

9 GRADATION OF PRIMARY FILTER MATERIAL
% Passing #4 Sieve [___] % Passing #40 Sieve [___]
% Passing #10 Sieve [___] % Passing #100 Sieve [___]

10 PERMEABILITY OF PRIMARY FILTER MATERIAL (FT/DAY) ____

11 TYPE AND LOCATION OF SECONDARY FILTER MATERIAL [__]
Fabric Encapsulating the Primary Filter Material 1
Fabric Encapsulating the Drainage Pipe 2
Other (Specify) 3 _____

12 AVERAGE OUTLET INTERVAL (FEET) 3[00 0]

13 PRIMARY PURPOSE OF SUBDRAINAGE INSTALLATION [1]
Remove Free Water From Pavement Layers 1
Cut Off Side-Hill/Through Hill Seepage 2
Lower Water Table 3
Other (Specify) 4 _____

PREPARER [signature] EMPLOYER BRE DATE 8/25/92

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LTPP-SPS CONSTRUCTION DATA
REVISED LAYER DESCRIPTIONS
CONSTRUCTION DATA SHEET 2

* STATE CODE [40]
* SPS PROJECT CODE [06]
* TEST SECTION NO. [01]

1. LAYER NUMBER	2. LAYER DESCRIPTION	3. MATERIAL TYPE CLASS	4. LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[53]				
2	[06]	[26]	[80]	----	----	----
3	[05]	[24]	[40]	----	----	----
4	[03]	[05]	[91]	88	98	02
5	[01]	[01]	[45]	36	55	05
6	[ ]	[ ]	[ ]	----	----	----
7	[ ]	[ ]	[ ]	----	----	----
8	[ ]	[ ]	[ ]	----	----	----
9	[ ]	[ ]	[ ]	----	----	----
10	[ ]	[ ]	[ ]	----	----	----
11	[ ]	[ ]	[ ]	----	----	----
12	[ ]	[ ]	[ ]	----	----	----
13	[ ]	[ ]	[ ]	----	----	----
14	[ ]	[ ]	[ ]	----	----	----
15	[ ]	[ ]	[ ]	----	----	----

NOTES.

1. Layer 1 is subgrade soil, the highest numbered layer is the pavement surface.
2. Layer description codes:
   Overlay 01
   Seal/Tack Coat w/overlay 02
   Original Surface..... 03
   HMAC Layer (Subsurface) 04
   Base Layer 05
   Subbase Layer.....06
   Subgrade 07
   Interlayer 08
   Porous Friction Course..09
   Surface Treatment.....10
   Embankment (Fill).....11
   If milling was performed, the layers which were milled shall be assigned their previous layer number and material type. If the layer was completely removed by milling, it shall still be shown as a layer with a zero thickness.
3. Enter the material type classification codes from Tables A.5, A.6, A.7 and A.8 which best describes the material in each layer. If the layer was milled, enter the material classification code corresponding to the type material which was removed.
4. Enter the average thickness of each layer and the maximum, minimum, and standard deviation of the thickness measurements, if known. If a layer was partially milled, the remaining thickness of the layer shall be indicated.

PREPARER [signature] EMPLOYER BRC DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA OVERLAY PLACEMENT OPERATIONS CONSTRUCTION DATA SHEET 7	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [01]

1. DATE SURFACE PREPARATION BEGAN (Month-Day-Year) [07-29-92]
2. DATE SURFACE PREPARATION COMPLETED [07-29-92]

3. SURFACE PREPARATION PRIOR TO PLACEMENT OF OVERLAY [1]
   None..... 1 Broomed.... .. 2 Broomed - Asphaltic Tack Coat... 3
   Asphaltic Tack Coat (only) ... 4

4. TACK COAT
   Layer Numbers [ ] [ ]
   Material Type None..... 1 SS-1.... 2 SS-1H.... 3 CRS-1.... 4 [2]
   CRS-2.... 5 CMS-2. .. 6 CMS-2H.. 7 CSS-1.. . 8 CSS-1H... 9
   Other.... 10 (Specify) _____
5. TACK COAT DILUTION
   (Percent) [50]
   Mixing Rate Parts Diluent 1 TO Parts Asphalt 1
6. TACK COAT APPLICATION RATE (Gal/Sq. Yd.) [.]

7. ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers		
Plant 1	[2]	CATERPILLAR-2000	[7]	[2]	[5]	[ ]	[ ]
Plant 2	[ ]		[ ]	[ ]	[ ]	[ ]	[ ]
Plant 3	[ ]		[ ]	[ ]	[ ]	[ ]	[ ]

   Plant Type: Batch ... 1 Drum Mix.. 2 Other...3 Specify_____

8. MANUFACTURER OF ASPHALT CONCRETE PAVER CEDARAPIDS
9. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER CR461 "GRAYHOUND"
10. SINGLE PASS LAYDOWN WIDTH (Feet) [12]

11. AC BINDER COURSE
    Layer Number [ ]
    Nominal First Lift Placement Thickness - Uncompacted (Inches) [ ]
    Nominal Second Lift Placement Thickness - Uncompacted (Inches) [ ]
12. AC SURFACE COURSE
    Layer Number [5]
    Nominal First Lift Placement Thickness - Uncompacted (Inches) [2 7]
    Nominal Second Lift Placement Thickness - Uncompacted (Inches) [2.7]
13. SURFACE FRICTION COURSE
    Layer Number [ ]
    Nominal Placement Thickness - Uncompacted (Inches) [ ]
14. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    Binder Course [+]
    Surface Course [+]
    Surface Friction Course [+]
15. LOCATION OF LONGITUDINAL SURFACE JOINT [1]
    Between lanes.. 1 Within lane.. 2 [.]
    (specify offset from outside edge of lane in feet)
16. SIGNIFICANT EVENTS DURING CONSTRUCTION(disruptions, rain, equip. problems, etc.)

PREPARER [signature] EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA OVERLAY COMPACTION DATA CONSTRUCTION DATA SHEET 8	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO. [07]

1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-29-92]
2. DATE PAVING OPERATIONS COMPLETED [08-07-92]
3. LAYER NUMBER [5]
4. MIXING TEMPERATURE (°F) [___]
5. LAYDOWN TEMPERATURES (°F)
   - Mean..... 306.
   - Minimum..... 300
   - Standard Deviation... ___.___
   - Number of Tests 6
   - Maximum..... 315

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr /Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	135				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	14.0				
11	F	Pneumatic-Tired					
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.	10.0				
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.					
19	N	Double-Drum Vibr					
20	O	Double-Drum Vibr					
21	P	Double-Drum Vibr.					
22	Q	Other					

	COMPACTION DATA	First Lift	Second Lift	Third Lift	Fourth Lift
23	BREAKDOWN — HYSTER Roller Code (A-Q)	I	I		
24	Coverages	4	4		
25	INTERMEDIATE — BOMAG Roller Code (A-Q)	E	E		
26	Coverages	12	10		
27	FINAL — HYSTER Roller Code (A-Q)	A	A		
28	Coverages	4	4		
29	Air Temperature (°F)	90.	90		
30	Compacted Thickness (In)	2.4	2.1		
31	Curing Period (Days)	91	02		

PREPARER Jerome F. Dill EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA LAYER THICKNESS MEASUREMENTS CONSTRUCTION DATA SHEET 10-1	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 7]

1. DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2. DATE MEASUREMENTS COMPLETED [0 8-2 7-9 2]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	FINAL SURFACE	FIRST 2" LIFT	ORIGINAL CONC SURFACE
0-0 0	0 8	.	105.69	105.46	105.25
	3 6	.	105.75	105.53	105.29
	7 2	.	105.79	105.59	105.35
	1 0 8		105.82	105.62	105.39
	1 4 4		105.86	105.66	105.43
0-5 0	0 4		105.44	105.22	105.03
	3 6	.	105.52	105.29	105.06
	7 2	.	105.57	105.36	105.11
	1 0 8	.	105.61	105.41	105.16
	1 4 4	.	105.65	105.45	105.21
1-0 0	0 4		105.22	105.02	104.83
	3 6	.	105.28	105.07	104.87
	7 2		105.33	105.13	104.92
	1 0 8	.	105.37	105.17	104.96
	1 4 4		105.40	105.21	105.01
1-5 0	0 4	.	104.99	104.79	104.66
	3 6	.	105.06	104.86	104.70
	7 2	.	105.10	104.91	104.74
	1 0 8	.	105.14	104.95	104.78
	1 4 4	.	105.18	104.99	104.81
2-0 0	0 4	.	104.76	104.56	104.41
	3 6	.	104.83	104.62	104.45
	7 2	.	104.88	104.67	104.50
	1 0 8	.	104.92	104.71	104.54
	1 4 4	.	104.95	104.75	104.60
2-5 0	0 4		104.57	104.36	104.22
	3 6		104.63	104.42	104.26
	7 2	.	104.69	104.48	104.31
	1 0 8	.	104.72	104.53	104.35
	1 4 4	.	104.76	104.57	104.40
		.	TBM PAINT DOT ON CONC BASE OF CAMPING-EXIT 214 SIGN; STA. 4-65± ASSUMED ELEV 100.00		
LAYER NUMBER					

PREPARER Jon Perrault EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA
LAYER THICKNESS MEASUREMENTS
CONSTRUCTION DATA SHEET 10-1

* STATE CODE [4 0]
* SPS PROJECT CODE [0 6]
* TEST SECTION NO [0 7]

1. DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2. DATE MEASUREMENTS COMPLETED [0 8-2 7-9 2]

SHEET 2 OF 2

LAYER THICKNESS MEASUREMENTS (Inches)

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	FINAL SURFACE	FIRST 2" LIFT	ORIGINAL CONC. SURFACE
3-0 0	0 4		104.36	104.18	104.02
	3 6		104.43	104.22	104.06
	7 2		104.48	104.28	104.11
	1 0 8		104.52	104.33	104.16
	1 4 4		104.57	104.38	104.20
3-5 0	0 4		104.16	103.95	103.82
	3 6		104.23	104.03	103.86
	7 2		104.29	104.10	103.92
	1 0 8		104.33	104.13	103.96
	1 4 4		104.38	104.17	104.01
4-0 0	0 4		103.97	103.80	103.67
	3 6		104.04	103.84	103.71
	7 2		104.10	103.90	103.76
	1 0 8		104.14	103.95	103.79
	1 4 4		104.18	103.99	103.83
4-5 0	0 4		103.80	103.63	103.50
	3 6		103.86	103.68	103.53
	7 2		103.91	103.73	103.57
	1 0 8		103.95	103.77	103.62
	1 4 4		104.00	103.81	103.66
5-0 0	0 4		103.62	103.42	103.27
	3 6		103.68	103.49	103.31
	7 2		103.74	103.55	103.36
	1 0 8		103.78	103.60	103.40
	1 4 4		103.83	103.63	103.45
LAYER NUMBER					

PREPARER Jon Peasch EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS CONSTRUCTION DATA SHEET 11	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [27]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

THE CONCRETE WAS RUBBLIZED WITH AN RMI RESONANT FREQUENCY BREAKER, RESULTING IN SMALLER PIECES THAN NORMALLY EXPERIENCED DURING CRACK & SEAT. PIECES AT THE SURFACE WERE ON AVERAGE, 2" TO 3" IN SIZE. FROM TRENCHING AND ADDITIONAL EXPLORATION IT WAS DETERMINED THAT THE PIECES ON THE BOTTOM OF THE SLAB WERE GENERALLY LARGER (5" TO 8").

FIRST LIFT OF TYPE B MIX PLACED 7/29/92
BEGAN @ 7-0 @ 12:30
FINISHED @ 7-5 @ 1:00
(PAVED TYPE B FROM STA 931+50 TO 922+75)

SECOND LIFT OF TYPE B MIX PLACED 8/7/92
BEGAN @ 7-0 @ 2:30
FINISHED @ 7-5 @ 3:00
(PAVED TYPE B FROM STA 931+75 TO 911+00)

PREPARER Jerome F. Dell EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA SUBDRAINAGE RETROFIT FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 28	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO. [01]

1. DATE SUBDRAINAGE PLACEMENT BEGAN (Month-Day-Year) [07-30-92]
   @ 5:00 PM @ 7+0
2. DATE SUBDRAINAGE PLACEMENT COMPLETED [08-03-92]
   EDGEDRAIN PLACEMENT COMPLETED 7/30/92 @ 6:00 PM @ 7+5
   LATERALS PLACED 8/3/92
3. TYPE OF DRAINAGE PIPE [8]
   Clay Tile... 1 Concrete Tile... 2 Vitrified Clay .. 3
   Perforated Plastic Bituminous Fiber... 4 Perforated Corrugated Metal... 5
   Corrugated Plastic Tubing .. 6 Drainage Mat.. 7
   Other (Specify)... 8 2" X 18" CORRUGATED PLASTIC CHANNEL, ADVAN EDGE ®
   (SEE BROCHURE ATTACHED TO 400LOS SHEET 2
   None... 9
4. DIAMETER OF PIPE (INCHES) N/A [___]
5. DEPTH OF PIPE BELOW TOP OF PAVEMENT SURFACE (INCHES) [50]
   1" BELOW PCC SLAB SURFACE
6. HORIZONTAL PLACEMENT OF PIPE FROM OUTER EDGE OF PAVEMENT (INCHES) [3.0]
7. TYPE OF PRIMARY FILTER USED [7]
   Graded Aggregate... 1 Uniformly Graded Aggregate (One Size)... 2
   Woven Fabric... 3 Non-Woven Fabric... 4 Porous PCC... 5
   Porous Bituminous Concrete... 6
   Other (Specify).. 7 HIGH MODULUS GEOTEXTILE WRAP, TYPAR ®
8. MAXIMUM PARTICLE SIZE OF PRIMARY FILTER MATERIAL (INCHES) N/A [___]
9. GRADATION OF PRIMARY FILTER MATERIAL
   % Passing #4 Sieve [___.__]
   % Passing #10 Sieve [___.__]
   % Passing #40 Sieve [___.__]
   % Passing #100 Sieve [___.__]
10. PERMEABILITY OF PRIMARY FILTER MATERIAL (FT/DAY) [___.__]
11. TYPE AND LOCATION OF SECONDARY FILTER MATERIAL [__]
    Fabric Encapsulating the Primary Filter Material... 1
    Fabric Encapsulating the Drainage Pipe.. 2
    Other (Specify)... 3
12. AVERAGE OUTLET INTERVAL (FEET) 300.0
13. PRIMARY PURPOSE OF SUBDRAINAGE INSTALLATION [1]
    Remove Free Water From Pavement Layers... 1
    Cut Off Side-Hill/Through Hill Seepage... 2
    Lower Water Table... 3
    Other (Specify)... 4

PREPARER [signature] EMPLOYER BRE DATE 8/25/92

LTPP-SPS CONSTRUCTION DATA CRACK/BREAK AND SEAT DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 29	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO. [07]

1. DATE CRACK/BREAK AND SEAT OPERATION BEGAN (Month-Day-Year) [07-27-92]
   @ STA 931+00 @ 1+50
2. DATE CRACK/BREAK AND SEAT OPERATION COMPLETED (IN OUTSIDE LANE) [07-27-92]
   @ STA 911+00 @ 6+40
3. AVERAGE PCC BREAKAGE SIZE (INCHES)
   Width [2]
   Length [2]
4. PAVEMENT BREAKER PASSES/LANE 8" WIDE SHOE [20]
5. PAVEMENT BREAKER TYPE [7]
   Pile Driver Hammer 2 Guillotine Drop Hammer... 4
   Other (Specify) 7 RESONANT FREQ. BREAKER (RMI)
6. SEATING ROLLER WEIGHT (TONS) ROLLED SECTIONS 7 & 8 ON EVENING OF 7/28/92 [39]
7. NUMBER OF SEATING ROLLER PASSES/LANE [7]
8. DEFLECTION MEASUREMENTS TAKEN
   Yes... 1 No . 2
   Before Breaking [1]
   After Breaking (Prior to Seating) [2]
   After Seating (Prior to Overlay) 7/29/92 [1]
   After Overlay [1]
9. BROKEN PAVEMENT SURFACE PREPARATION [6]
   None... 1 Sweeping .. 2 Tack Coat... 3 Leveling Course... 4
   Full Depth Repair of Failed Areas . 5
   Other (Specify)... 6 MISTED WITH WATER

PREPARER [signature] EMPLOYER BRE DATE 8/25/92

LTPP-SPS CONSTRUCTION DATA REVISED LAYER DESCRIPTIONS CONSTRUCTION DATA SHEET 2	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO. [08]

1 LAYER NUMBER	2. LAYER DESCRIPTION	3. MATERIAL TYPE CLASS	4. LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[53]				
2	[06]	[26]	[80]	----	----	----
3	[05]	[24]	[40]	----	----	----
4	[03]	[05]	[91]	88	98	0.2
5	[04]	[28]	[60]	49	67	04
6	[01]	[01]	[19]	14	23	02
7	[ ]	[ ]	[ ]	----	----	----
8	[ ]	[ ]	[ ]	----	----	----
9	[ ]	[ ]	[ ]	----	----	----
10	[ ]	[ ]	[ ]	----	----	----
11	[ ]	[ ]	[ ]	----	----	----
12	[ ]	[ ]	[ ]	----	----	----
13	[ ]	[ ]	[ ]	----	----	----
14	[ ]	[ ]	[ ]	----	----	----
15	[ ]	[ ]	[ ]	----	----	----

NOTES:

1. Layer 1 is subgrade soil, the highest numbered layer is the pavement surface.
2. Layer description codes:
   Overlay .....01 Base Layer.. .....05 Porous Friction Course..09
   Seal/Tack Coat w/overlay02 Subbase Layer.....06 Surface Treatment.....10
   Original Surface.....03 Subgrade. .....07 Embankment (Fill).....11
   HMAC Layer (Subsurface).04 Interlayer 08
   If milling was performed, the layers which were milled shall be assigned their previous layer number and material type If the layer was completely removed by milling, it shall still be shown as a layer with a zero thickness.
3. Enter the material type classification codes from Tables A.5, A.6, A.7 and A.8 which best describes the material in each layer. If the layer was milled, enter the material classification code corresponding to the type material which was removed.
4. Enter the average thickness of each layer and the maximum, minimum, and standard deviation of the thickness measurements, if known. If a layer was partially milled, the remaining thickness of the layer shall be indicated.

PREPARER [signature] EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA OVERLAY PLACEMENT OPERATIONS CONSTRUCTION DATA SHEET 7	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO. [08]

1. DATE SURFACE PREPARATION BEGAN (Month-Day-Year) [07-29-92]
2. DATE SURFACE PREPARATION COMPLETED [07-29-92]

3. SURFACE PREPARATION PRIOR TO PLACEMENT OF OVERLAY [1]
   None..... 1 Broomed. ..... 2 Broomed + Asphaltic Tack Coat.... 3
   Asphaltic Tack Coat (only).... 4

4. TACK COAT
   Layer Numbers [__ __] [__ __]
   Material Type None..... 1 SS-1.. . 2 SS-1H.. . 3 CRS-1 ... 4 [__ 2]
   CRS-2.... 5 CMS-2.... 6 CMS-2H.. 7 CSS-1.... 8 CSS-1H... 9
   Other.... 10 (Specify) _____
5 TACK COAT DILUTION
   (Percent) [50]
   Mixing Rate Parts Diluent 1 TO Parts Asphalt 1
6. TACK COAT APPLICATION RATE (Gal/Sq. Yd.) [__ . __ __]

7. ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers		
Plant 1	[2]	CATERPILLAR-2000	[__ __ 7]	[__ 7]	[5]	[6]	[__]
Plant 2	[__]	_____	[__ __ __]	[__ __]	[__]	[__]	[__]
Plant 3	[__]	_____	[__ __ __]	[__ __]	[__]	[__]	[__]

   Plant Type: Batch. ... 1 Drum Mix.. 2 Other...3 Specify_____

8. MANUFACTURER OF ASPHALT CONCRETE PAVER CEDARAPIDS
9. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER CR461 "GRAYHOUND"
10 SINGLE PASS LAYDOWN WIDTH (Feet) [12.__]

11. AC BINDER COURSE
   Layer Number [__ 5]
   Nominal First Lift Placement Thickness - Uncompacted (Inches) [4.0]
   Nominal Second Lift Placement Thickness - Uncompacted (Inches) [4 0]
12. AC SURFACE COURSE
   Layer Number [__ 6]
   Nominal First Lift Placement Thickness - Uncompacted (Inches) [2 7]
   Nominal Second Lift Placement Thickness - Uncompacted (Inches) [__ __]
13. SURFACE FRICTION COURSE
   Layer Number [__ __]
   Nominal Placement Thickness - Uncompacted (Inches) [__ __]
14. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
   Binder Course [__ + __ __]
   Surface Course [__ + __ __]
   Surface Friction Course [__ + __ __]
15. LOCATION OF LONGITUDINAL SURFACE JOINT [1]
   Between lanes.. 1 Within lane.. 2 [__ __ __]
   (specify offset from outside edge of lane in feet)
16. SIGNIFICANT EVENTS DURING CONSTRUCTION(disruptions, rain, equip. problems, etc.)

PREPARER [signature] EMPLOYER BRC DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA OVERLAY COMPACTION DATA CONSTRUCTION DATA SHEET 8	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO. [04]

1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-29-92]
2. DATE PAVING OPERATIONS COMPLETED [08-03-92]
3. LAYER NUMBER [5]
4. MIXING TEMPERATURE (°F) [___]
5. LAYDOWN TEMPERATURES (°F)
   - Mean..... 305
   - Minimum. 300
   - Standard Deviation... ___
   - Number of Tests 10
   - Maximum..... 310

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	135				
7	B	Steel-Whl Tandem	___				
8	C	Steel-Whl Tandem	___				
9	D	Steel-Whl Tandem	___				
10	E	Pneumatic-Tired	14.0	___			
11	F	Pneumatic-Tired	___	___			
12	G	Pneumatic-Tired	___	___			
13	H	Pneumatic-Tired	___		___	___	___
14	I	Single-Drum Vibr	100		___	___	___
15	J	Single-Drum Vibr.	___		___	___	___
16	K	Single-Drum Vibr.	___		___	___	___
17	L	Single-Drum Vibr.	___		___	___	___
18	M	Double-Drum Vibr.	___		___	___	___
19	N	Double-Drum Vibr.	___		___	___	___
20	O	Double-Drum Vibr.	___		___	___	___
21	P	Double-Drum Vibr.	___		___	___	___
22	Q	Other					

	COMPACTION DATA	First Lift	Second Lift	Third Lift	Fourth Lift
23	BREAKDOWN — HYSTER Roller Code (A-Q)	I	I	___	___
24	Coverages	4	4	___	___
25	INTERMEDIATE — BOMAG Roller Code (A-Q)	E	E	___	___
26	Coverages	10	10	___	___
27	FINAL — HYSTER Roller Code (A-Q)	A	A	___	___
28	Coverages	4	4	___	___
29	Air Temperature (°F)	90	70	___	___
30	Compacted Thickness (In)	3.0	3.0	___	___
31	Curing Period (Days)	50	39	___	___

PREPARER Jane F. Dell EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA OVERLAY COMPACTION DATA CONSTRUCTION DATA SHEET 8	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 8]

1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 8-0 7-9 2]
2. DATE PAVING OPERATIONS COMPLETED [0 8-0 7-9 2]

3. LAYER NUMBER [_ 6]

4. MIXING TEMPERATURE (°F) [_ _ _]
5. LAYDOWN TEMPERATURES (°F)
   - Mean.... 3 0 0
   - Minimum..... _ _ _
   - Standard Deviation. _ _ _
   - Number of Tests 3
   - Maximum. .. _ _ _

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	1 3 5				
7	B	Steel-Whl Tandem	_ _ _				
8	C	Steel-Whl Tandem	_ _ _				
9	D	Steel-Whl Tandem	_ _ _				
10	E	Pneumatic-Tired	1 4 0	_ _ _ _			
11	F	Pneumatic-Tired	_ _ _	_ _ _ _			
12	G	Pneumatic-Tired	_ _ _	_ _ _ _			
13	H	Pneumatic-Tired	_ _ _	_ _ _ _			
14	I	Single-Drum Vibr.	1 0 0		_ _ _ _	_ _ _	_ _ _
15	J	Single-Drum Vibr.	_ _ _		_ _ _ _	_ _ _	_ _ _
16	K	Single-Drum Vibr.	_ _ _		_ _ _ _	_ _ _	_ _ _
17	L	Single-Drum Vibr.	_ _ _		_ _ _ _	_ _ _	_ _ _
18	M	Double-Drum Vibr.	_ _ _		_ _ _ _	_ _ _	_ _ _
19	N	Double-Drum Vibr.	_ _ _		_ _ _ _	_ _ _	_ _ _
20	O	Double-Drum Vibr.	_ _ _		_ _ _ _	_ _ _	_ _ _
21	P	Double-Drum Vibr.	_ _ _		_ _ _ _	_ _ _	_ _ _
22	Q	Other					

	COMPACTION DATA	First Lift	Second Lift	Third Lift	Fourth Lift
	BREAKDOWN – HYSTER				
23	Roller Code (A-Q)	I	_	_	_
24	Coverages	_ 4	_ _	_ _	_ _
	INTERMEDIATE – BOMAG				
25	Roller Code (A-Q)	E	_	_	_
26	Coverages	1 0	_ _	_ _	_ _
	FINAL – HYSTER				
27	Roller Code (A-Q)	A	_	_	_
28	Coverages	_ 4	_ _	_ _	_ _
29	Air Temperature (°F)	_ 9 0	_ _ _	_ _ _	_ _ _
30	Compacted Thickness (In)	1 9	_ _	_ _	_ _
31	Curing Period (Days)	_ 0 1	_ _ _	_ _ _	_ _ _

PREPARER Jerome S. Dabl EMPLOYER BKE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA
LAYER THICKNESS MEASUREMENTS
CONSTRUCTION DATA SHEET 10-1

* STATE CODE [4 0]
* SPS PROJECT CODE [0 6]
* TEST SECTION NO. [0 8]

1. DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2. DATE MEASUREMENTS COMPLETED [0 8-2 7-9 2]

SHEET 1 OF 2

LAYER THICKNESS MEASUREMENTS (Inches)

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	FINAL SURFACE	SECOND 3" LIFT	ORIGINAL CONC. SURFACE
0+00	04		103.01	102.86	102.36
	36		103.07	102.92	102.39
	72		103.13	102.98	102.44
	108		103.17	103.02	102.49
	144		103.21	103.06	102.54
0+50	04		102.92	102.67	102.16
	36		102.89	102.74	102.20
	72		102.94	102.80	102.25
	108		102.99	102.84	102.29
	144		103.04	102.88	102.34
1+00	04		102.58	102.42	101.96
	36		102.65	102.52	102.00
	72		102.71	102.57	102.05
	108		102.76	102.58	102.09
	144		102.80	102.63	102.13
1+50	04		102.45	102.28	101.76
	36		102.53	102.35	101.81
	72		102.58	102.40	101.86
	108		102.61	102.44	101.90
	144		102.65	102.48	101.94
2+00	04		102.20	102.07	101.58
	36		102.26	102.14	101.61
	72		102.32	102.19	101.66
	108		102.37	102.22	101.70
	144		102.41	102.25	101.74
2+50	04		101.97	101.84	101.37
	36		102.03	101.90	101.40
	72		102.09	101.94	101.45
	108		102.14	101.98	101.49
	144		102.19	102.02	101.53
			TBM PAINT DOT ON TOP OF FNC. POST (@ BRACE POSTS) STA. 5+00± @ WEST R.O.W ASSUMED ELEV 100.00		
LAYER NUMBER					

PREPARER Jon Pennel EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA LAYER THICKNESS MEASUREMENTS CONSTRUCTION DATA SHEET 10-1	* STATE CODE [4 0] * SPS PROJECT CODE [0 6] * TEST SECTION NO [0 8]

1. DATE MEASUREMENTS BEGAN (Month-Day-Year) [0 6-0 3-9 2]
2. DATE MEASUREMENTS COMPLETED [0 6-2 7-9 2]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE	FINAL SURFACE	SECOND 3" LIFT	ORIGINAL CONC SURFACE
3-00	04		101.75	101.58	101.17
	36		101.82	101.66	101.20
	72		101.88	101.72	101.25
	108		101.93	101.77	101.29
	144		101.99	101.81	101.33
3-50	04		101.57	101.40	100.96
	36		101.65	101.50	100.99
	72		101.71	101.55	101.04
	108		101.77	101.60	101.08
	144		101.83	101.65	101.14
4-00	04		101.35	101.18	100.74
	36		101.42	101.26	100.78
	72		101.49	101.31	100.83
	108		101.54	101.36	100.86
	144		101.59	101.40	100.91
4-50	04		101.15	101.00	100.56
	36		101.23	101.08	100.59
	72		101.30	101.13	100.64
	108		101.35	101.18	100.69
	144		101.41	101.22	100.73
5-00	04		100.96	100.84	100.37
	36		101.05	100.91	100.41
	72		101.11	100.95	100.45
	108		101.17	100.99	100.49
	144		101.22	101.03	100.53
--					
-+-					
LAYER NUMBER					

PREPARER Jon Pesent EMPLOYER BRE DATE 3/26/93

LTPP-SPS CONSTRUCTION DATA MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS CONSTRUCTION DATA SHEET 11	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO. [09]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

THE CONCRETE WAS RUBBLIZED WITH AN RMI RESONANT FREQUENCY BREAKER, RESULTING IN SMALLER PIECES THAN NORMALLY EXPERIENCED DURING CRACK & SEAT. PIECES AT THE SURFACE WERE ON AVERAGE, 2" TO 3" IN SIZE. FROM TRENCHING AND ADDITIONAL EXPLORATION IT WAS DETERMINED THAT THE PIECES ON THE BOTTOM OF THE SLAB WERE GENERALLY LARGER (5" TO 8")

FIRST LIFT OF TYPE A MIX PLACED 7/29/92
BEGAN @ 8-0 @ 5:00
FINISHED @ 8-5 @ 5:30
(PAVED TYPE A FROM STA 922+75 TO 911+25)

SECOND LIFT OF TYPE A MIX PLACED 8/3/92
BEGAN @ 8-0 @ 5:15
FINISHED @ 8-5 @ 5:45
(PAVED TYPE A FROM STA 923+00 TO 911+00)

SURFACE COURSE (TYPE B) PLACED 8/7/92
BEGAN @ 8-0 @ 3:30
FINISHED @ 8-5 @ 4:00
(PAVED TYPE B FROM STA 931+75 TO 910+75)

PREPARER Jerry C. Dell EMPLOYER BRE DATE 8/31/92

LTPP-SPS CONSTRUCTION DATA SUBDRAINAGE RETROFIT FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 28	* STATE CODE [40] * SPS PROJECT CODE [06] * TEST SECTION NO [09]

1. DATE SUBDRAINAGE PLACEMENT BEGAN (Month-Day-Year) [07-31-92]
   @ 8:00A @ 8+0
2. DATE SUBDRAINAGE PLACEMENT COMPLETED [08-03-92]
   EDGE DRAIN PLACEMENT COMPLETED 7/31/92 @ 10:30 @ 8+5
   LATERALS PLACED 8/3/92
3. TYPE OF DRAINAGE PIPE [8]
   Clay Tile... 1 Concrete Tile.. 2 Vitrified Clay... 3
   Perforated Plastic Bituminous Fiber... 4 Perforated Corrugated Metal... 5
   Corrugated Plastic Tubing... 6 Drainage Mat.. 7
   Other (Specify)... 8 2" x 18" CORRUGATED PLASTIC CHANNEL, ADVANEDGE®
   None... 9 (SEE BROCHURE ATTACHED TO 400605 SHEET 28)
4. DIAMETER OF PIPE (INCHES) N/A [ ]
5. DEPTH OF PIPE BELOW TOP OF PAVEMENT SURFACE (INCHES) [9 0]
   1" BELOW PCC SLAB SURFACE
6. HORIZONTAL PLACEMENT OF PIPE FROM OUTER EDGE OF PAVEMENT (INCHES) [3 .0]
7. TYPE OF PRIMARY FILTER USED [7]
   Graded Aggregate .. 1 Uniformly Graded Aggregate (One Size)... 2
   Woven Fabric... 3 Non-Woven Fabric... 4 Porous PCC... 5
   Porous Bituminous Concrete . 6
   Other (Specify)... 7 HIGH MODULUS GEOTEXTILE WRAP, TYPAR®
8. MAXIMUM PARTICLE SIZE OF PRIMARY FILTER MATERIAL (INCHES) N/A [ ]
9. GRADATION OF PRIMARY FILTER MATERIAL
   % Passing #4 Sieve [ ] % Passing #40 Sieve [.]
   % Passing #10 Sieve [.] % Passing #100 Sieve [.]
10. PERMEABILITY OF PRIMARY FILTER MATERIAL (FT/DAY) [ ]
11. TYPE AND LOCATION OF SECONDARY FILTER MATERIAL [ ]
    Fabric Encapsulating the Primary Filter Material... 1
    Fabric Encapsulating the Drainage Pipe .. 2
    Other (Specify)... 3 _____
12. AVERAGE OUTLET INTERVAL (FEET) 3 [0 0 0]
13. PRIMARY PURPOSE OF SUBDRAINAGE INSTALLATION [1]
    Remove Free Water From Pavement Layers... 1
    Cut Off Side-Hill/Through Hill Seepage... 2
    Lower Water Table... 3
    Other (Specify)... 4 _____

PREPARER [signature] EMPLOYER BRE DATE 8/25/92

LTPP-SPS CONSTRUCTION DATA CRACK/BREAK AND SEAT DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES CONSTRUCTION DATA SHEET 29	* STATE CODE [46] * SPS PROJECT CODE [06] * TEST SECTION NO. [24]

1. DATE CRACK/BREAK AND SEAT OPERATION BEGAN (Month-Day-Year) [07-27-92]
   @ STA 451+00 @ 1:50, @ 8+0 @ 2:00
2. DATE CRACK/BREAK AND SEAT OPERATION COMPLETED (IN OUTSIDE LANE) [07-27-92]
   @ STA 411+00 @ 6:40
3. AVERAGE PCC BREAKAGE SIZE (INCHES) [2]
   Width [2]
   Length [20]
4. PAVEMENT BREAKER PASSES/LANE 8" WIDE SHOE [7]
5. PAVEMENT BREAKER TYPE
   Pile Driver Hammer .. 2 Guillotine Drop Hammer .. 4
   Other (Specify)... 7 RESONANT FREQ BREAKER (RMI)
6. SEATING ROLLER WEIGHT (TONS) ROLLED SECTIONS 7 & 8 ON EVENNING OF 7/28/92 [39]
7. NUMBER OF SEATING ROLLER PASSES/LANE [7]
8. DEFLECTION MEASUREMENTS TAKEN
   Yes... 1 No .. 2 [1]
   Before Breaking [2]
   After Breaking (Prior to Seating) [1]
   After Seating (Prior to Overlay) 7/29/92 [1]
   After Overlay [6]
9. BROKEN PAVEMENT SURFACE PREPARATION
   None... 1 Sweeping... 2 Tack Coat... 3 Leveling Course .. 4
   Full Depth Repair of Failed Areas... 5
   Other (Specify)... 6 MISTED WITH WATER

PREPARER [signature] EMPLOYER BRE DATE 8/25/92

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REHABILITATION DATA -

SURFACE COURSE (TYPE B MIX)

Revised December 15, 1989

*STATE ASSIGNED ID [_ _ _ _]

SHEET 3

*STATE CODE [4 0]

REHABILITATION DATA

*SHRP SECTION ID [0 6 0 3]

LTPP PROGRAM

ASPHALT CONCRETE OVERLAY AGGREGATE PROPERTIES TYPE B (FOR ADDITIONAL IN SEE SHA RECORDS ATTACHED

* 1. LAYER NUMBER (FROM SHEET 2) [5]

COMPOSITION OF COARSE AGGREGATE (Items 2 , 3., and 4)

				TYPE	PERCENT
Crushed Stone	1	Crushed Slag . . .	4	* 2 [1]	[4 4]
Gravel . .	2	Manufactured		* 3 [6]	[5 6]
Crushed Gravel	3	Lightweight....	5	* 4. [_]	[_ _ _]
Other (Specify) "MINE CHAT"			6		

* 5 GEOLOGIC CLASSIFICATION OF COARSE AGGREGATE [_ _]
(SEE GEOLOGIC CLASSIFICATION CODES, TABLE A.9)

COMPOSITION OF FINE AGGREGATE (Items 6 , 7., and 8)

			TYPE	PERCENT
Natural Sand	1	* 6.	[1]	[2 4]
Manufactured Sand (From		* 7.	[2]	[7 6]
Crushed Gravel or Stone)	2	* 8.	[_]	[_ _ _]
Recycled Concrete....	3			
Other (Specify)_____	4			

* 9. TYPE OF MINERAL FILLER [_]

Stone Dust . .	1	Portland Cement...	3
Hydrated Lime . .	2	Fly Ash	4
Other (Specify)_____			5

AGGREGATE DURABILITY TEST RESULTS (Items 10 to 13.)
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
10	COARSE	_ 1	_ 2 4 4 _ _
11.	COARSE	_ _	_ _ _ _ _ _
12.	COARSE	_ _	_ _ _ _ _ _
13	COMBINED COARSE AND FINE	_ _	_ _ _ _ _ _

14 POLISH VALUE OF COARSE AGGREGATES _ _
(SURFACE LAYER ONLY) (AASHTO T279, ASTM D3319)

Revised December 15, 1989

SHEET 4

REHABILITATION DATA

LTPP PROGRAM

*STATE ASSIGNED ID [_ _ _ _]

*STATE CODE [4 0]

*SHRP SECTION ID [0 6 0 3]

ASPHALT CONCRETE OVERLAY
AGGREGATE PROPERTIES (CONTINUED)

* 1 LAYER NUMBER (FROM SHEET 2) [5]

* 2 GRADATION OF COMBINED AGGREGATES

Sieve Size or No	% Passing	Sieve Size or No	% Passing
2"	[_ _ _]	No 4 . .	[6 0]
1 1/2"	[_ _ _]	No 8	[_ _]
1"	[_ _ _]	No 10 . .	[2 8]
7/8" . .	[_ _ _]	No 16	[_ _]
3/4 " . ..	[1 0 0]	No 30 .	[_ _]
5/8"..	[_ _ _]	No 40 ..	[1 1]
1/2".	[_ 9 4]	No 50 .	[_ _]
3/8"	[8 8]	No 80	[_ 7]
		No 100 ...	[_ _]
		No 200	[_ 6]

BULK SPECIFIC GRAVITIES (Items 3. to 6)

* 3 COARSE AGGREGATE (AASHTO T85 OR ASTM C127) [_ _ _ _]

* 4 FINE AGGREGATE (AASHTO T84 OR ASTM C128) [_ _ _ _]

* 5. MINERAL FILLER (AASHTO T100 OR ASTM D854) [_ _ _ _]

* 6 AGGREGATE COMBINATION (CALCULATED - EQ 7 1) [_._ _ _]

7. EFFECTIVE SPECIFIC GRAVITY OF AGGREGATE COMBINATION (CALCULATED - EQ 7 2) 2 6 2 7

Revised December 15, 1989

*STATE ASSIGNED ID [_ _ _ _]

SHEET 5

*STATE CODE [4 0]

REHABILITATION DATA

*SHRP SECTION ID [0 6 0 3]

LTPP PROGRAM

ASPHALT CONCRETE OVERLAY
ASPHALT CEMENT PROPERTIES

* 1. LAYER NUMBER (FROM SHEET 2) [5]

* 2 ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) AC-20 [0 4]
(IF OTHER, SPECIFY _____)

* 3 SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [3 1]
(IF OTHER, SPECIFY _____)

* 4. SPECIFIC GRAVITY OF ASPHALT CEMENT
(AASHTO T228 OR ASTM D70) [1 0 1 0]

* 5 VISCOSITY OF ASPHALT AT 140°F (POISES)
(AASHTO T202 OR ASTM D2171) [_ _ 1 9 1 6]

* 6 VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES)
(AASHTO T201 OR ASTM D2170) [_ 4 0 0 . _ _]

* 7 PENETRATION AT 77°F (AASHTO T49 OR ASTM D5)
(TENTHS OF A MM) (100 G., 5 SEC.) [_ 7 0 .]

ASPHALT MODIFIERS (SEE TYPE CODE, TABLE A.15) (Items 8. and 9.)

		TYPE	QUANTITY(%)
* 8.	MODIFIER #1	[_ _]	[_ _.]
* 9	MODIFIER #2	[_ _]	[_ _.]

(IF OTHER, SPECIFY TYPE _____)

10 DUCTILITY AT 77°F (CM)
(AASHTO T51 OR ASTM D113) _ _ _

11 DUCTILITY AT 39.2°(CM)
(AASHTO T51 OR ASTM D113) _ _ _

12. TEST RATE FOR DUCTILITY MEASUREMENT AT 39.2°F (CM/MIN) _ _ _

13. PENETRATION AT 39.2°F (AASHTO T49 OR ASTM D5)
(TENTHS OF A MM) (200 G., 60 SEC) _ _ _

14 RING AND BALL SOFTENING POINT (AASHTO T53) (°F) _ _ _

Revised December 15, 1989

*STATE ASSIGNED ID [_ _ _ _]

SHEET 6

*STATE CODE [4 0]

REHABILITATION DATA

*SHRP SECTION ID [0 6 0 3]

LTPP PROGRAM

ASPHALT CONCRETE OVERLAY
LABORATORY AGED ASPHALT CEMENT PROPERTIES

* 1.LAYER NUMBER (FROM SHEET 2) [5]

2.TEST PROCEDURE USED TO MEASURE AGING EFFECTS 2
ASTM D1754 - Thin Film Oven Test. 1
ASTM D2872 - Rolling Thin Film Oven Test.. 2
Other (Specify)_____ 3

3 VISCOSITY OF ASPHALT AT 140°F (POISES) _ _4049
(AASHTO T202 OR ASTM D2171)

4 VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) _ _ _ _ _ _
(AASHTO T201 OR ASTM D2170)

5 DUCTILITY AT 77°F (CM) (AASHTO T51 OR ASTM D113) 110+

6 DUCTILITY AT 39.2°F (CM) (AASHTO T51 OR ASTM D113) _ _ _.

7 TEST RATE FOR DUCTILITY MEASUREMENT AT 39.2°F (CM/MIN) _ _ _

8 PENETRATION AT 77°F, 100 G , 5 SEC.
(TENTHS OF A MM) (AASHTO T49 OR ASTM D5) _ _ _

9 PENETRATION AT 39.2°F, 200 G, 60 SEC.
(TENTHS OF A MM) (AASHTO T49 OR ASTM D5) _ _

10 RING AND BALL SOFTENING POINT (°F) (AASHTO T53) _ _ _

11.WEIGHT LOSS (PERCENT) _ _

Revised December 15, 1989

SHEET 7

REHABILITATION DATA

LTPP PROGRAM

*STATE ASSIGNED ID [_ _ _ _]

*STATE CODE [4 0]

*SHRP SECTION ID [0 6 0 3]

ASPHALT CONCRETE OVERLAY
LABORATORY MIXTURE DESIGN

* 1. LAYER NUMBER (FROM SHEET 2)	[5]
2 MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (EQ. 7 3)	2 4 2 9
3 BULK SPECIFIC GRAVITY (ASTM D1188)	2 3 0 2
4 OPTIMUM ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)	_ 5 1
5 PERCENT AIR VOIDS (EQ. 7.4) $\frac{2.429 - 2.302}{2.429} \times 100$	_ 5 2
6 MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559)	_ _ _ _
7 NUMBER OF BLOWS	_ _.
8 MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559)	_ _ _ _.
9. HVEEM STABILITY (AASHTO T246 OR ASTM D1561)	_ _ _.
10 HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM D1561)	_ _ _ _.

*STATE ASSIGNED ID [_ _ _ _]

SHEET 8

*STATE CODE [4 0]

REHABILITATION DATA

*SHRP SECTION ID [0 6 0 3]

LTPP PROGRAM

ASPHALT CONCRETE OVERLAY
MIXTURE PROPERTIES AS PLACED

* 1 LAYER NUMBER (FROM SHEET 2) [5]

* 2 TYPE OF SAMPLES [1]
Mixed in Field, Compacted in Laboratory ... 1
Mixed and Compacted in Field 2

* 3 MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (EQ. 7.3) [2 4 4 3]

* 4. BULK SPECIFIC GRAVITY (ASTM D1188)
MEAN .....[2.2 9 7] NUMBER OF TESTS . 3
MINIMUM .. .. 2 2 9 7 MAXIMUM 2 2 9 7
STD. DEV. . _ _ _ _

* 5 ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)
MEAN .... [_ 4 7] NUMBER OF TESTS . _ _
MINIMUM .... _ _ _ MAXIMUM ... . .. _ _ _
STD. DEV ... . _ _ _

* 6 PERCENT AIR VOIDS (EQ 7 4)
MEAN ....[_ 6 0] NUMBER TESTS . _ _
MINIMUM ... _ _ _ MAXIMUM . _ _ _
STD DEV. ..... _ _._

7 VOIDS IN MINERAL AGGREGATE (PERCENT) (EQ 7.5)
MEAN . .. . 1 6 7 NUMBER OF TESTS .. . _ _
MINIMUM _ _ _ MAXIMUM .. .. _ _ _
STD. DEV .. .. _ _ _

8 EFFECTIVE ASPHALT CONTENT (PERCENT) (EQ 7.6)
MEAN ..... _ _ _ NUMBER OF TESTS . _ _
MINIMUM ..... _ _ _ MAXIMUM . ..... _ _ _
STD. DEV. .... _ _ _

OKLAHOMA DEPARTMENT OF TRANSPORTATION
Asphalt Plant Inspector's Work Sheet

Project No. TR 35-4 (148) 214 Lot No. #6

Mix Type B INS Design No. 2012-OAPA-92077

EXTRACTIONS AND GRADATIONS (OHD L 25, AASHTO T-30, T-27 T-11)

Date		8-9-92												
Sample No.		941-00												
SIEVE SIZE	JMF	Acc. Wt. Retd.	Acc. % Retd.	Total Agg. % Passing	Acc. Wt. Retd.	Acc. % Retd.	Total Agg. % Passing	Acc. Wt. Retd.	Acc. % Retd.	Total Agg. % Passing	Acc. Wt. Retd.	Acc. % Retd.	Total Agg. % Passing
2 1/2"													
2"													
1 1/2"													
1"													
3/4"	100	—	—	100									
1/2"	97	71	6.0	94.0									
3/8"	90	137	11.6	88.4									
No. 4	58	476	40.3	59.7									
No. 10	29	851	72.2	27.8									
No. 40	12	1050	89.1	10.9									
No. 80	8	1093	93.21	6.8									
No. 200	5.4	1114	94.5	5.5									
% AC	5.1			4.7									
Pan													
Original Mix	(W 1)	1236.8											
Moist. & Vol.	(W.)	1236.8											
Extr. Aggr.	(W.)	1162.6											
Ash	(W.)	15.7											
Total Aggr.	(W.+W.)	1178.3											

MOISTURE & VOLATILE SAMPLE

Pan				
Original Mix	(W_{MM})			
Dry Mix	(W_{DM})			

$$\% AC = \frac{(W_1 - W_2) - (W_1 + W_2)}{W_1 - W_2} \times 100$$

$$W_2 = W_1 - \frac{W_{3M} \times W}{W_{1M}}$$

W_M = Weight of Moisture Sample Before Drying

W_{3M} = Weight of Moisture Sample After Drying

NUCLEAR GAUGE ASPHALT CONTENT

Background Count				
% AC - Moist. & Vol. (P_{GM})				
% AC				

P_{GM} = % AC from gauge

$$\% AC = \frac{(P_{GM} \times W_{1M}) - (W_M - W_{3M})}{W_{3M}} \times 100$$

ROADWAY DENSITY (OHD L 14)

Max. Theo. Sp. Gr. at JMF														
Specimen No.														
Station														
Expressway														
Lane														
Thickness														
A (Wt. Spec. in Air)														
C (Wt. Spec. in Water)														
A - C														
Core Spec. Grav.														
Average Core Spec. Grav.														
% Roadway Density														

$$\text{Core Spec. Grav} = \frac{A}{A - C}$$

$$\% \text{ Rdy Density} = \frac{\text{Avg. Core Spec. Grav.}}{\text{Max. Theo. Sp. Gr. @ JMF}} \times 100$$

MAXIMUM SPECIFIC GRAVITY

(AASHTO T 209)

Sub-Lot No.					
Sample No. —					
Flask No.					
Sample Wt. (A)					
Cam. Wt. (B)					
A + B (C)					
Sample + Flask + H_2O (D)					
C − D (E)					
Rice's Gravity (A/E)					
Avg. Rice Gravity					
Eff. Spec. Grav. (ESG)					

$$ESG = \frac{\%\ Aggr.}{\frac{100}{\text{Rice's Gravity}} - \frac{\%\ AC}{\text{Spec. Grav. AC}}}$$

% AC = % AC From Extraction
% Aggr. = 100 − % AC
Spec. Grav. AC is given on mix design

LAB MOLDED DENSITY

(OHD L-8, L 14)

Eff. Spec. Grav	2.627												
Spec. Grav. AC	1.0101												
% AC	4.7												
Max. Theo. Spec. Grav	2.443												
Specimen No.	1	2	3										
A (Wt. Spec. in Air)	1196.7	1199.0	1201.1										
C (Wt. Spec. in Water)	675.8	677.0	678.3										
A − C	520.9	522.0	522.8										
L.M. Spec. Grav	2.297	2.297	2.297										
Avg. L.M. Spec. Grav	2.297												
% L.M. Density	94.0												
% Air Voids	6.0												
% V.M.A.	16.-												

$$L.M.\ Spec.\ Grav. = \frac{A}{A - C}$$

% Air Voids = 100 − % L.M. Density

$$Max.\ Theo.\ Spec.\ Grav = \frac{100}{\frac{\%\ AC}{\text{Spec. Grav. AC}} + \frac{\%\ Aggr.}{ESG}}$$

$$\%\ V.M.A. = 100 - \frac{\text{Avg. L.M. Spec. Grav} \times \%\ Aggr.}{ESG}$$

$$\%\ L.M.\ Density = \frac{\text{Avg. L.M. Spec. Grav.}}{\text{Max. Theo. Spec. Grav.}} \times 100$$

HVEEM STABILITY

(OHD L 16)

Specimen No.													
Specimen Height													
V Lbs.	(Pv) V p.s.i.	Stabilometer Reading P.S.I. Lateral (Ph)											
500	40												
1000	80												
2000	160												
3000	240												
4000	320												
5000	400												
6000	480												
Final Displacement (D_2)													
Stability Value													
Stability Value Corrected													
Avg. Stability Value													

$$Stability = \frac{22.2}{\frac{P_h \times D_2}{400 - P_h} + 0.222}$$

P_h = Stabilometer Reading @ 5000 lbs.
P_v = 400 @ 5000 lbs.
D_2 = Turns Displacement

SAND EQUIVALENT

(AASHTO T 176)

S.E. No.													
Sand Reading													
Clay Reading													
Sand Equivalent													
Average Sand Equivalent													

$$Sand\ Equivalent = \frac{\text{Sand Reading}}{\text{Clay Reading}} \times 100$$

By: Bill Imas

L.D. No. 004-010-092 ASPH. CONC. TYPE B INS. Design No. 3012-OAPA-92077

Project No. IR-35-4(148)214 11392(04) Hwy. I-35 Avg. Daily Traffic 5000+

Contractor: Cummins Const. Co. Producer: Cummins Const. Co. @ Blackwell, Okla.

MATERIAL	SOURCE	% USED
5/8" Chips	Stewart Stone @ Pawnee, Okla.	22
Mine Chat	Bingham S & G @ Treese, Kansas	28
Screenings	The Quapaw Co. @ Pawnee, Okla.	38
Coarse Sand	Arkansas S & G @ Arkansas City, Kansas	12
Asphalt Cement (AC-20)	Total @ Arkansas City, Kansas	

Laboratory No. Percent Passing	92077 Chips	92078 Chat	92079 Scrns	92080 Sand	Combined Aggregate	Job Formula	JMF Tolerances
					100	100	-0-
3/4"	100			100	97	97	± 7
1/2"	84	100		98	90	90	± 7
3/8"	60	96	100	93	58	58	± 7
No. 4	10	26	97	71	29	29	± 4
10	1	3	51	16	12	12	± 4
40	1	1	24	1	8	8	± 4
80	1	1	18	0.3	5.4	5.4	± 2
No. 200	0.8	0.4	13.3			5.1	±0.4
% Asphalt Cement (AC-20)						305	±20

Mix temperature @ discharge from mixer, °F

*Anti-Strip agent required 0.5% by weight of Asphalt Cement

Tests on Asphalt Cement:	Found	Required
Penetration @ 25° C	70	60-100
Viscosity @ 60° C	1916	2000±400
Viscosity @ 135° C	400	300 Min.
Residue from RTFO		
Viscosity @ 60° C	4049	8000 Max.
Ductility @ 25° C	110+	50 Min.
Specific Gravity @ 25° C	1.0101	

Tests on Aggregates:	Found	Required
Sand Equivalent	72	45 Min.
L.A. Abrasion % Wear	24.4	40 Max.
Durability (DC)	60	40 Min.
Insoluble Residue (Cal)	35.8	30 Min.
Fractured Faces	100	75 w/2
BISG	2.627	
Hveem Weight	1200	

Tests on Compressed Mixtures:

Percent Asphalt	Spec. Grav. Specimen	Max. Theo. Spec Grav.	Dens. % of Max. Theo.	Dens. % Req'd. of Max. Theo.	V.M.A. (%)	V.M.A. (Min.%)	Hveem Stab.	Hveem Stab. (Min
4.5	2.284	2.450	93.2	94-96	17.1	15	44	40
5.0	2.302	2.432	94.6		16.8		46	
5.5	2.324	2.414	96.3		16.4		41	

Retained Strength 90.2 % 75% Minimum Required

Recommended 5.1 % Asphalt Cement (AC-20)

Compacted Wt. 106.8 lbs./sq.yd./1" thickness

Max. Theo. Spec. Grav. @ 5.1 % Asphalt Cement is 2.429 (151.6 pcf).

MEET SPECIFICATION REQUIREMENTS

DT-Form 352-84

RECEIVED
APR 16 1992

STATE OF OKLAHOMA
DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION

To: Contractor

Job No. IR-35-4(148)214 11392(04)
County Kay
Division 4

Enclosed herewith please find Mix Design No. 3012-OAPA-92077 for Asphalt Concrete Type B Insol. which was designed at your request utilizing the sources of materials furnished to us by you or by your producer.

If you concur in the mix design as stated, please sign in the appropriate space below and return one copy to the Materials Division for distribution. This will be the accepted design to be used on the above captioned project.

Sincerely,

J. D. Telford

J. D. Telford, P. E.
Materials Engineer

I, Wade B Hopkins, of the firm of Cummins Const. Co. accept the above mix design to be used on Project No. IR-35-4(148)214 11392(04).

By: [signature]

Title: Vice President

RECEIVED
APR 17 1992
MATERIALS DIVISION

Distribution: Materials
2-Asphalt Design
2-Liaison
Construction
Liquid Asphalt
Div. 4
[redacted]
Cummins Const. Co.

RECEIVED
APR 22 1992
Perry Residency

Transmitted: 4-14-92

REHABILITATION DATA -

BINDER COURSE (TYPE A MIX)

Revised December 15, 1989

*STATE ASSIGNED ID [_ _ _ _]

SHEET 3

*STATE CODE [4 0]

REHABILITATION DATA

*SHRP SECTION ID [0 6 0 8]

LTPP PROGRAM

ASPHALT CONCRETE OVERLAY
AGGREGATE PROPERTIES TYPE A (FOR ADDITIONAL INFO SEE SHA RECORDS ATTACHED)

* 1 LAYER NUMBER (FROM SHEET 2) [5]

COMPOSITION OF COARSE AGGREGATE (Items 2., 3., and 4)

				TYPE	PERCENT
Crushed Stone..	1	Crushed Slag	4	* 2	[1] [1 0 0]
Gravel	2	Manufactured Lightweight .	5	* 3.	[_] [_ _ _.]
Crushed Gravel .	3			* 4.	[_] [_ _ _]
Other (Specify)_____			6		

* 5.GEOLOGIC CLASSIFICATION OF COARSE AGGREGATE [_ _]
(SEE GEOLOGIC CLASSIFICATION CODES, TABLE A.9)

COMPOSITION OF FINE AGGREGATE (Items 6 , 7 , and 8)

		TYPE	PERCENT
Natural Sand	1	* 6. [2]	[_ 7 3]
Manufactured Sand (From Crushed Gravel or Stone)	2	* 7. [1]	[_ 2 7]
Recycled Concrete.	3	* 8. [_]	[_ _ _.]
Other (Specify)_____	4		

* 9.TYPE OF MINERAL FILLER [_]

Stone Dust. .	1	Portland Cement...	3
Hydrated Lime	2	Fly Ash	4
Other (Specify)_____			5

AGGREGATE DURABILITY TEST RESULTS (Items 10 to 13.)
(SEE DURABILITY TEST TYPE CODES,TABLE A 13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
10	COARSE	_ 1	_ 2 4 2 _ _
11.	COARSE	_ _	_ _ _ _ _ _
12.	COARSE	_ _	_ _ _ _ _ _
13	COMBINED COARSE AND FINE	_ _	_ _ _ _ _ _

14 POLISH VALUE OF COARSE AGGREGATES _ _
(SURFACE LAYER ONLY) (AASHTO T279, ASTM D3319)

Revised December 15, 1989

SHEET 4

REHABILITATION DATA

LTPP PROGRAM

*STATE ASSIGNED ID [_ _ _ _]

*STATE CODE [4 0]

*SHRP SECTION ID [0 6 0 8]

ASPHALT CONCRETE OVERLAY
AGGREGATE PROPERTIES (CONTINUED)

* 1. LAYER NUMBER (FROM SHEET 2) [5]

* 2. GRADATION OF COMBINED AGGREGATES

Sieve Size or No	% Passing	Sieve Size or No	% Passing
2"	[_ _ _]	No 4	[5 2]
1 1/2"	[1 0 0]	No 8	[_ _]
1"	[1 0 0]	No 10	[2 9]
7/8"	[_ _ _]	No 16	[_ _]
3/4"	[_ _ _]	No. 30	[_ _]
5/8"	[_ _ _]	No. 40	[1 7]
1/2"	[_ 8 5]	No. 50	[_ _]
3/8"	[_ _]	No. 80	[_ 8]
		No 100	[_ _]
		No. 200	[_ 4]

BULK SPECIFIC GRAVITIES (Items 3. to 6.)

* 3. COARSE AGGREGATE (AASHTO T85 OR ASTM C127) [_._ _ _]

* 4 FINE AGGREGATE (AASHTO T84 OR ASTM C128) [_ _ _ _]

* 5. MINERAL FILLER (AASHTO T100 OR ASTM D854) [_ _ _ _]

* 6. AGGREGATE COMBINATION (CALCULATED - EQ. 7.1) [_._ _ _]

7. EFFECTIVE SPECIFIC GRAVITY OF AGGREGATE COMBINATION (CALCULATED - EQ. 7.2) 2 6 1 5

Revised December 15, 1989

*STATE ASSIGNED ID [_ _ _ _]

SHEET 5

*STATE CODE [4 0]

REHABILITATION DATA

*SHRP SECTION ID [0 6 0 8]

LTPP PROGRAM

ASPHALT CONCRETE OVERLAY
ASPHALT CEMENT PROPERTIES

* 1 LAYER NUMBER (FROM SHEET 2) [5]

* 2 ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) AC-20 [0 4]
(IF OTHER, SPECIFY _____)

* 3 SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [3 1]
(IF OTHER, SPECIFY _____)

* 4.SPECIFIC GRAVITY OF ASPHALT CEMENT
(AASHTO T228 OR ASTM D70) [1.0 1 0]

* 5.VISCOSITY OF ASPHALT AT 140°F (POISES)
(AASHTO T202 OR ASTM D2171) [_ _ 1 9 1 6]

* 6.VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES)
(AASHTO T201 OR ASTM D2170) [_ 4 0 0._ _]

* 7 PENETRATION AT 77°F (AASHTO T49 OR ASTM D5)
(TENTHS OF A MM) (100 G , 5 SEC.) [_ 7 0.]

ASPHALT MODIFIERS (SEE TYPE CODE, TABLE A.15) (Items 8. and 9.)

	TYPE	QUANTITY(%)
* 8. MODIFIER #1	[_ _.]	[_ _.]
* 9. MODIFIER #2	[_ _]	[_ _.]

(IF OTHER, SPECIFY TYPE _____)

10.DUCTILITY AT 77°F (CM)
(AASHTO T51 OR ASTM D113) _ _ _.

11.DUCTILITY AT 39.2°(CM)
(AASHTO T51 OR ASTM D113) _ _ _.

12.TEST RATE FOR DUCTILITY MEASUREMENT AT 39.2°F (CM/MIN) _ _ _

13 PENETRATION AT 39 2°F (AASHTO T49 OR ASTM D5)
(TENTHS OF A MM) (200 G , 60 SEC.) _ _ _.

14 RING AND BALL SOFTENING POINT (AASHTO T53) (°F) _ _ _

Revised December 15, 1989

SHEET 6

REHABILITATION DATA

LTPP PROGRAM

*STATE ASSIGNED ID [_ _ _ _]

*STATE CODE [4 0]

*SHRP SECTION ID [0 6 0 8]

ASPHALT CONCRETE OVERLAY
LABORATORY AGED ASPHALT CEMENT PROPERTIES

* 1. LAYER NUMBER (FROM SHEET 2) [5]

2. TEST PROCEDURE USED TO MEASURE AGING EFFECTS 2
ASTM D1754 - Thin Film Oven Test 1
ASTM D2872 - Rolling Thin Film Oven Test. . . . 2
Other (Specify)_____ 3

3 VISCOSITY OF ASPHALT AT 140°F (POISES) (AASHTO T202 OR ASTM D2171) _ _ 4 0 4 9

4 VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) (AASHTO T201 OR ASTM D2170) _ _ _ _ . _ _

5 DUCTILITY AT 77°F (CM) (AASHTO T51 OR ASTM D113) 1 1 0 +

6 DUCTILITY AT 39 2°F (CM) (AASHTO T51 OR ASTM D113) _ _ _

7. TEST RATE FOR DUCTILITY MEASUREMENT AT 39 2°F (CM/MIN) _ _ _

8. PENETRATION AT 77°F, 100 G , 5 SEC (TENTHS OF A MM) (AASHTO T49 OR ASTM D5) _ _ _

9. PENETRATION AT 39.2°F, 200 G, 60 SEC. (TENTHS OF A MM) (AASHTO T49 OR ASTM D5) _ _

10 RING AND BALL SOFTENING POINT (°F) (AASHTO T53) _ _ _

11 WEIGHT LOSS (PERCENT) _ _

Revised December 15, 1989

SHEET 7

REHABILITATION DATA

LTPP PROGRAM

*STATE ASSIGNED ID [_ _ _ _]

*STATE CODE [4 0]

*SHRP SECTION ID [0 6 0 8]

ASPHALT CONCRETE OVERLAY
LABORATORY MIXTURE DESIGN

* 1. LAYER NUMBER (FROM SHEET 2)	[5]
2 MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (EQ 7 3)	2 4 6 6
3 BULK SPECIFIC GRAVITY (ASTM D1188)	2 3 4 2
4 OPTIMUM ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)	_ 3 8
5 PERCENT AIR VOIDS (EQ. 7 4) $\frac{2.466-2.342}{2.466} \times 100$	_ 5 0
6 MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559)	_ _ _ _
7 NUMBER OF BLOWS	_ _
8 MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559)	_ _ _ _
9. HVEEM STABILITY (AASHTO T246 OR ASTM D1561)	_ _ _
10 HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM D1561)	_ _ _ _.

Revised December 15, 1989

SHEET 8

REHABILITATION DATA

LTPP PROGRAM

*STATE ASSIGNED ID [_ _ _ _]

*STATE CODE [4 0]

*SHRP SECTION ID [0 6 0 8]

ASPHALT CONCRETE OVERLAY
MIXTURE PROPERTIES AS PLACED

* 1. LAYER NUMBER (FROM SHEET 2) [5]

* 2. TYPE OF SAMPLES [1]
Mixed in Field, Compacted in Laboratory 1
Mixed and Compacted in Field 2

* 3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (EQ 7.3) [2 4 7 4]

* 4. BULK SPECIFIC GRAVITY (ASTM D1188)
MEAN ..... [2.3 6 6]
MINIMUM 2 3 6 2
STD. DEV. .... _ _ _ _
NUMBER OF TESTS 3
MAXIMUM 2 3 7 3

* 5. ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)
MEAN ..... [_ 3.6]
MINIMUM ..... _ _._
STD. DEV. ..... _ _._
NUMBER OF TESTS ... _ _
MAXIMUM ..... _ _ _

* 6 PERCENT AIR VOIDS (EQ. 7.4)
MEAN ..... [_ 4.4]
MINIMUM ..... _ _._
STD. DEV. ..... _ _ _
NUMBER TESTS ..... _ _.
MAXIMUM ..... _ _._

7. VOIDS IN MINERAL AGGREGATE (PERCENT) (EQ 7.5)
MEAN 1 3 0
MINIMUM ..... _ _ _
STD. DEV. ..... _ _._
NUMBER OF TESTS ..... _ _
MAXIMUM ..... _ _ _

8 EFFECTIVE ASPHALT CONTENT (PERCENT) (EQ. 7.6)
MEAN ..... _ _._
MINIMUM ..... _ _._
STD. DEV. .... _ _ _
NUMBER OF TESTS ..... _ _
MAXIMUM ..... _ _._

Mike's

OKLAHOMA DEPARTMENT OF TRANSPORTATION
Asphalt Plant Inspector's Work Sheet

Project No. IR 35-4(143)214 Lot No. 1-1 Sharp

Mix Type A Design No. 3011-OAPA-92018

EXTRACTIONS AND GRADATIONS (CHD L 25, AASHTO T-30, T-27 T 11)

Date		7-29-92											
Sublot No.		SMRP Lot 1											
SIEVE SIZE	JMF	Acc. Wt. Retd.	Acc. % Retd.	Total Agg. % Passing	Acc. Wt. Retd.	Acc. % Retd.	Total Agg. % Passing	Acc. Wt. Retd.	Acc. % Retd.	Total Agg. % Passing	Acc. Wt. Retd.	Acc. % Retd.	Total Ac % Passi
2 1/2"													
2"													
1 1/2"	100	0	0	100									
1"	98	0	0	100									
3/4"	—	—	—	—									
1/2"	81	211	14.7	85.3									
3/8"	—	—	—	—									
No. 4	47	1,083	47.6	52.4									
No. 8	31	1016	70.8	29.2									
No. 40	18	1196	83.3	16.7									
No. 80	9	1318	91.8	8.2									
No. 200	3.7	1376	95.8	4.2									
% AC	3.8			3.6									
Pan													
Original Mix	(W)	1490.0											
Moist. & Vol.	(W.)	1490.0											
Ext. Aggr	(W.)	1426.3											
Ash	(W.)	9.5											
Total Aggr.	(W.+W.)	1435.8											

MOISTURE & VOLATILE SAMPLE

Pan				
Original Mix	(W)			
Dry Mix	(W)			

$$\% AC = \frac{(W_1 - W_2) - (W_3 - W_4)}{W_1 - W_2} \times 100 \qquad W_2 = W_1 - \frac{W_{3a} \times W_1}{W_{1a}}$$

W_{1a} = Weight of Moisture Sample Before Drying
W_{3a} = Weight of Moisture Sample After Drying

NUCLEAR GAUGE ASPHALT CONTENT

Background Count				
% AC - Moist. & Vol. (P_{3a})				
% AC				

P_{3a} = % AC from gauge

$$\% AC = \frac{(P_{3a} \times W_{3a}) - (W_{1a} - W_{3a})}{W_{3a}} \times 100$$

ROADWAY DENSITY (CHD L 141)

Max. Theo. Sp. Gr. @ JMF															
Specimen No.															
Station															
Expressway															
Lane															
Thickness															
A (Wt. Spec. in Air)															
C (Wt. Spec. in Water)															
A - C															
Core Spec. Grav															
Average Core Spec. Grav															
% Roadway Density															

$$\text{Core Spec. Grav} = \frac{A}{A - C} \qquad \% \text{ Rdy Density} = \frac{\text{Avg. Core Spec. Grav}}{\text{Max. Theo. Sp. Gr. @ JMF}} \times 100$$

MAXIMUM SPECIFIC GRAVITY

(AASHTO T 209)

Sub-Lot No				
Sample No. —				
Flask No.				
Sample Wt. (A)				
Cush. Wt. (B)				
A + B (C)				
Sample + Flask + H_2O (D)				
C − D (E)				
Rice's Gravity (A/E)				
Avg. Rice Gravity				
Eff. Spec. Grav. (ESG)				

$$ESG = \frac{\%\ Aggr.}{\frac{100}{\text{Rice's Gravity}} - \frac{\%\ AC}{\text{Spec. Grav. AC}}}$$

% AC = % AC From Extraction
% Aggr. = 100 − % AC
Spec. Grav. AC is given on mix design

LAB MOLDED DENSITY

(OHD L-8, L 14)

Eff. Spec. Grav	2.615											
Spec. Grav. AC	1.0101											
% AC	3.6											
Max. Theo. Spec. Grav	2.474											
Specimen No.	1	2	3									
A (Wt. Spec. in Air)	1209.6	1212.2	1214.7									
C (Wt. Spec. in Water)	697.7	702.7	705.2									
A − C	512.2	515.5	513.4									
L.M. Spec. Grav	2.362	2.363	2.373									
Avg. L.M. Spec. Grav	2.366											
% L.M. Density	95.6											
% Air Voids	4.4											
% V.M.A.	13.0											

$$\text{L.M. Spec. Grav.} = \frac{A}{A - C}$$

$$\text{Max. Theo. Spec. Grav.} = \frac{100}{\frac{\%\ AC}{\text{Spec. Grav. AC}} + \frac{\%\ Aggr.}{ESG}}$$

$$\%\ V.M.A. = 100 - \frac{\text{Avg. L.M. Spec. Grav.} \times \%\ Aggr.}{ESG}$$

% Air Voids = 100 − % L.M. Density

$$\%\ \text{L.M. Density} = \frac{\text{Avg. L.M. Spec. Grav.}}{\text{Max. Theo. Spec. Grav.}} \times 100$$

HVEEM STABILITY

(OHD L 16)

Specimen No												
Specimen Height												
V Lbs.	(Pv) V p.s.i.	Stabilometer Reading, P.S.I. Lateral (Ph)										
500	40											
1000	80											
2000	160											
3000	240											
4000	320											
5000	400											
6000	480											
Final Displacement (D_2)												
Stability Value												
Stability Value Corrected												
Avg. Stability Value												

$$\text{Stability} = \frac{22.2}{\frac{P_h \times D_2}{400 - P_h} + 0.222}$$

P_h = Stabilometer Reading @ 5000 lbs.
P_v = 400 @ 5000 lbs.
D_2 = Turns Displacement

SAND EQUIVALENT

(AASHTO T 176)

S.E. No.												
Sand Reading											—	
Clay Reading											—	
Sand Equivalent											—	
Average Sand Equivalent												

$$\text{Sand Equivalent} = \frac{\text{Sand Reading}}{\text{Clay reading}} \times 100$$

By: S. Moss & Fowler

A.D. No. 003-003-092 ASPH CONC. TYPE A Design No. 3011-OAPA-92018

Project No. IR-35-4(148)214 11392(04) Hwy. I-35 Avg. Daily Traffic 5000+

Contractor: The Cummins Const Producer: Cummins Const. Co. @ Blackwell, Okla.

MATERIAL	SOURCE	% USED
1-1/2" Rock	The Quapaw Co. @ Pawnee, Okla.	25
5/8" Chips	Stewart Stone @ Pawnee, Okla.	30
Manufactured Sand	Anchor Stone @ Tulsa, Okla.	33
Fine Sand	Hwy 74 & Saltfork River	12
Asphalt Cement (AC-20)	Total @ Arkansas City, Kansas	

Laboratory No. / Percent Passing	92018 1½" Rock	92001 5/8" Chips	92017 M. Sand	92004 F. Sand	Combined Aggregate	Job Formula	JMF Tolerances
1-1/2"	100				100	100	-0-
1"	90				98	98	± 7
1/2"	24	100	100		81	81	± 7
No. 4	2	11	95		47	47	± 7
No. 10	1	5	53	100	31	31	± 4
No. 40	1	4	17	92	18	18	± 4
No. 80	1	3	9	37	9	9	± 4
No. 200	0.9	3.1	5.6	5.7	3.7	3.7	± 2
% Asphalt Cement (AC-20)						3.8	±0.4
Mix temperature @ discharge from mixer, °F						305	±20

Tests on Asphalt Cement:

	Found	Required
Penetration @ 25° C	70	60-100
Viscosity @ 60° C	1916	2000±400
Viscosity @ 135° C	400	300 Min.
Residue from RTFO		
Viscosity @ 60° C	4049	8000 Max.
Ductility @ 25° C	110+	50 Min.
Specific Gravity @ 25° C	1.0101	

Tests on Aggregates:

	Found	Required
Sand Equivalent	58	40 Min.
L.A. Abrasion % Wear	24.2	40 Max.
Durability (DC)	60	40 Min.
Fractured Faces	100	75 w/2
BISG	2.615	
Hveem Weight	1210	

Tests on Compressed Mixtures:

Percent Asphalt	Spec. Grav. Specimen	Max. Theo. Spec.Grav.	Dens. % of Max. Theo.	Dens. % Req'd. of Max. Theo.	V.M.A. (%)	V.M.A. (Min.%)	Hveem Stab.	Hveem Stab.(Mi
3.8	2.342	2.466	95.0		13.8	13	58	
4.3	2.365	2.448	96.6	94-96	13.4		59	40
4.8	2.372	2.430	97.6		13.6		60	

Retained Strength 75.0% 75% Minimum Required

Recommended 3.8 % Asphalt Cement (AC-20)
Compacted Wt. 108.5 lbs./sq.yd./1" thickness
Max. Theo. Spec. Grav. @ 3.8 % Asphalt Cement is 2.466 (153.9 Pcf).

MEETS SPECIFICATION REQUIREMENTS

DT-Form 352-84

STATE OF OKLAHOMA
DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION

To: Contractor

Job No. IR-35-4(148)214 11392(04)
County Kay
Division 4

Enclosed herewith please find Mix Design No. 3011-OAPA-92018 for Asphalt Concrete Type A which was designed at your request utilizing the sources of materials furnished to us by you or by your producer.

If you concur in the mix design as stated, please sign in the appropriate space below and return one copy to the Materials Division for distribution. This will be the accepted design to be used on the above captioned project.

Sincerely,

J. D. Telford

J. D. Telford, P. E.
Materials Engineer

I, Wade B Hogle, Jr. the firm of The Cummins Const. Co accept the above mix design to be used on Project No. IR-35-4(148)214 11392(04).

By: See Attached Letter

Title: Vice P.

Distribution: 1-Materials
2-Asphalt Design
2-Liaison
Construction
Liquid Asphalt
Div. 4
Perry Res.
The Cummins Const.

Transmitted: 3-4-92

REHABILITATION DATA -

SHOULDER RESTORATION

*STATE ASSIGNED ID [_ _ _ _]

SHEET 61

*STATE CODE [4 0]

REHABILITATION DATA

*SHRP SECTION ID [0 6 0 2]

LTPP PROGRAM

RESTORATION OF AC SHOULDERS

* 1 SHOULDER RESTORED [3]
- Outside 1
- Inside 2
- Both 3

		INSIDE SHOULDER	OUTSIDE SHOULDER
* 2	SURFACE TYPE (CODES-TABLE A 5)	1 2	1 2
* 3	TOTAL WIDTH (FEET)	4	[1 0]
* 4	PAVED WIDTH (FEET)	4	[1 0]
* 5	SHOULDER BASE TYPE (CODES-TABLE A 6)	2 7	[2 7]
* 6	SURFACE THICKNESS (INCHES)	0.7	[0.7]
* 7	BASE THICKNESS (INCHES)	8 3	[8 3]

* 8. TYPE OF SHOULDER RESTORATION [2]
- AC Overlay Without Removal of Existing AC. . . 1
- Cold Milling and AC Overlay 2
- Complete Shoulder Removal and Replacement 3
- In-place Recycling and Overlay . . 4
- Other (Specify)_____ 5

* 9 TYPE OF AC MATERIALS [1]
- New Materials 1
- Hot Recycled Materials . 2
- Cold Recycled Materials 3
- Other (Specify)_____ 4

*10 THICKNESS OF AC MATERIAL REMOVED BY COLD MILLING (IN) [5 0]

*11 AC OVERLAY THICKNESS (IN) [5 0]

12 LANE/SHOULDER JOINT SEALANT [1]
- None 1
- Sealed Without Providing Reservoir 2
- Saw Reservoir and Seal. . . . 3
- Other (Specify)_____ 4

13 LANE/SHOULDER JOINT SEALANT RESERVOIR
- WIDTH (INCHES) _ _
- DEPTH (INCHES) _ _

14 TYPE OF JOINT SEALANT _
- Poured. 1
- Preformed .. 2

NOTE DATA ITEMS 8 TO 14 PERTAIN ONLY TO THE RESTORED OUTSIDE SHOULDER

*STATE ASSIGNED ID [_ _ _ _]

SHEET 61

*STATE CODE [4 0]

REHABILITATION DATA

*SHRP SECTION ID [0 6 0 3]

LTPP PROGRAM

RESTORATION OF AC SHOULDERS

* 1 SHOULDER RESTORED [3]
- Outside 1
- Inside 2
- Both 3

		INSIDE SHOULDER	OUTSIDE SHOULDER
* 2	SURFACE TYPE (CODES-TABLE A 5)	12	12
* 3	TOTAL WIDTH (FEET)	4	[1 0]
* 4	PAVED WIDTH (FEET)	4	[1 0]
* 5	SHOULDER BASE TYPE (CODES-TABLE A.6)	27	[2 7]
* 6	SURFACE THICKNESS (INCHES)	0.7	[0.7]
* 7	BASE THICKNESS (INCHES)	8 3	[8 3]

* 8 TYPE OF SHOULDER RESTORATION [1]
- AC Overlay Without Removal of Existing AC . . 1
- Cold Milling and AC Overlay 2
- Complete Shoulder Removal and Replacement 3
- In-place Recycling and Overlay 4
- Other (Specify)_____ 5

* 9 TYPE OF AC MATERIALS [1]
- New Materials 1
- Hot Recycled Materials . . . 2
- Cold Recycled Materials.... 3
- Other (Specify)_____ 4

*10. THICKNESS OF AC MATERIAL REMOVED BY COLD MILLING (IN) [_ _]

*11 AC OVERLAY THICKNESS (IN) [4 0]

12 LANE/SHOULDER JOINT SEALANT [1]
- None 1
- Sealed Without Providing Reservoir .. 2
- Saw Reservoir and Seal. 3
- Other (Specify)_____ 4

13 LANE/SHOULDER JOINT SEALANT RESERVOIR
- WIDTH (INCHES) _ _
- DEPTH (INCHES) _ _

14 TYPE OF JOINT SEALANT _
- Poured 1
- Preformed . . . 2

NOTE DATA ITEMS 8 TO 14 PERTAIN ONLY TO THE RESTORED OUTSIDE SHOULDER

*STATE ASSIGNED ID [_ _ _ _]

SHEET 61

*STATE CODE [4 0]

REHABILITATION DATA

*SHRP SECTION ID [0 6 0 8]

LTPP PROGRAM

RESTORATION OF AC SHOULDERS

* 1 SHOULDER RESTORED [3]
- Outside 1
- Inside 2
- Both 3

		INSIDE SHOULDER	OUTSIDE SHOULDER
* 2	SURFACE TYPE (CODES-TABLE A 5)	1 2	1 2
* 3	TOTAL WIDTH (FEET)	_ 4	[1 0]
* 4	PAVED WIDTH (FEET)	_ 4	[1 0]
* 5	SHOULDER BASE TYPE (CODES-TABLE A 5)	2 7	[2 7]
* 6	SURFACE THICKNESS (INCHES)	_ 0.7	[_ 0.7]
* 7	BASE THICKNESS (INCHES)	_ 8 3	[_ 8 3]

* 8 TYPE OF SHOULDER RESTORATION [1]
- AC Overlay Without Removal of Existing AC . . . 1
- Cold Milling and AC Overlay . . . 2
- Complete Shoulder Removal and Replacement . . . 3
- In-place Recycling and Overlay . . . 4
- Other (Specify)_____ 5

* 9. TYPE OF AC MATERIALS [1]
- New Materials . . . 1
- Hot Recycled Materials . . . 2
- Cold Recycled Materials . . . 3
- Other (Specify)_____ 4

*10 THICKNESS OF AC MATERIAL REMOVED BY COLD MILLING (IN) [_ _]

*11. AC OVERLAY THICKNESS (IN) [8 0]

12. LANE/SHOULDER JOINT SEALANT [1]
- None 1
- Sealed Without Providing Reservoir .. 2
- Saw Reservoir and Seal.... 3
- Other (Specify)_____ 4

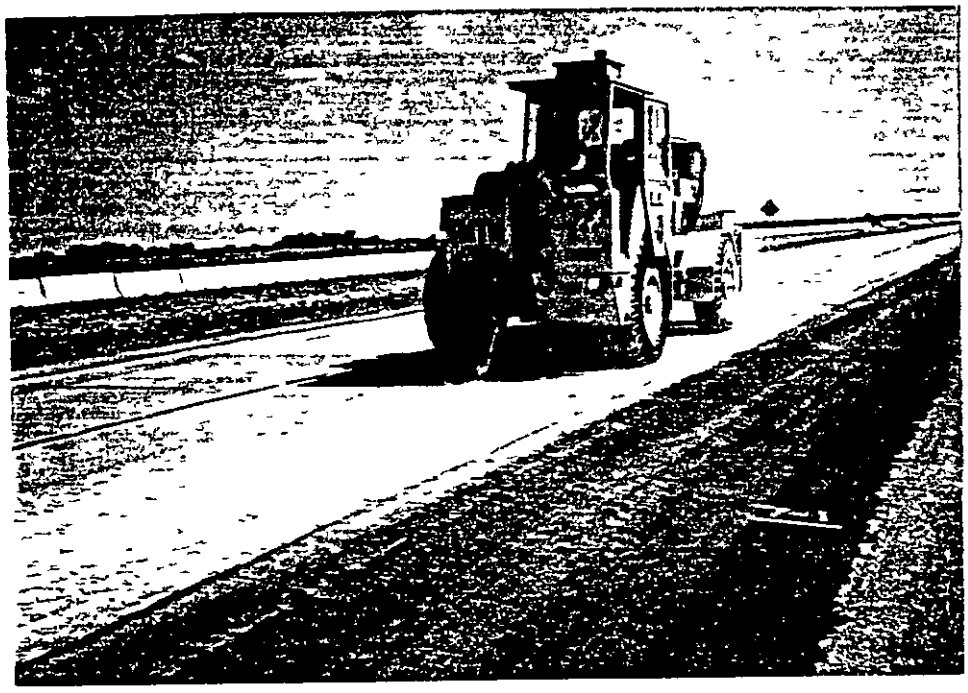
13 LANE/SHOULDER JOINT SEALANT RESERVOIR
- WIDTH (INCHES) _ _
- DEPTH (INCHES) _ _

14 TYPE OF JOINT SEALANT _
- Poured. 1
- Preformed . . 2

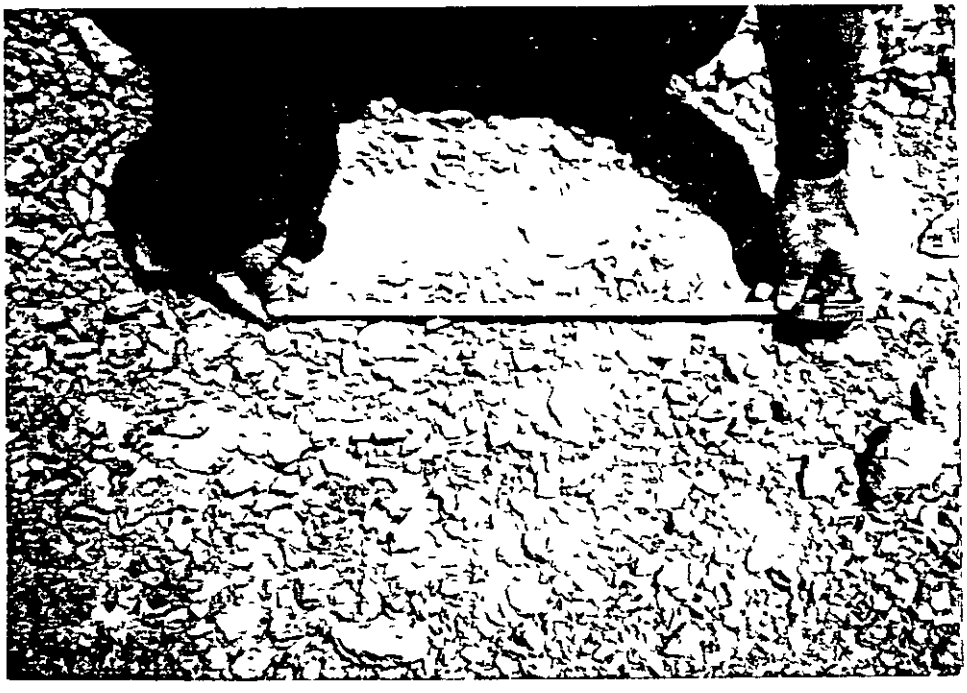
NOTE DATA ITEMS 8 TO 14 PERTAIN ONLY TO THE RESTORED OUTSIDE SHOULDER

APPENDIX F

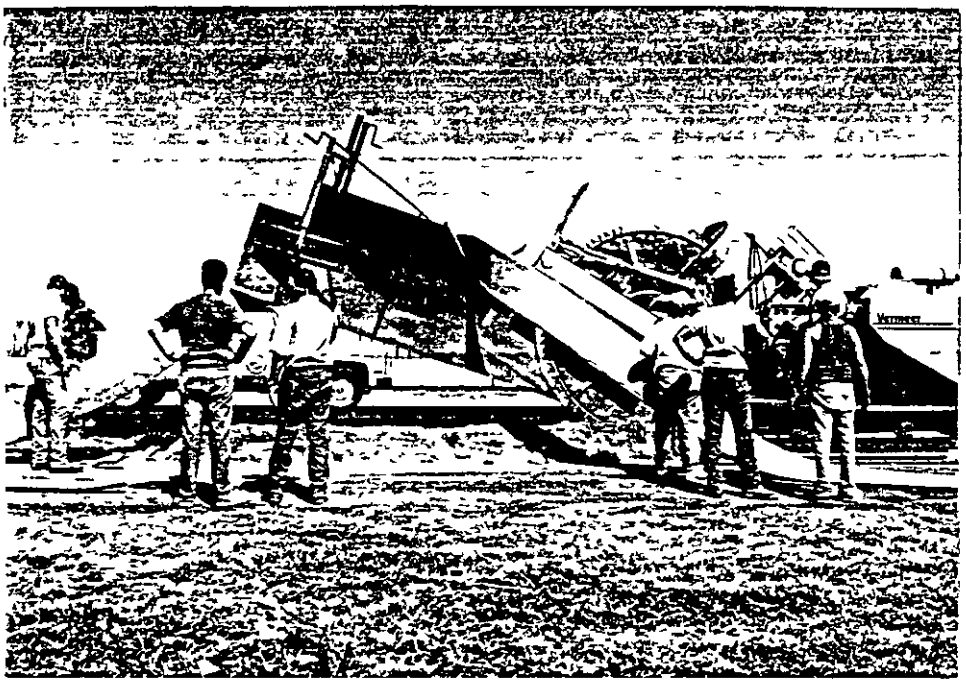
PHOTOGRAPHS



1 - Break and Seat Operations (Rubblizing) 400607



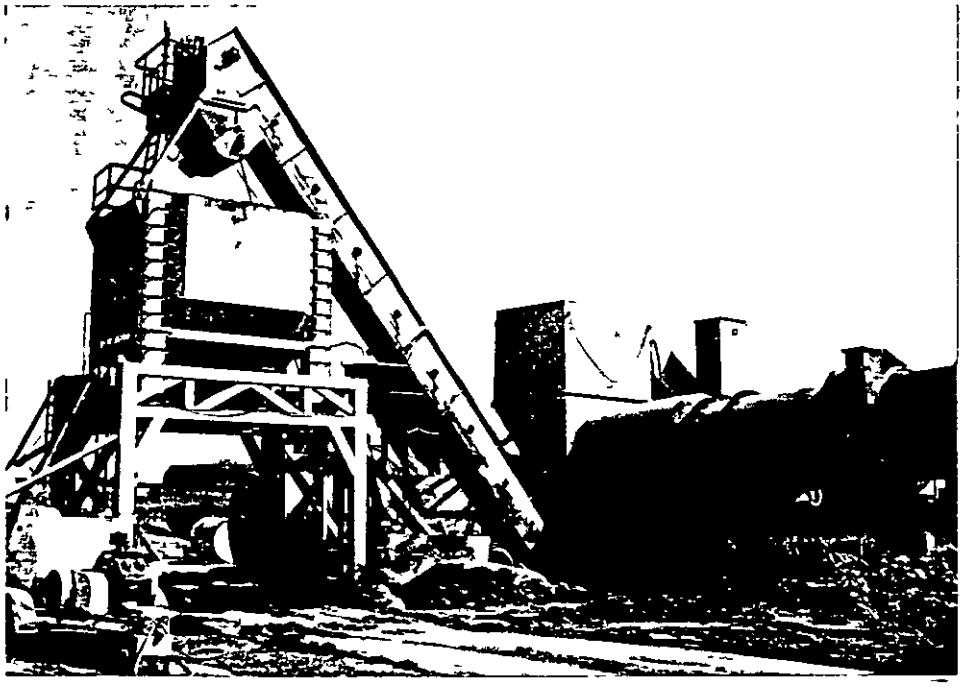
2 - Closeup of Break and Seat (Rubblizing)



3 - Edge Drain Installation 400607

4 - Problem Associated with Tracking of the Longitudinal Joint During Edge Drain Installation

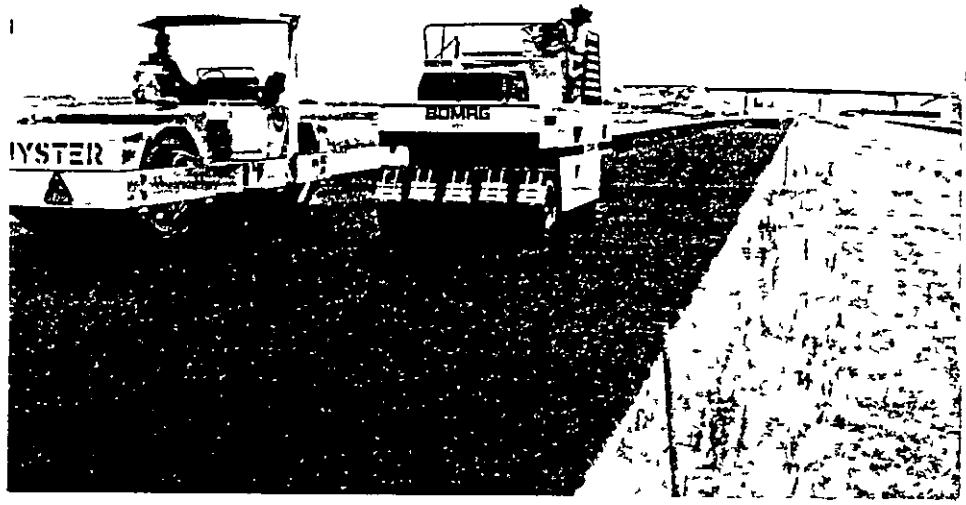
5 - Installing Lateral Drains 400607



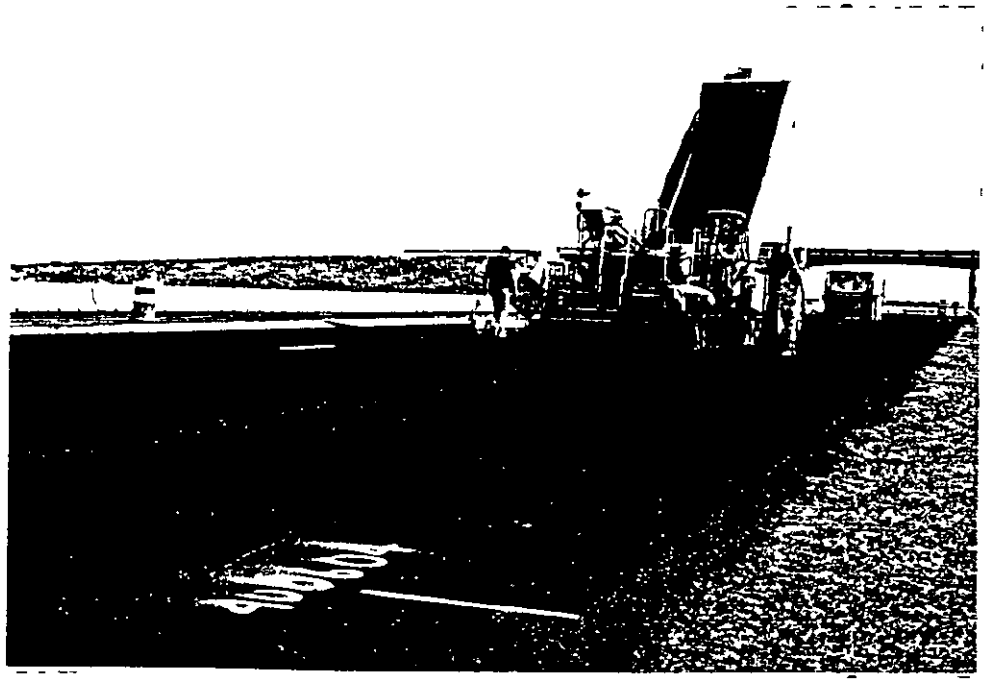
6 - CAT-2000 Hot Mix Plant

7 - Hoppers, Conveyor, and Mixer
CAT-2000 Hot Mix Plant

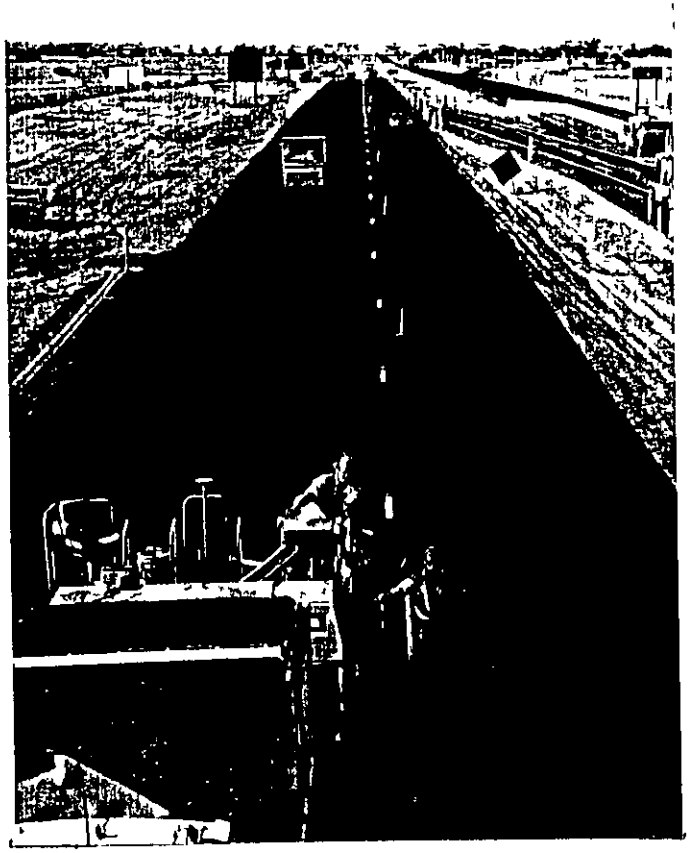
8 - First Lift B-Mix Over Break and Seat 400607



9 - Rolling Operation First Lift B-Mix 400608

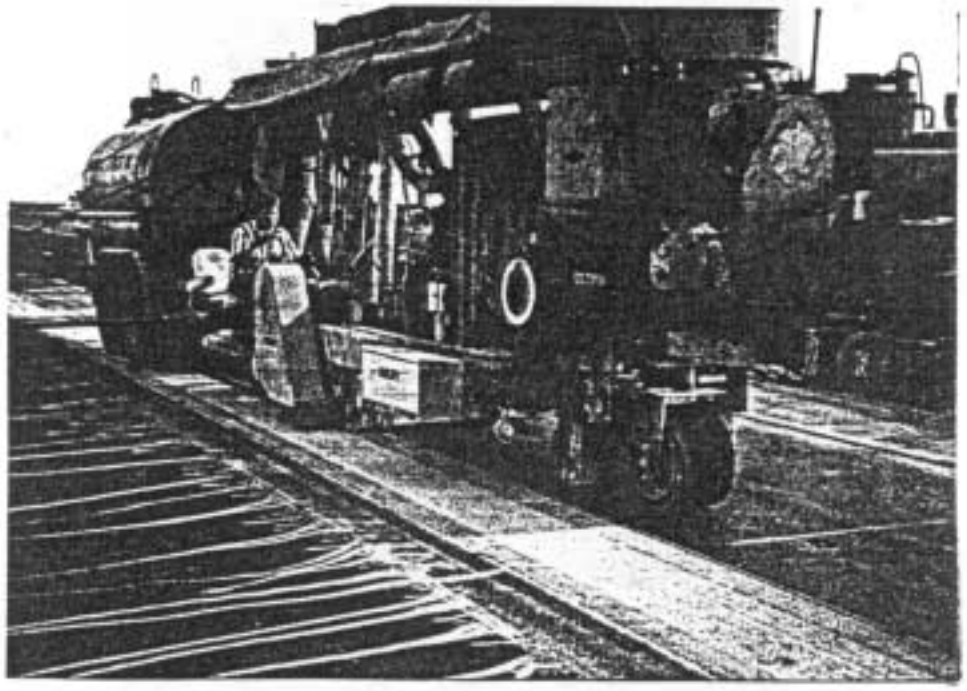


10 - Closeup Final Lift B-Mix 400604

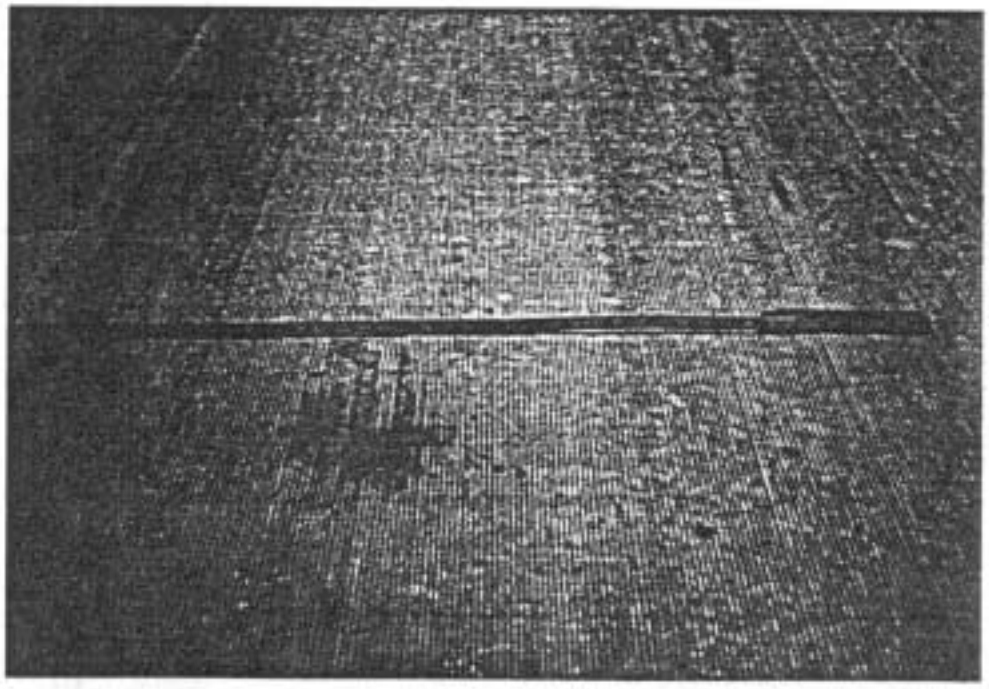


11 - Overview Final Lift B - Mix 400604

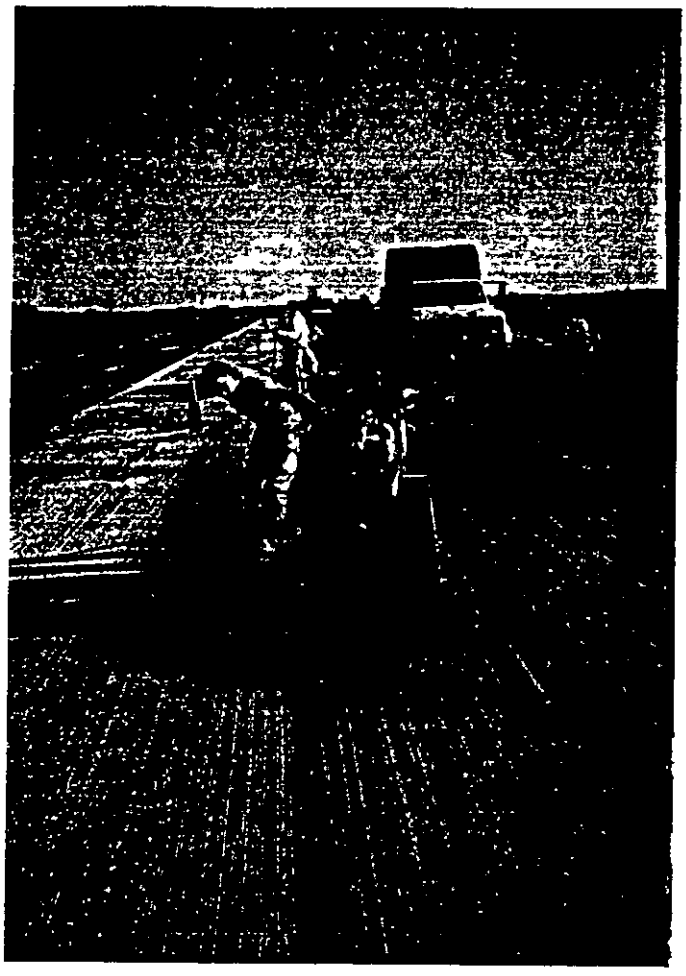
12 - Sealing Transverse Saw - Cut Joint in AC Overlay 400604



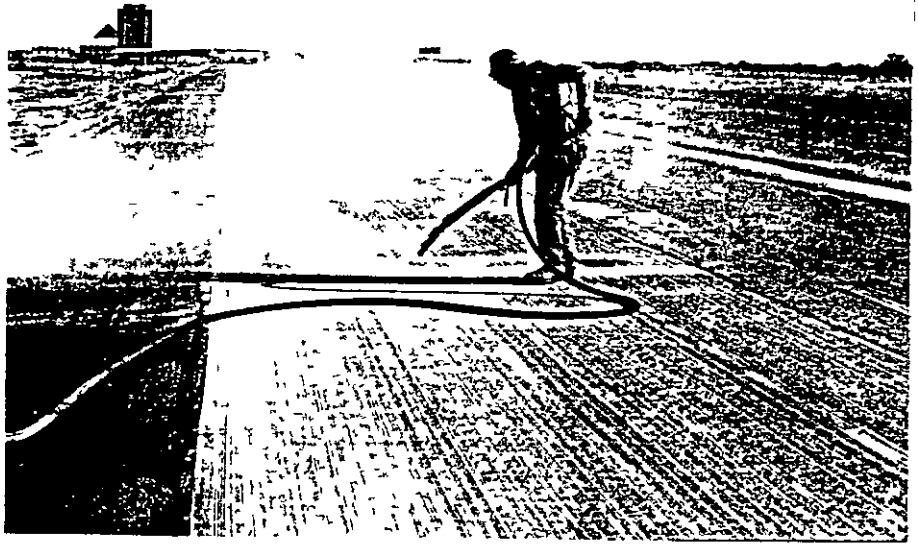
13 - Diamond Grinding Operation 400605



14 - Closeup of Diamond Ground Area 400602

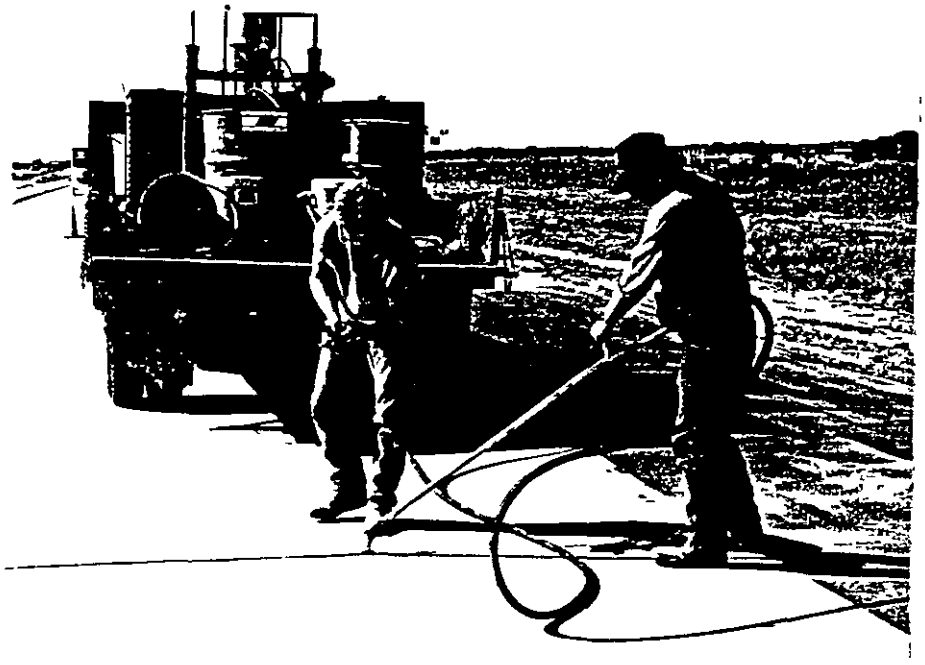


15 - Saw and Seal Operation 400602



16 - Sandblasting a Sawed Joint 400602

17 - Installing Backer Rod Material 400602



18 - Sealing the Prepared Joint 400602