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May 3, 1996
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Mr. Larry Scofield
Arizona Department of Transportation
206 South 17th Ave.
Mail Drop 075R
Phoenix, AZ 85007

RE: Final SPS-1 Construction Report

Dear Larry:

Enclosed is the final version of the SPS-1 Construction Report. Included in the final version are colored photos and the completed data forms.

Thank you for your review and comments on the draft report. If you have any questions regarding this report, please do not hesitate to call.

Sincerely,
NICHOLS CONSULTING ENGINEERS, Chtd.

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FEDERAL HIGHWAY ADMINISTRATION

Long Term Pavement Performance Specific Pavement Studies

ARIZONA SPS-1

Construction Report on Site 040100
Arizona Department of Transportation

FINAL

Prepared by:

Western Region Contractor
Nichols Consulting Engineers, Chtd.

April 1996

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I. INTRODUCTION

The Strategic Highway Research Program (SHRP) SPS-1 (Specific Pavement Study) experiment was designed to study the structural factors involved in flexible pavement design. The objective of this study is to more precisely determine the relative influence of strategic factors that influence the performance of flexible pavements. The factors addressed include drainage, base type and thickness and asphalt surface thickness.

The study objective includes a determination of the influence of environmental region and soil type on these factors.

This report covers the construction of the SPS-1 experimental test sections on US-93 in Mohave County, Arizona between October 1992 and August 1993. Section II gives a project description, Section III describes the materials and construction procedures used for each type of material then continues to detail the construction operation on a section-by-section basis, the construction is summarized in Section IV, while key observations are noted in Section V.

II. SPS-1 PROJECT DESCRIPTION

LAYOUT

The SHRP SPS-1 experiment consists of the construction of twelve test sections of asphalt concrete (AC) surface layers and base layers of varying thickness and material type. These are shown as Sections 040113-040124 in Figure 1. For this project, five supplemental test sections designed by Arizona DOT were included. These are shown as Sections 040159-040163 in Figure 1.

PHYSICAL ATTRIBUTES

The Arizona SPS-1 project is located in Northwest Arizona, approximately twenty miles north of Kingman, Arizona, in the outer northbound lane of U.S. Highway 93, as shown in Figure 2. It extends from Milepost 52.61 to Milepost 49.48. This segment of U.S. 93 was one lane in each direction and this project consisted of providing an additional two lanes, separated from the existing by a median.

The terrain surrounding the test section is rolling, with grades sometimes reaching 3%. The soil is covered with various desert type brush and small trees. Low foothills surround the test sections in the distance. The approximate elevation of the test section is 3124 ft., with a latitude of 35°18' and longitude of 114°05'.

CLIMATE

The location of this test site is classified by LTPP to be in the Dry, No-Freeze zone. Based upon existing climatic information collected at Kingman, Arizona (20 miles from the test site), the average maximum air temperature is 100°F (38°C), the average minimum air temperature is 16°F (-9°C) and the average annual rainfall is 9.4 inches (240mm) per year.

During embankment construction from October 1992 through February 1993, this area experienced abnormally high rainfall amounts. Accumulated October to February rainfall amounts for 1988-1993 are shown in Figure 3. As is evidenced in this Figure, the rainfall received during construction is about three times greater than normal. The effect of the rainfall on embankment placement is discussed later in the report.

TRAFFIC

Based upon Arizona DOT records, the current ADT for this section of roadway is 5,920, while the projected ADT for the year 2009 is 9,550. For design, Arizona DOT estimated the 18-kip ESALs are approximately 3.7 million for a twenty-year design period. Of the current traffic stream, 33.5% are commercial truck traffic having the following distribution:

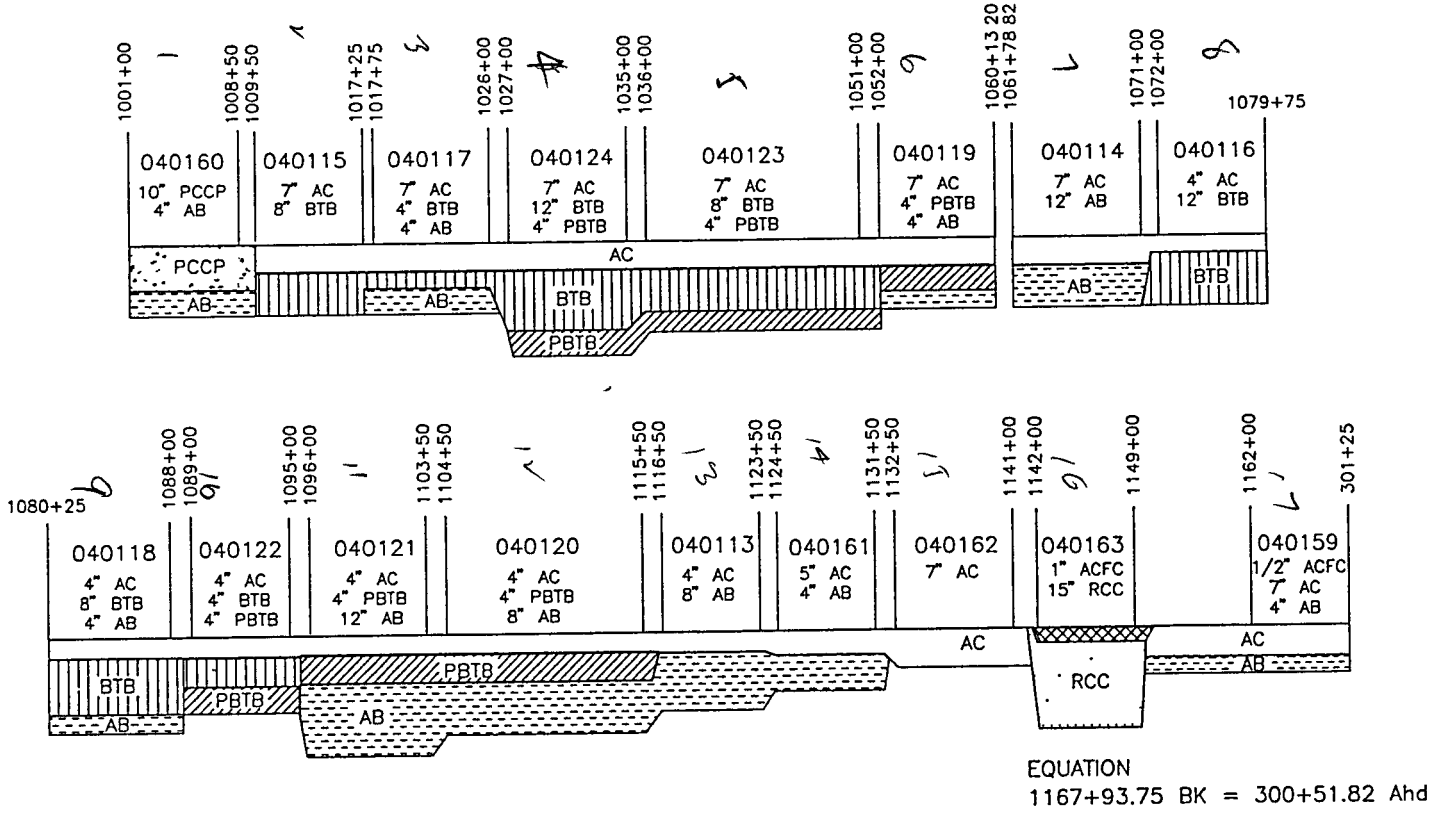


Figure 1. Layout of Experimental Test Sections, Arizona SPS-1

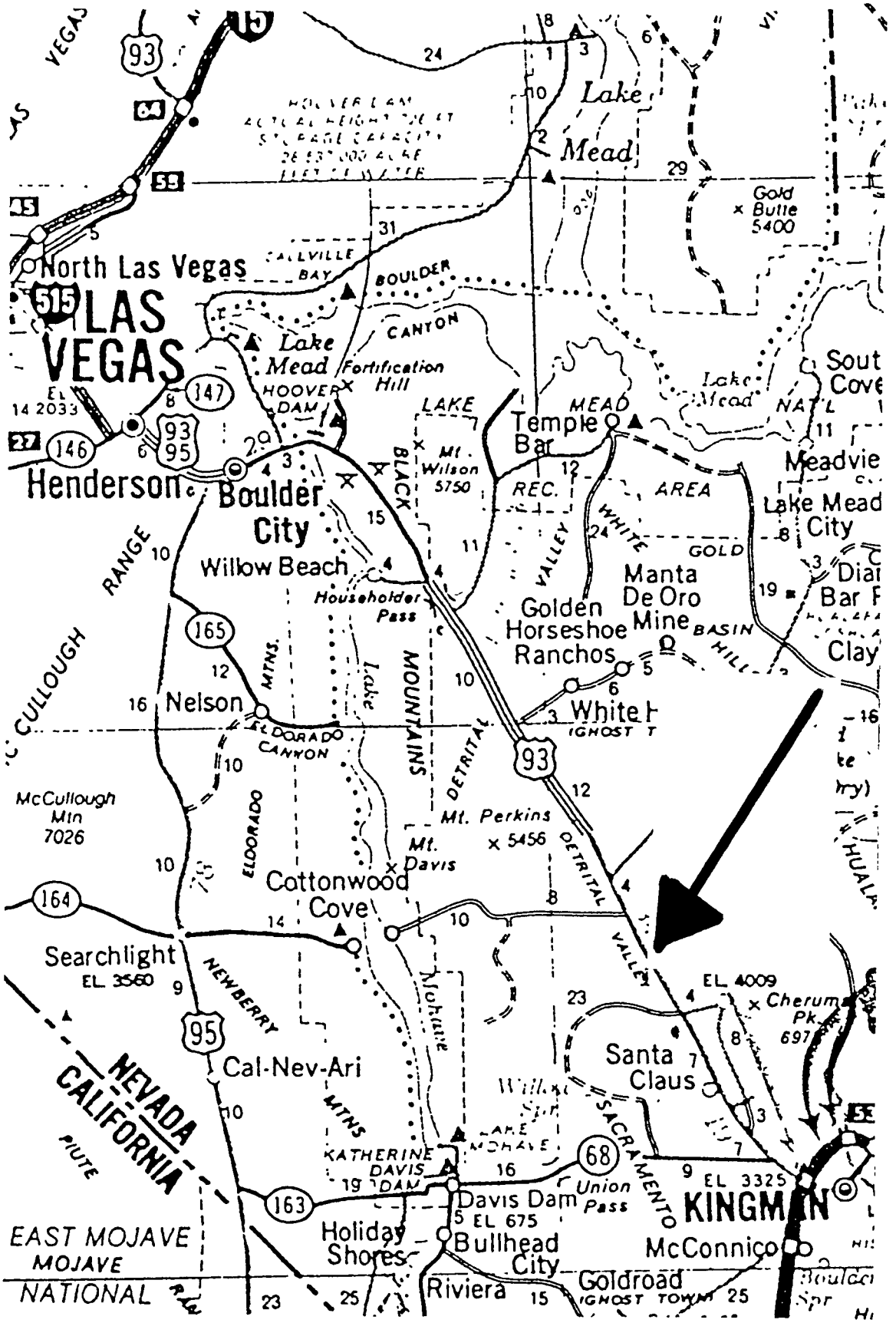


Figure 2. Arizona SPS-1 Project Location

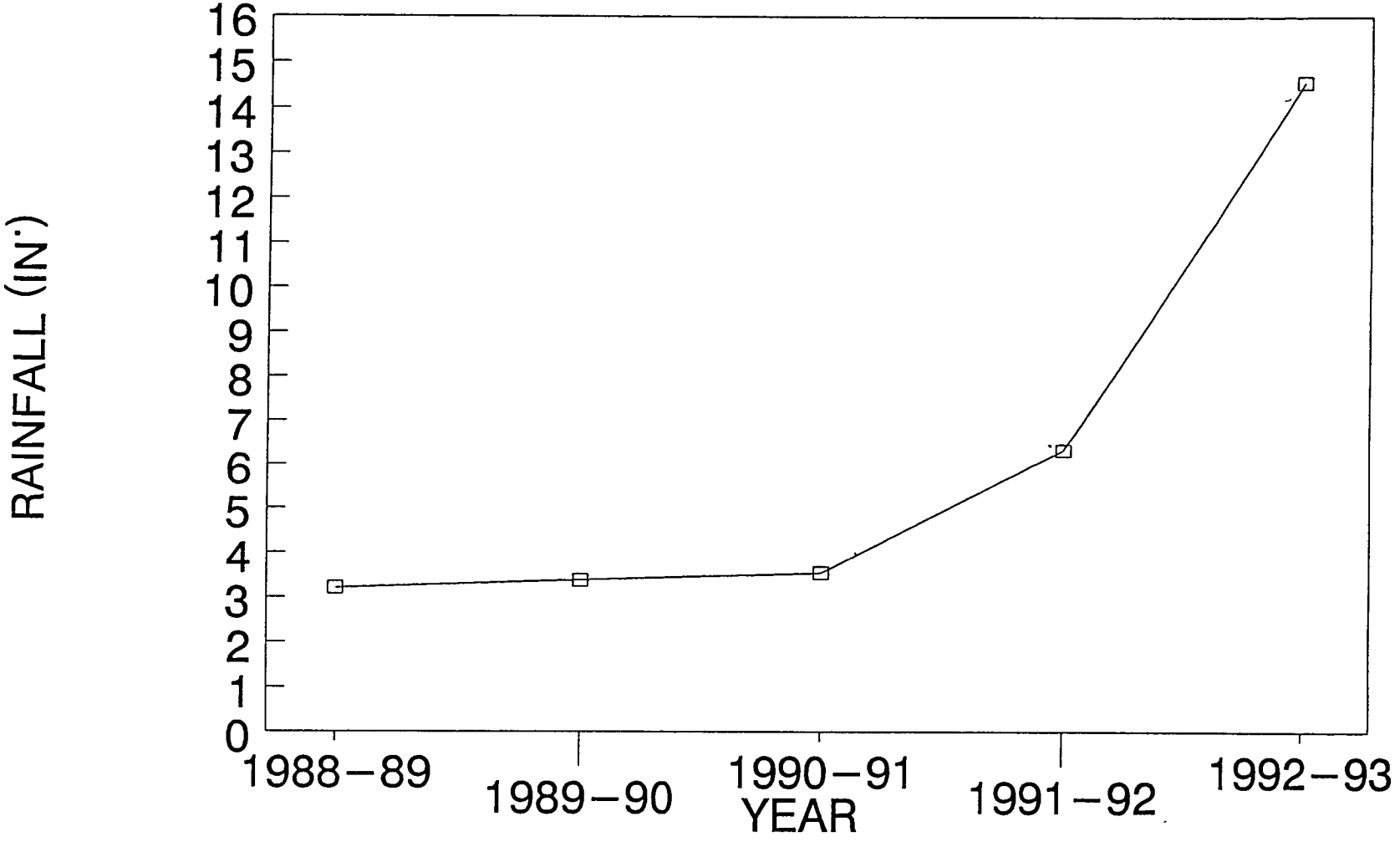


Figure 3. Average Rainfall - Kingman, Arizona - October-February

Category	Percent
Light Truck	68.8
Medium Truck	13.9
Heavy Truck	17.3

GEOMETRICS

The test sections are horizontally straight, with no curvature introduced. The vertical grade is less than $\pm 0.5\%$ up to the end of Section 040123, increases to $+1.8\%$ at the end of Section 040118, then decreases gradually to the end of the test section with a maximum grade of -2.7% within Sections 040120, 040113 and 040161. The last section (040159) is located on a -0.5% grade.

SUPPLEMENTAL TEST SECTIONS

Five state supplemental test sections were included on this project in addition to the twelve standard SHRP SPS-1 sections. They are shown in Table 1.

Section 040159 was included to compare the standard ADOT design against the other sections. Section 040160 was included to provide a smooth surface for the weigh-in-motion station installed at the leave end of the section and to evaluate PCC performance under the given traffic and climate. This will be discussed in further detail within this report. Section 040163 utilizes Roller Compacted Concrete. The method of placement differs from normal PCC and is similar to placing asphalt. Section 040161 was added to compare a five inch asphalt surface with four inch asphalt base to the standard ADOT design of seven inches asphalt concrete with four inches asphalt base. Section 040162 was added to compare the performance of an asphalt concrete with no base, to all of the other sections, which have bases.

PROJECT PERSONNEL

The roadway contractor on this project was F-N-F Construction, Inc. of Tucson, Arizona. Mr. Will Garrison was the project superintendent and Kajima Engineering and Construction, Inc. of Phoenix was a subcontractor providing quality control testing. ADOT project personnel consisted of Gordon Senzek, Resident Engineer, and George Cisney, Project Supervisor. The ADOT SHRP-LTPP coordinator was Larry Scofield and Lonnie Hendrix was the ADOT SHRP-LTPP field representative.

Table 1. State supplemental sections.

Section	Treatments
040159	Standard ADOT design for the northbound lane, 1/2" ACFC, 7" AC, 4" AB
040160	10" PCCP, 4" AB
040161	5" AC, 4" AB
040162	7" AC
040163	1" ACFC, 15" Roller Compacted Concrete

ACFC - Asphalt Concrete Friction Course
AC - Asphalt Concrete
AB - Aggregate Base
PCCP - Portland Cement Concrete Pavement

III. CONSTRUCTION

SUBGRADE

Preparation of the subgrade began November 5, 1992. The natural ground was prepared by clearing off the vegetation, undesirable soil and large rocks, then scarifying with scrapers to a depth of 6" to 8".

The majority of the test sections were constructed on fill material, as shown in Figure 4. The cut sections are located from approximately Station 1013+00 to 1017+00, Station 1113+00 to 1136+00 and from 1148+00 to 1153+00. The cut sections include all of test Sections 040113, 040161 and 1/2 of 040162. The last 1/3 of Section 040163 is also included in a cut section. Sections 040113, 040161 and 040162 were later scarified to a depth of 18" and reprocessed to simulate fill sections.

The following sections will detail the subgrade materials used and the construction process.

Materials

The subgrade fill was built with roadway excavation and borrow material. Generally, the first two lifts of backfill were roadway excavation and the balance was borrow material from F-N-F borrow #1. F-N-F #1 was located in the vicinity of Station 1095+00. The borrow material consisted of overburden material from the roadside borrow. Table 2 lists the subgrade soil types by section as tested in the laboratory following drilling and sampling. Appendix G shows the materials sampling layout for the subgrade.

Processing

The roadside borrow material was hauled to the fill in belly-dumps. Scrapers were used to excavate, haul and spread the roadway excavation. It was then spread into 8" loose lifts. Graders processed the material and water was added where necessary. Compaction was performed by loaded scrapers and haul truck traffic. Table 3 lists the equipment used for subgrade preparation. Appendix A shows subgrade preparation photos.

Densities

A Troxler 3440 Direct Transmission Nuclear Densometer was used by Kajima Engineering personnel to obtain preliminary density readings. If acceptable by the nuclear test, Arizona DOT personnel then obtained the subgrade density using the volumeter method. The volumeter density readings were taken on various lifts throughout the project. Forty-seven volumeter densities were taken on the subgrade fill from Station 1001+00 to 1150+00. Table 4 lists the volumeter density readings taken on the site. Of the 47 densities, there were only two failures. These two density sites were reworked and retested the same day, and passed.

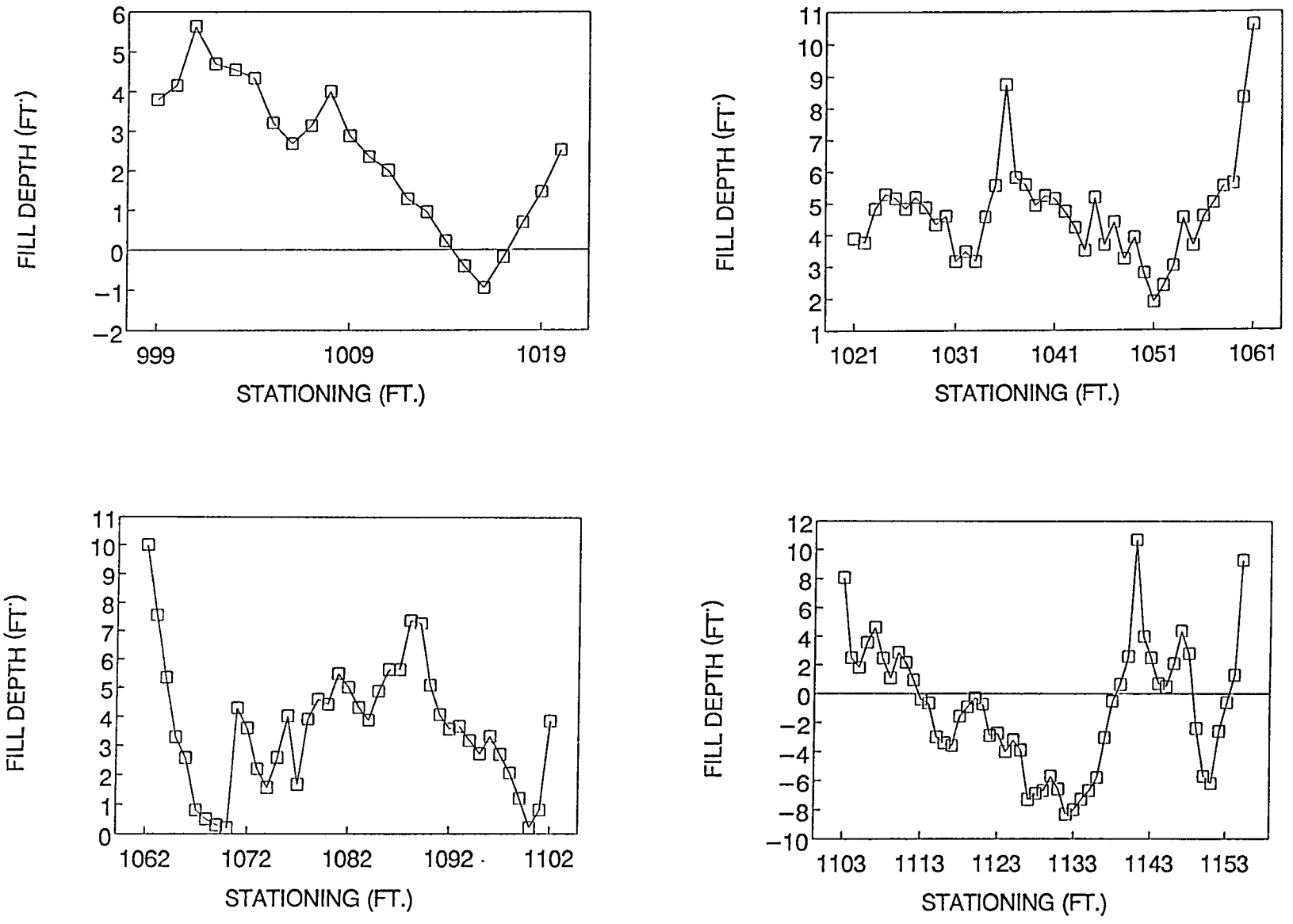


Figure 4. Subgrade Fill Depths - Arizona SPS-1

Table 2. Subgrade soil types by section.

Section	Subgrade Soil Type
040160	Well graded gravel with silt and sand
040115	Silty sand with gravel
040117	Silty sand with gravel
040124	Silty sand with gravel
040123	Well graded sand with silt and gravel
040119	Silty sand with gravel
040114	Silty sand with gravel
040116	Silty sand with gravel
040118	Clayey sand with gravel
040122	Silty sand with gravel
040121	Well graded gravel with silt and sand
040120	Well graded sand with silt and gravel
040113	Well graded sand with silt and gravel
040161	Well graded gravel with silt and sand
040162	Well graded gravel with silt and sand
040163	Well graded gravel with silt and sand
040159	Silty sand with gravel

Table 3. Equipment used for subgrade preparation.

Equipment	Job
899B Cat.	Fix cut areas, loading belly dump trucks
16G Cat.	Blade processing embankment material on grade
140G Cat.	Blade excavating slopes and trenches
4 Kenworth Belly Dump Trucks	Hauling and dumping embankment material on grade, compacting the grade
621B Cat.	8000 gallon water truck, wetting haul road and compacting the grade
627B Cat.	Excavating pumping areas on grade

Table 4. Subgrade volumeter density readings.

Station	Distance to Centerline (ft)	% Max Dry Density (Volumeter)	Proctor (pcf)	Max Adj. Proctor (pcf)	Approx. Average Fill or Cut (ft)
1001+10	5 RT	96.5	128.4	138.8	5.3 F
1001+50	6 LT	97.7	114.1	117.7	4.3 F
1002+25	20 RT	96.4	123.7	125.2	4.3 F
1003+00	5 LT	97.6	123.7	125.3	4.3 F
1017+25	CL	98.8	112.7	116.7	0.3 F
1018+00	6 RT	98.9	112.7	116.8	0.8 F
1032+25	15 LT	99.1	112.7	116.7	2.5 F
1033+00	3 RT	100	112.7	116.9	1.1 F
1043+65	3 RT	96.4	127.9	129.2	3.0 F
1044+00	4 LT	100.6	117.5	126.3	2.4 F
1058+15	7 LT	98.5	117.5	130.1	5.0 F
1058+65	12 RT	96.8	127.9	129.1	5.0 F
1059+00	15 RT	96.8	117.5	121.6	5.7 F
1059+10	12 RT	97.8	124.4	132.7	5.7 F
1059+25	13 LT	97.5	124.4	128.3	5.5 F
1059+35	20 RT	95.6	117.5	129	5.5 F
1060+25	10 LT	99.5	117.5	124.1	5.6 F
1061+90	2 RT	97.7	117.5	121.8	5.6 F
1062+05	14 LT	97.8	124.4	127.4	9.4 F
1062+50	2 LT	94.8	112.7	118.9	9.4 F
1062+90	5 RT	98	117.5	125.9	6.6 F
1062+95	6 LT	100.5	117.5	124.6	6.2 F
1064+00	CL	98.9	124.4	126.1	5.6 F
1068+70	4 RT	98.9	124.4	131.9	2.3 F
1072+00	10 RT	95.8	124.4	128.7	2.8 F
1073+50	10 RT	98.8	124.4	128.3	1.3 F
1074+00	5 RT	98	124.4	126.7	0 9 F

Table 4. Subgrade volumeter density readings. (cont'd)

Station	Distance to Centerline (ft)	% Max Dry Density (Volumeter)	Proctor (pcf)	Max Adj. Proctor (pcf)	Approx. Average Fill or Cut (ft)
1076+00	15 RT	100.3	124.4	128.6	3.6 F
1079+00	CL	99.7	124.4	127.4	2.7 F
1079+25	1 RT	98.6	124.4	131.9	2.7 F
1083+00	6 LT	100.6	124.4	126.2	3.6 F
1086+00	15 LT	103.3	117.5	119.3	5.4 F
1089+25	8 LT	99.6	117.5	126.9	6.8 F
1091+00	12 RT	100.3	117.5	119.7	3.4 F
1091+25	3 LT	96.3	124.4	129.3	3.4 F
1091+90	CL	96.3	124.4	127.1	3.4 F
1092+00	12 LT	96.1	124.4	128.5	3.2 F
1094+00	4 LT	97.1	124.4	126.4	3.0 F
1094+00	12 LT	99.4	124.4	127.5	3.0 F
1095+00	2 RT	101.8	117.5	120.1	2.7 F
1107+35	28 RT	98.8	117.5	123.8	3.5 F
1110+00	10 RT	96.2	124.4	127.3	2.2 F
1139+75	CL	98.8	117.5	128.3	4.5 F
1143+15	2 RT	98.6	114.1	117.8	2.7 F
1144+50	9 RT	98.9	127.9	130	0.3 F

Weather Problems

Heavy rain occurred during several days of the subgrade placement. The weather was generally cool, cloudy and rainy. As was shown in Figure 3, the rainfall for this 1992-93 period was much higher than normal. On Friday, February 19, rain left standing puddles of water on the subgrade. Due to the rain, the subgrade material began to pump. Two to three feet of wet pumping material was removed in several areas. Scrapers continued to remove wet material until February 23, and pumping areas were still present. Filling operations continued in the dry areas. Rain occurred again on February 24 and the subgrade became too wet for the equipment. On February 25, the contractor shut down the grading operations due to the pumping.

On March 7, wet spots and pumping areas again began to be removed by the Contractor and fill operations continued. Arizona DOT technicians were present during the high rainfall periods to ensure that no wet fill was covered with the next fill lift. ADOT also made sure that all densities were to specification before continuing.

Final Preparation

Subgrade preparation continued with hauling, filling and grading. There were some oversize rocks in the borrow material, oversize being greater than 3" in the top 2' of fill and greater than 36" below 2' from finish grade. The oversize was carried to the shoulder by the motor grader operator to be picked up later and hauled to the roadside borrow.

By March 24, the subgrade was bladed smooth, compacted, tested for density and was being used as a haul road for fill operations north of the SHRP sections. Towards the end of May, the subgrade fill was staked to finished subgrade elevation, bringing the fill close to finish elevation. Final sampling and testing of the subgrade material took place around the first week of June and the subgrade was ready for placement of the aggregate base starting the second week of June 1993.

FWD Testing - Subgrade Variation

Falling Weight Deflectometer (FWD) testing on the subgrade took place on June 7th and June 8th. Testing was done in the midlane and outer wheelpath. The deflections for Sensors 1 and 7 were normalized to 9,000 lbs for both midlane and outer wheelpath testing. There was significant variation in averages between the sections, and also a high overall project standard deviation. Table 5 lists the project averages and standard deviation for both Sensors 1 and 7. Appendix H shows deflection plots, section averages and standard deviations for all sections except 040121, for which no data was available. Sections 040115, 040120, 040113, 040161 and 040162 all had standard deviations over 8 for Sensor 1, and Sections 040120 and 040113 had standard deviations of up to 20 for Sensor 1.

Table 5. Subgrade FWD deflection averages and standard deviations.

	Outer Wheelpath Deflections at 9000 lbs (mils)		Midlane Deflections at 9000 lbs (mils)	
	Sensor 1	Sensor 7	Sensor 1	Sensor 7
Average	26.9	1.2	26.6	1.2
Standard Deviation	11.5	0.6	11.5	1.2

AGGREGATE BASE

An aggregate base (AB) was constructed on ten of the test Sections (040160, 040117, 040119, 040114, 040118, 040121, 040120, 040113, 040161, 040159). Thickness varied from 4" to 12" of AB. Details of the construction and materials used are described in the following sections.

AB Construction

Placement of the AB began on June 8, 1993 and continued until June 12. Belly-dump trucks were used to spread the AB (approximately 30-35 tons/load) in a windrow. The material was then bladed and water was added. The 4" AB sections were placed in one lift and the 12" AB sections in two 6" lifts. Compaction was obtained using a pneumatic caterpillar PS-180 roller. Heavy construction equipment was also used for compaction. The pneumatic roller made three passes over each section. Photos of AB placement and finished AB are shown in Appendix A.

Since the gradation specification for the AB placed in the SHRP sections was different from that of the rest of the job, AB placement operations consisted of the contractor keeping two drivers separate from other hauling operations. By doing this, the drivers were instructed to only go to SHRP's AB stockpile (Appendix A). This way, segregation of the SHRP AB stockpile was monitored separate from the rest of the project.

AB Materials

Figure 5 shows the location of the F-N-F Construction Materials Stockpiles, and the location of the SHRP AB and Regular AB stockpiles. Appendix A shows a general photo of the aggregate pit.

The AB stockpile was produced utilizing the same crushing operation. The crushing system used was considered to be "closed loop", i.e, no material could get onto the belt going to the stockpile without being sized first.

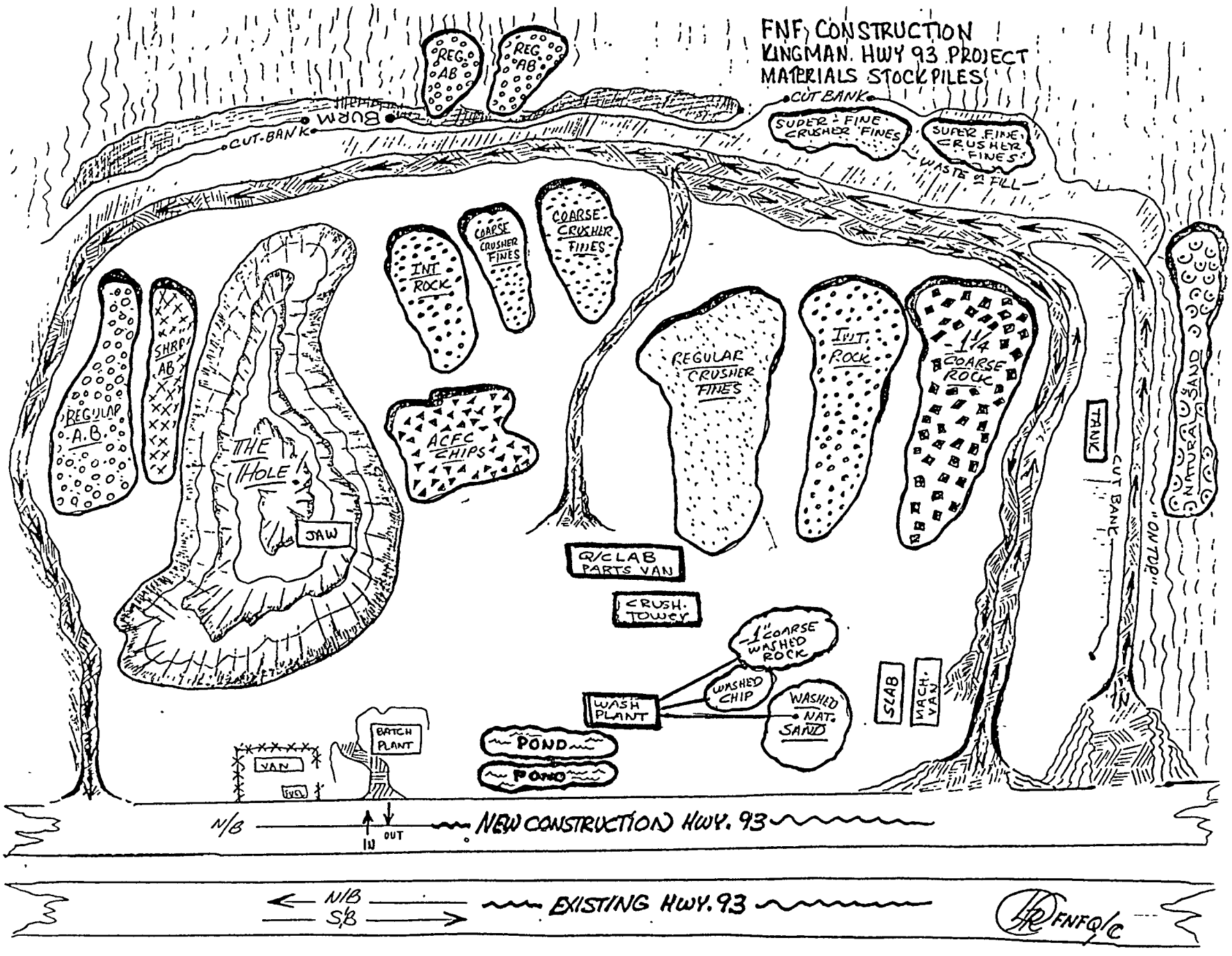


Figure 5. Location of FNF Stockpiles

Material from the borrow was first dumped onto a Pioneer 42" x 40" feeder that fed into a Cedar Rapids 3648 Jaw Crusher set at 5-1/2" (Appendix A). The material fed out of the crusher onto a feeder belt to an Eljay 1316 screening plant with a 6' x 20' 3-deck screen. After screening, all +1" material was fed to an Eljay 54" cone crusher, set at 7/8". The -1" material from the screening was sized and then dumped onto a feeder belt to the AB stockpiles. All of the cone crushed material was fed back to the screening plant, sized and then dumped onto the feeder belt to the AB stockpiles.

Due to the nature and variety of the rock used in the crushing operation, it was necessary to crush the aggregate twice as described above to meet the 75% fractured faces specifications. Table 6 shows AB gradations taken at seven of the test sections, and also the averages compared to the specification. All of the specifications were met except for the -200 amount at Section 040159.

The final measured AB thicknesses for eight of the test sections are shown in Table 7. The AB materials sampling layout is shown in Appendix G.

PERMEABLE BITUMINOUS TREATED BASE (PBTB)

Six sections received a permeable bituminous treated base (PBTB) layer. Three sections were placed directly on subgrade (040122, 040123, 040124) and three sections were placed over a dense-graded aggregate base (040119, 040120, 040121). Each section had edge drains constructed along the outside shoulder for the entire length of the PBTB. Construction of these sections was completed in two phases, the first being construction of the drainage system and the second being placement of the PBTB material.

Drainage System Construction

Construction of the longitudinal edge drains and the transverse interceptor drains began June 17, 1993 and were completed June 30. The edge drain system is comprised of the longitudinal drain running parallel to the roadway along the outside edge of the shoulder, outlet drains approximately 250 feet apart and transverse interceptor drains. Photos of edge drain construction are shown in Appendix A. Since the roadway has a constant cross slope to the outside, the edge drains were only installed along the outer edge of the shoulder. Those sections placed directly on subgrade had a fabric beneath the entire PBTB layer while those placed on the DGAB only had fabric around the edge drains. However, the DGAB was primed prior to PBTB placement. Table 8 lists the location of the outlet drains and the transverse interceptor drains.

The edge and transverse drains were constructed using a backhoe to excavate a 12" deep by 14" wide trench (specification values), however the actual excavated trench was more "U" shaped with a bottom width of 12", a top width of 24" and a depth of 12". Fabric, having the properties listed in Table 9, was then placed around the trench. The fabric was a 100% polyethylene terephthalate trevia Spunbound Fabric S1125, Spartansburg, South Carolina.

Table 6. Aggregate Base on Site Gradations (% Passing)

Section	Sieve Size													
	1"	3/4"	1/2"	3/8"	1/4"	No. 4	No. 8	No. 16	No. 30	No. 40	No. 50	No. 80	No. 100	No. 200
040114	100	86	66	56	43	38	31	24	18	15	12	--	7	4.2
040119	99	88	69	60	50	44	35	27	21	18	15	--	11	7.5
040113	100	88	68	58	48	42	33	--	--	19	--	--	--	6.9
040160	100	90	74	63	52	46	38	30	23	20	17	--	12	7.9
040118	100	95	76	67	--	49	--	--	--	19	--	13	--	7.6
040161	100	88	66	57	--	42	--	--	--	16	--	11	--	6.7
040159	100	96	82	75	--	59	--	--	--	24	--	15	--	8.9
Average	100	90	72	62	48	46	34	27	21	19	15	13	10	7.1
Specification	100	80-100	--	55-75	--	--	30-45	--	--	--	--	--	--	0-8

Table 7. Aggregate Base Layer Thicknesses

Section	Average Thickness (in)	Specified Thickness (in)	Minimum Thickness (in)	Maximum Thickness (in)	Standard Deviation (in)
040117	4.2	4	3.5	5.3	0.39
040119	4.4	4	3.1	6.0	0.74
040114	12.0	12	9.5	14.9	0.94
040118	4.3	4	3.6	5.0	0.31
040121	12.2	12	11.4	13.2	0.42
040120	7.3	8	6.1	8.8	0.61
040113	7.5	8	6.5	8.5	0.48
040161	3.7	4	2.6	5.0	0.57

Table 8. Summary of Drainage Details

Section Number	Project Station	Drainage Feature
040124	1028+50	Intermediate Outlet
040124	1031+00	Intermediate Outlet
040124	1033+50	Dual Outlet
040123	1036+00	Transverse Interceptor Drain
040123	1038+00	Intermediate Outlet
040123	1040+25	Intermediate Outlet
040123	1042+50	Intermediate Outlet
040123	1044+75	Intermediate Outlet
040123	1047+15	Transverse Interceptor Drain
040123	1050+00	Transverse Interceptor Drain
040119	1052+25	Dual Outlet
040119	1054+90	Intermediate Outlet
040119	1057+50	Intermediate Outlet
040122	1090+50	Intermediate Outlet
040122	1093+00	Intermediate Outlet
040122	1095+00	Transverse Interceptor Drain
040121	1097+50	Intermediate Outlet
040121	1100+00	Intermediate Outlet
040121	1102+00	Intermediate Outlet
040121	1103+50	Transverse Interceptor Drain
040120	1105+50	Intermediate Outlet
040120	1108+00	Intermediate Outlet
040120	1110+50	Intermediate Outlet
040120	1113+00	Intermediate Outlet
040120	1115+50	Intermediate Outlet

Table 9. Typical Physical Properties of Trevira Spunbound S1125 Fabric

Fabric Property	Unit	Test Method	Typical Value
Fabric Weight	oz/yd^2	ASTM D-3776	7.5
Thickness, t	mils	ASTM D-1777	110
Grab Strength (MD/CD)	lbs	ASTM D-4632	300/235
Grab Elongation (MD/CD)	%	ASTM D-4632	75/85
Trapezoid Tear Strength (MD/CD)	lbs	ASTM D-4533	105/95
Puncture Resistance	lbs	ASTM D-4833	115
Mullen Burst Strength	psi	ASTM D-3786	400
Water Flow Rate	gpm/ft^2	ASTM D-4491	150
Permittivity	sec^{-1}	ASTM D-4491	2.01
Permeability	cm/sec	ASTM D-4491	0.56
Apparent Opening Size (AOS)	Sieve Size mm	ASTM D-4751	70-100 .210-.149

Figure 6 shows a schematic of the fabric placement for the six sections requiring it. Once fabric was placed into the trench, a 1.5 to 2" lift of a washed open graded aggregate was dumped into the trench using a backhoe. This gravel was then leveled and smoothed by two laborers with shovels. The aggregate was stockpiled in the right-of-way (ROW) in small piles, then loaded into the backhoe. Minor contamination of drain rock was possible with this method. After the thin lift of drain rock was in place, a 4" slotted pipe, as shown in Appendix A, was placed in the trench. Once all pipe was connected, including the outlet drains and the transverse interceptor drains, the trench was backfilled with drain rock, again using the backhoe and laborers. The drain rock was smoothed and compacted using a hand compactor. The fabric was folded over the trench to avoid contamination prior to placement of the PBTB. The aggregate used to backfill the trench was identical to the aggregate used in the PBTB mixture, without any binder.

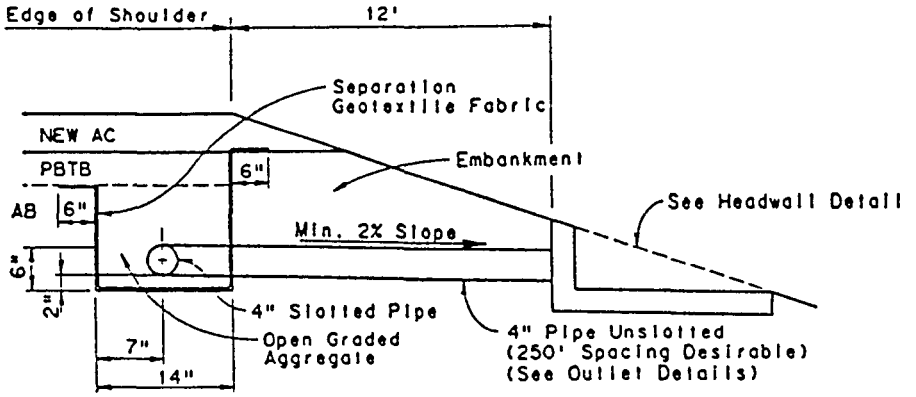
Sections 040122, 040123 and 040124 were placed directly on the subgrade. Therefore, as required by LTPP a filter fabric was placed beneath the PBTB, as was shown in Figure 6. The fabric used was the same as listed in Table 8. Generally, a 12 foot wide roll of fabric was placed in the trench leaving one to two feet overhang on the outside edge of the trench and approximately eight feet across the roadway. A 15 foot wide roll of fabric was then placed in the center of the roadway and overlapped the other fabric approximately one foot. A final 15 foot wide roll was placed across the inside portion of the roadway, which also overlapped the adjacent fabric at least one foot. This resulted in 38 feet of fabric from the outside edge of the trench to the inside edge of the fabric. The fabric was tacked down with nails and shiners and was generally smooth although there were some wrinkles. Very few rips, tears, or gaps were noticed.

For those sections placed directly on DGAB, a prime coat consisting of MC 250 was applied at a rate of 0.40 gallons per square yard a week prior to PBTB placement. No fabric was utilized on these sections.

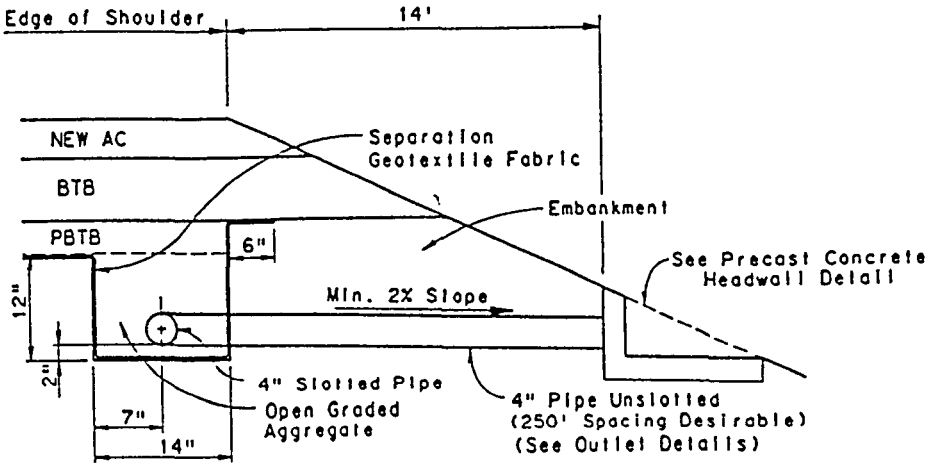
One minor discrepancy between the LTPP requirements and as constructed was that the transverse interceptor drains were installed perpendicular to the roadway rather than at an acute angle.

PBTB Construction

Placement of the PBTB was completed on Sections 040119, 040123, and 040124 on June 29, 1993 and Sections 040122, 040121 and 040120 were all paved July 14, 1993. All PBTB was placed in one 4" compacted lift. The PBTB was placed on Sections 040119, 040123 and 040124 on June 29 and since these sections are back-to-back they were all paved in one consecutive pass. Paving started on the inside portion of the roadway and went from north to south. This allowed for initial placement of the mixture before placing on the test sections in the test lanes. Paving was accomplished with a Blaw Knox PF250 paver (Appendix A). Mix was transported to the roadway via belly dump trucks. The mixture was windrowed ahead of the paver and a Cedar Rapids pick-up machine was used to convey the mix into the paver hopper. Rolling was accomplished using one twelve ton Caterpillar CB614 double smooth drum roller making three



AGGREGATE TRENCH EDGE DRAIN (ATED)
FOR PAVEMENT STRUCTURAL SECTION
Nos Y19, Y20, Y21



AGGREGATE TRENCH EDGE DRAIN (ATED)
FOR PAVEMENT STRUCTURAL SECTION
Nos Y22, Y23, Y24

Figure 6. Fabric Placement, Permeable Bituminous Treated Base Sections, Arizona SPS-1

passes. No vibration was used. The first paving pass began at about 7:30 and was 11 feet wide. Grade was controlled using a wire line on the right hand side of the paver and a 30 foot ski on the left hand side. The wire line was not set by elevations, but rather by using a tape to measure the distance to the finished subgrade or base course. The second, or middle pass, began at 10:50 and was 12.5 feet wide. Grade was controlled using the 30 foot ski on the left side and the electronics off of the finished mat on the right side. The final pass was started at 2:30 with a paving width of 13.5 feet. For this pass, only the right side used the electronic grade controls off of the adjacent mat and the left side was controlled manually. The weather during the paving of theses sections was clear and sunny with ambient temperatures ranging from 80°F in the morning to 95°F at mid-afternoon.

Similar to the first three sections paved, Sections 040120, 040121 and 040122 were also paved continuously. The same equipment and methods were utilized. Paving began on the north end of these sections and proceed to the south. The first pass was on the inside portion of the roadway. This pass was begun at about 7:30 and was 11 feet wide. Grade was controlled using a wire line on the right hand side of the paver and a 30 foot ski on the left hand side. The second pass began at 11:30 and was 12.5 feet wide. Grade was controlled using the 30 foot ski on the left side and the electronics off of the finished mat on the right side. The final pass was started at 1:45 with a paving width of 13.5 feet. For this pass, only the right side used the electronic grade controls off of the adjacent mat and the left side was controlled manually. Weather during paving was hot and sunny with temperatures in the nineties.

The contractor attempted to place the PBTB in 5" uncompacted thicknesses, planning for about a 1" roll down. In most cases it seemed the uncompacted thicknesses were closer to 4.5", however, the final thicknesses were close to 4". Actual field measurements are contained in Table 10.

During placement, compaction of the PBTB was best accomplished when the surface temperature of the PBTB cooled to at least 150°F. The rolling pattern used was making one pass along the edge, returning along the same edge (second pass), making a third pass in the same location then returning along the opposite edge. A second pass was then made along the second edge and the third pass was the return. In most cases a fourth pass was made directly down the center to begin the pattern for the next segment. Rolling occurred in approximately 200 foot segments. Generally the roller was at least a hour behind the paver. The mixture rolled down with very little shoving or slippage. By letting the mixture cool before rolling, very few roller marks were evident (Appendix A).

Traffic was kept off of the PBTB for about two weeks before limited construction traffic was allowed on the PBTB while constructing the successive layers.

Table 10. PBTB Layer Thicknesses

Section	Average Thickness (in)	Planned Thickness (in)	Minimum Thickness (in)	Maximum Thickness (in)	Standard Deviation (in)
040124	4.1	4	3.6	4.7	0.23
040123	3.8	4	3	4.6	0.41
040119	4.5	4	2.6	5.5	0.52
040122	4.6	4	4.3	5.4	0.33
040121	4.2	4	3.4	4.8	0.33
040120	4.3	4	3.0	4.9	0.45

PBTB Materials

As noted in the aggregate processing section of this report, the aggregate for the edge drain trench and the PBTB were both crushed in the pit adjacent to the test sections. Properties of the PBTB aggregate as measured by Arizona DOT from a sample off of the cold feed belt are given in Table 11.

The aggregate was mixed with 2.5% to 3% AC-30 asphalt cement which was supplied by Chevron USA in Richmond, California. The AC-30 had 1% cement added for anti-stripping purposes. The mixture was combined in a CMI PVM-10X portable drum mix plant using a propane fueled burner which was set up in the aggregate pit next to the test sections. Haul distances for all PBTB sections were less than one mile. The PBTB was generally mixed at 230 F and laid between 190 F and 210 F.

Sampling and testing was limited on this material although samples were collected for the LTPP testing requirements and also for the SHRP Materials Reference Library (MRL). A complete materials sampling layout is shown in Appendix G.

PBTB Construction - Section-By-Section

Section 040119

The edge drains were completed June 18, 1993 and the PBTB was placed June 29. The dense graded aggregate base was primed about one week prior to PBTB placement. PBTB placement for the entire job started on this section. The first load of mixture sat in the truck for approximately 45 minutes prior to the start of paving, although temperature was about 200°F. Throughout the section, the windrow size varied causing variations in the amount of mix in the hopper of the paver. The hopper varied from practically empty to overflowing. Paving proceeded continuously, however a few minor delays (5 to 10 minutes) occurred periodically for various reasons. While paving next to the edge drain trench, a soft spot was noticed from Station 1055+30 to 1056+25 (section Station 2+30 to 3+25). The paver wheels were within 1½ feet of the edge drain trench and caused the base material to "hump-up" 2" to 3" next to the trench. This may inhibit the drainage in this area. Also, the backfill in the trench was as much as 2" low from Station 1054+00 to 1057+00 (Section Station 1+00 to 4+00).

Section 040120

Edge drains were completed June 29, 1993 and PBTB placement occurred July 14. The aggregate base course was primed about one week prior to PBTB paving. Construction of the drainable base on this section went very smooth although the amount of mixture in the hopper of the paver tended to vary from 1/4 full to completely full at times.

Table 11. PBTB Aggregate Properties

Aggregate Property	Test Result
Gradation	
Sieve Size	Percent Passing
1½"	100
1"	95
3/4"	65
1/2"	32
3/8"	15
1/4"	4
#4	3
#8	2
#10	1.8
Fractured Faces	93%

Section 040121

Edge drains were completed June 29, 1993 and PBTB placement occurred July 14. The aggregate base course was primed about one week prior to PBTB paving. Construction of the drainable base on this section went very smooth although the amount of mixture in the hopper of the paver tended to vary from 1/4 full to completely full at times.

Section 040122

Edge drains were completed June 29, 1993 and fabric and PBTB placement occurred July 14. Construction of the drainable base on this section went smooth although the amount of mixture in the hopper of the paver tended to vary from 1/4 full to completely full at times.

Section 040123

Construction of the edge drains was completed on this section June 18, 1993. Paving of the PBTB was completed June 29 which was the same day the fabric was placed over the roadway. Generally paving went smooth through this section, however brief delays periodically occurred. The problems with consistency of windrow size were not corrected in this section. Again the mixture in the hopper varied from 1/4 full to completely full. From Station 1047+50 to 1048+00 (Section Station 8+00 to 8+50, transition area) the paver was breaking down the edge of the trench. This was causing the paver to spin its wheels, causing the fabric to be pulled and stretch, resulting in some separation at the overlapped portions. The fabric was re-nailed when possible.

Section 040124

Edge drains were completed June 18, 1993 and the fabric and the PBTB placement occurred June 29. Construction of the drainable base on this section went very smooth although the amount of mixture in the hopper of the paver tended to vary from 1/4 full to completely full at times.

BITUMINOUS TREATED BASE

A bituminous treated base (BTB) was constructed on seven of the test sections (040115, 040116, 040117, 040118, 040122, 040123 and 040124). Thickness varied from 4" to 12" of BTB. Details of the construction methods and materials used are described in the following sections.

BTB Construction

BTB construction began July 15, 1993 and continued through July 23. The weather was consistently clear, sunny and hot with ambient temperatures ranging from the low 80s in the early mornings to near 100°F in the afternoons. Construction began on the south end of the job placing the first lift on Sections 040115, 040124 and 040123, respectively. The second lift was then placed on Section 040124 a few days later. The following day, June 20, the final lift of BTB was placed on Sections 040115, 040117, 040124, 040123 in one continuous paving pass. The first lift on Section 040116 was also placed this day. BTB construction continued June 21 with placement of the second lift on Section 040116 and the first lift on Section 040118. BTB paving was completed June 22 with the placement of the final lift on Sections 040116, 040118 and 040122. All lifts were placed to result in a 4" compacted thickness, therefore Sections 040117 and 040122 were placed in one lift, Sections 040115, 040123 and 040118 were placed in two lifts and three lifts were required for Sections 040124 and 040116. Appendix A shows three lifts of BTB in place. Thickness of the completed BTB layers are listed in Table 12. Placement of each lift of the BTB was completed in three passes, the first being along the inside (west) edge of the pavement and completed along the outside pass.

Paving the BTB was accomplished using a Blaw Knox PF250 paver, the same paver used for the PBTB and the AC. Mix was transported to the roadway via belly dump trucks. The mixture was windrowed ahead of the paver and a Cedar Rapids, or a Cat WE-851B (they were used interchangeably) pick-up machine was used to convey the mix into the paver hopper (Appendix A). Breakdown rolling was accomplished using one twelve ton Caterpillar CB614 double smooth drum roller making four passes in the vibration mode. Two pneumatic tired rollers, a Ingram 25 ton 9-5500 SB and a 18 ton Catapillar PS180, each made six passes for a total of twelve passes for intermediate rolling. Intermediate rolling occurred with the Ingram roller leading the way then the Catapillar roller would follow right behind it. Six passes were completed in this manner. Finish rolling was accomplished with two passes of a twelve ton Catapillar CB614 double smooth drum roller without vibration. Paving grades were generally controlled using a 30 foot ski on one side of the paver and simply the electronics off of the other side.

Where BTB was placed above PBTB one exception to the above procedure was noted. The first lift of BTB on the PBTB was placed using a track paver, specifically a Catapillar track paver. All other equipment was the same. Using a track paver was a requirement for placement above the PBTB due to concern with tearing and shoving caused by a wheeled paver.

BTB Materials

As noted in the aggregate processing section of this report, the aggregate for the BTB was crushed in the pit adjacent to the test sections. Properties of the BTB aggregate as measured by Arizona DOT from sample off of the cold feed belt are listed in Table 13. Average mixture properties for each days production, based on quantity calculation made at the plant, are listed in Table 14. Table 15 summarizes the BTB mixture design for this project determined using the 50-blow Marshall mix design method. Appendix D contains the complete BTB mixture design.

Table 12. BTB Layer Thicknesses

Section	Average Thickness (in)	Planned Thickness (in)	Minimum Thickness (in)	Maximum Thickness (in)	Standard Deviation (in)
040115	8.5	8	7.7	9.5	0.34
040117	4.2	4	3.5	5.3	0.39
040124	11.5	12	10.8	12.2	0.27
040123	7.8	8	7.1	8.4	0.27
040116	11.8	12	11.2	13.3	0.42
040118	7.7	8	7.2	8.2	0.21
040122	4.3	4	3.8	4.6	0.22

Table 13. BTB Mixture Properties - Gradations from Cold Feed

DATE SAMPLED	SIEVE SIZE														
	1 1/2"	1"	3/4"	1/2"	3/8"	1/4"	#4	#8	#10	#16	#30	#40	#50	#100	#200
07/15/93	100	96	81	71	66	58	50	35	33	25	17	13	9	4	2.4
07/15/93	100	96	84	74	68	58	49	34	32	26	17	13	9	4	2.3
07/15/93	100	93	83	74	69	59	51	35	32	24	16	12	9	4	2.4
07/15/93	100	97	86	72	66	57	49	35	33	25	17	13	9	4	2.4
07/15/93	100	97	85	74	68	58	49	34	31	24	17	13	9	4	2.4
07/15/93	100	96	81	69	65	56	47	35	30	23	15	12	9	4	2.2
07/19/93	100	96	84	76	73	64	55	41	38	30	20	15	11	5	2.6
07/19/93	100	97	86	75	69	59	51	37	35	28	19	15	11	5	2.5
07/20/93	100	95	81	71	67	59	51	37	35	27	18	14	10	5	2.8
07/20/93	100	96	84	75	70	61	52	37	35	27	18	14	10	5	2.5
07/20/93	100	99	90	76	70	61	53	37	35	28	19	14	10	4	2.1
07/20/93	100	96	86	75	70	61	52	37	35	29	20	15	10	4	2.4
07/20/93	100	96	83	74	69	60	52	37	34	25	17	13	9	4	2.3
07/20/93	100	95	81	70	65	57	50	38	36	27	18	14	10	4	1.9
07/20/93	100	96	84	74	69	60	52	37	34	27	19	15	11	5	2.1
07/21/93	100	95	86	76	70	59	51	37	35	28	19	15	11	5	2.1
07/21/93	100	96	82	72	68	60	52	39	36	27	18	14	10	4	2.1
07/21/93	100	94	82	69	64	56	48	33	31	25	18	14	10	5	2.8
07/21/93	100	96	84	75	70	58	50	41	39	31	21	16	11	5	2.7
07/21/93	100	95	82	72	67	58	50	40	38	30	20	15	10	4	1.5
07/21/93	100	96	80	69	64	55	47	33	31	23	15	11	8	4	1.8
07/21/93	100	97	85	73	66	55	46	31	29	22	14	10	7	3	2.1
07/21/93	100	96	86	74	68	56	47	35	33	26	17	13	9	4	1.5
07/22/93	100	95	81	71	66	54	47	36	33	26	18	14	10	4	2
07/22/93	100	95	83	71	64	53	45	31	29	23	15	11	8	4	1.6
07/22/93	100	95	83	72	67	57	49	36	33	26	17	13	9	4	1.5
07/23/93	100	96	87	77	73	61	53	38	36	28	19	15	11	5	2.5
07/23/93	100	94	83	74	70	60	51	35	33	26	17	13	9	4	1.8
07/23/93	100	93	81	71	66	56	48	35	33	26	18	14	10	4	2.4
07/23/93	100	95	84	73	68	59	51	37	34	27	18	14	10	4	2.1
07/23/93	100	93	81	72	65	54	47	36	34	27	18	14	10	4	2.3
AVERAGE	100	96	84	73	68	58	50	36	34	26	18	14	10	4	2.2
STD DEV	0.0	1.3	2.2	2.2	2.4	2.5	2.3	2.4	2.4	2.1	1.6	1.3	1.0	0.5	0.36
SPEC.		87/99	77/89		63/75			29/41				10/20			0.3/3.9

Table 14. BTB Mixture Properties - Percent Asphalt, Mineral Filler and Compaction (based on plant data)

Date of Production	Percent Aphalt Cement (Plant)	Percent Mineral Filler (Plant)	Percent Compaction*
07/15/93	4.86	2.10	98.3
07/19/93	5.10	1.93	99.1
07/20/93	5.00	2.02	98.1
07/21/93	5.00	2.16	98.7
07/22/93	5.05	2.00	98.4
07/23/93	4.92	1.86	99.5
Average	4.99	2.01	98.7
Standard Deviation	0.09	0.11	0.5

*Percent of Average Laboratory Bulk Density, approximately 150 lbs/ft^3 average.

Table 15. BTB Mixture Design Summary - 50 Blow Marshall

ADOT Bituminous Treated Base Mix	
Asphalt Type	AC-30
Asphalt Source	Conoco
Admixture Type	Type II Portland Cement
Admixture Source	Phoenix Cement
Marshall Stability (lb)	4302 (1000 min)
% Air Voids	4.2
% Asphalt	4.9

The aggregate was mixed with an average of 5% AC-30 asphalt cement which was supplied by Chevron USA in Richmond, California. The AC-30 did not contain a added anti-stripping agent. The mixture was combined in a CMI PVM-10X portable drum mix plant using a propane fueled burner which was set up in the aggregate pit next to the test sections. Haul distances for all BTB sections were less than one mile. The BTB was generally mixed at 270°F and laid between 212°F and 280°F, with the majority of values around 240°F.

Arizona DOT performed normal project tests, such as gradation/extractions, and density tests. In addition to the project control testing, bulk samples of the BTB mixture were collected. One 55-gallon drum of aggregate was also sampled and sent to the SHRP Materials Reference Library (MRL). Cores of the BTB were taken for LTPP after construction of the surfacing was completed. Appendix G shows a complete materials sampling layout for the BTB sections.

BTB Construction - Section-By-Section

Section 040115

The 8" of BTB on this section was constructed in two lifts. Placement of the first lift occurred July 15, 1993 and the second lift was constructed July 20 and 21. Placement of the first lift utilized the Catapillar track paver while the second lift was completed with the Blaw Knox paver. Paving went smoothly with only minor periodic delays.

Section 040116

The 12" of BTB on this section was constructed in three lifts. Placement of the first lift occurred July 20, the second lift was constructed July 21 and 22 and the final lift was placed July 23. Paving of the final lift was completed utilizing the Catapillar track paver while the underlying lifts were completed with the Blaw Knox paver. Paving went smoothly with only minor periodic delays. The first lift was completed in four passes with widths of 14.75', 13', 12.2' and 13.75'. The second lift was placed in three passes of 13', 14' and 15.5'. The final lift was placed in three passes, 13', 13.3' and approximately 13.5'.

Section 040117

One 4" lift of BTB was placed July 20 and 21 on this section. BTB was placed in three passes, the first pass placed 13.7 feet wide on July 20 and the remaining two passes placed the following day. Both pass 2 and 3 were 14 feet wide. Although there were minor delays, stoppages for up to 8 minutes, no major delays or problems were encountered.

Section 040118

The 8" of BTB on this section was constructed in two lifts. Placement of the first lift occurred July 21 and 22, and the final lift was constructed July 23. Paving of the final lift was

completed utilizing the Catapillar track paver while the underlying lifts were completed with the Blaw Knox paver. Paving went smoothly with only minor periodic delays. The first lift was completed in three passes of 13', 14' and 15.5'. The final lift was placed in three passes, 13', 13.3' and approximately 13.5'.

Section 040122

One 4" lift of BTB was constructed on this section. Placement of this lift was completed utilizing the Catapillar track paver on July 23. Paving went smoothly with no delays. Paving was placed in three passes, 13', 13.3' and approximately 13.5' wide. No problems were noted when the first lift was placed over the PBTB, although the fabric was not wrapped around the edge of the PBTB as planned.

Section 040123

Eight inches of BTB was placed on this section in two lifts. Placement of the first lift occurred July 15, 1993 and the second lift was constructed July 20 and 21. Placement of the first lift utilized the Catapillar track paver while the second lift was completed with the Blaw Knox paver. Paving went smoothly with only minor periodic delays. The first lift was placed in three passes of 13.7', 14' and 14'. Three passes were also utilized on the final lift which were 10.5', 15' and 14' wide. No problems were noted when the first lift was placed over the PBTB, although the fabric was not wrapped around the edge of the PBTB as planned.

Section 040124

BTB construction on this section consisted of placing 12" of BTB in three lifts. Placement of the first lift was completed July 15 using the Catapillar track paver. Subsequent lifts were placed using the Blaw Knox paver. The second lift of BTB was begun July 19. The first pass and a portion of the second pass, up to Station 1032+50 (Test Section Station 4+00) were paved at which time the hot plant broke down. BTB placement resumed July 20 at which time the second lift was completed and the first pass of the third lift was placed. Completion of the third lift occurred July 21. Paving went smoothly with only minor periodic delays. The first lift was placed in four passes of 14.75', 13', 12.2' and 13.75' wide. Three passes were utilized for the second and third lifts. Paving widths of 15', 14', and 14.5' were used on the second lift and the third lift was completed with widths of 10.5', 15' and 14'. No problems were noted when the first lift was placed over the PBTB, although the fabric was not wrapped around the edge of the PBTB as planned.

ASPHALT CONCRETE

Fifteen of the seventeen test sections received an asphalt concrete (AC) surface course, with 040160 and 040163 being the non-AC sections. One section, 040162, was placed directly on the subgrade. Four sections were placed directly on an aggregate base (040114, 040113,

040161, 040159), seven were placed directly on a bituminous treated base (BTB), (photos in Appendix A), (040115, 040117, 040124, 040123, 040116, 040118, 040122) and three were placed on a permeable bituminous treated base (PBTB) (040119, 040121, 040120). The AC thicknesses ranged from 4" to 7". Details of the construction of the AC sections and the materials used are described in the following sections.

AC Construction

Construction of the AC surface course began on July 27, 1993 and continued through August 5 (Appendix A). The weather was consistently clear, sunny and hot with ambient temperatures ranging from the low 80s in the early mornings to near 100 F in the afternoons.

Paving of the AC was accomplished using a Blaw Knox PF250 paver, the same paver used for the PBTB and most of the BTB (Appendix A). A tack coat was placed on all AC, BTB and PBTB surfaces prior to placing the AC layer. A prime coat was placed on AB surfaces prior to placing the AC layer. Mix was transported to the roadway via belly dump trucks. The mixture was windrowed ahead of the paver and a Cedar Rapids, or a Cat WE-851B (they were used interchangeably) pick-up machine was used to convey the mix into the paver hopper. Breakdown rolling was accomplished using one twelve ton Catapillar CB614 double smooth drum roller making four passes in the vibration mode. Two pneumatic tired rollers, an Ingram 25 ton 9-5500 SB and an 18-ton Catapillar PS180, each made six passes for a total of twelve passes for intermediate rolling. Intermediate rolling occurred with the Ingram roller leading the way, then the Catapillar roller would follow right behind it. Six passes were completed in this manner. Finish rolling was accomplished with two passes of a twelve ton Catapillar CB614 double smooth drum roller without vibration. Paving grades were generally controlled using an electronics box with a 30-foot ski on one side of the paver and simply the electronics box off the adjacent mat on the other side.

AC Materials

As noted in the aggregate processing section of this report, the aggregate for the AC was crushed in the pit adjacent to the test sections. Properties of the AC aggregate as measured by Arizona DOT from samples of the cold feed belt are listed in Table 16. Average mixture properties for each days production, based on quantity calculation made at the plant, are listed in Table 17. Table 18 lists asphalt contents obtained from asphalt samples taken from the field. Table 19 summarizes the SHRP AC mixture design for this project, determined using the 75-blow Marshall mix design method. The mix design for Section 040159, using the State Standard Mix, is summarized in Table 20. Appendices B and C contain the complete AC mixture designs for both mixes.

The aggregate was mixed with an average of 4.7% AC-30 asphalt cement which was supplied by Conoco. The AC-30 did not contain an added anti-stripping agent. The mixture was combined in a CMI PVM-10X portable drum mix plant using a propane fueled burner which was

Table 16. Arizona SPS-1 AC Gradations from Cold Feed Belt (% Passing)

Date Sampled	Sieve Size													
	1"	3/4"	1/2"	3/8"	1/4"	No. 4	No. 8	No. 10	No. 16	No. 30	No. 40	No. 50	No. 100	No. 200
7/27	100	99	88	78	67	60	42	39	31	22	18	14	8	5.2
7/27	100	98	87	79	65	58	41	39	32	23	18	14	8	5.4
7/27	100	97	85	78	68	62	43	39	30	22	18	14	8	4.9
7/27	100	97	86	78	67	60	43	40	33	24	20	16	10	5.6
7/27	100	98	86	77	64	57	40	37	28	20	16	13	8	5.0
7/27	100	98	85	77	67	60	42	38	29	20	16	13	8	4.6
7/27	99	96	84	75	64	57	40	36	27	19	16	12	8	4.6
7/27	100	99	85	76	65	59	41	38	30	22	18	14	8	5.4
	100	98	86	77	66	59	42	38	30	22	18	14	8	5
	0.4	1.0	1.3	1.3	1.6	1.7	1.2	1.3	2.0	1.7	1.4	1.2	0.7	0.4
7/28	100	96	83	75	62	55	41	39	33	24	19	15	8	5.3
7/28	100	99	86	78	65	58	41	38	32	23	19	15	8	5.0
7/28	100	98	88	79	67	60	43	39	30	21	17	13	7	3.7
7/28	100	98	88	80	68	61	41	37	29	21	17	13	7	3.8
7/28	100	97	84	75	64	58	41	38	30	21	17	13	7	4
7/28	100	98	88	80	68	61	42	39	31	22	17	13	7	4.3
7/28	100	97	86	77	65	58	41	38	30	21	17	13	7	4.3

Table 16. Arizona SPS-1 AC Gradations from Cold Feed Belt (% Passing) [Cont'd]

Date Sampled	Sieve Size													
	1"	3/4"	1/2"	3/8"	1/4"	No. 4	No. 8	No. 10	No. 16	No. 30	No. 40	No. 50	No. 100	No. 200
7/28	100	98	86	77	64	57	39	36	28	19	15	11	6	3.7
Average	100	98	86	78	65	59	41	38	30	32	18	13	7	4.3
Standard Dev.	0	0.9	1.9	2.0	2.1	2.1	1.1	1.1	1.6	1.5	1.0	1.3	0.6	0.6
7/29	100	97	82	73	61	55	39	36	27	19	15	11	6	3.6
7/29	100	99	84	76	64	57	40	37	29	20	16	12	6	3.8
7/29	100	98	83	73	62	55	37	34	27	19	15	11	6	3.8
7/29	100	98	83	74	63	56	36	33	25	17	14	11	6	3.5
7/29	100	97	84	76	64	57	40	37	28	19	15	11	6	4.1
7/29	100	97	86	78	62	55	39	36	29	21	17	13	7	3.8
7/29	100	98	86	78	65	58	40	36	25	17	14	11	6	3.5
7/29	100	97	87	79	66	59	39	36	28	19	15	11	6	3.7
7/29	100	97	87	79	68	61	42	38	29	21	17	13	7	3.9
Average	100	98	85	76	64	57	39	36	27	19	15	12	6.0	3.7
Standard Dev.	0	0.7	1.9	2.4	2.2	2.1	1.8	1.5	1.6	1.5	1.1	0.9	0.4	0.2
7/30	100	97	86	79	66	59	42	39	30	21	17	13	7	4.4
7/30	100	98	87	80	68	61	45	42	34	25	20	15	8	4.9
7/30	99	97	87	79	65	58	41	38	30	21	17	13	7	4.3
7/30	100	99	86	79	68	61	45	42	35	25	20	15	8	4.7
7/30	100	99	88	81	68	61	42	39	31	22	18	14	8	4.5

Table 16. Arizona SPS-1 AC Gradations from Cold Feed Belt (% Passing) [Cont'd]

Date Sampled	Sieve Size													
	1"	3/4"	1/2"	3/8"	1/4"	No. 4	No. 8	No. 10	No. 16	No. 30	No. 40	No. 50	No. 100	No. 200
7/30	100	99	87	80	68	61	43	40	31	22	18	14	8	4.5
7/30	100	99	87	80	67	59	44	41	31	22	18	14	8	5.4
Average	100	98	87	80	67	60	43	40	32	23	18	14	8	4.7
Standard Dev.	0.4	1.0	0.7	0.8	1.2	1.3	1.6	1.6	2.0	1.7	1.3	0.8	0.5	0.4
8/5	100	98	88	79	65	59	43	40	32	23	19	15	8	5.1

Table 17. AC Mixture Properties - Percent Asphalt, Mineral Filler and Compaction (based on plant data)

Date of Production	Percent Asphalt Cement (Plant)	Percent Mineral Filler (Plant)	Percent Compaction*
7/27	4.57	2.05	96.9
7/28	4.51	2.03	95.6
7/29	4.65	1.92	95.6
7/30	4.95	2.09	96.0
8/5	4.86	?	?
Average	4.71	2.02	96.0
Standard Deviation	0.19	0.07	0.61

*Percent of Average Laboratory Bulk Density, approximately 147.5 lbs/ft^3 average.

Table 18. Asphalt Contents from AC Field Samples

Paving Date	Section	% Asphalt	Lift	Lane
7/27/93	040117	4.65	1	3
7/27/93	040124	4.90	1	1
7/28/93	040114	4.25	2	3
7/28/93	040122	4.30	1	2
7/29/93	040113	4.57	1	2
7/29/93	040161	4.91	3	1
7/30/93	040121	4.53	2	1
7/30/93	040119	5.05	3	2
8/5/93	040115	4.57	2	3
8/5/93	040113	5.02	2	2
Average		4.68		

Table 19. Summary of SHRP AC Mix Design (75 Blow Marshall Method)

ADOT 406, 3/4 Inch Mix	
Asphalt Type	AC-30
Asphalt Source	Conoco
Admixture Type	Type II Portland Cement
Admixture Source	Phoenix Cement
Marshall Stability (lb)	4347 (2000 min)
% Air Voids	5.6
% Asphalt	4.6

Table 20. Summary of State AC Mix Design for Section 040159 (75 Blow Marshall Method)

ADOT Base Mix	
Asphalt Type	AC-30
Asphalt Source	Conoco
Admixture Type	Type II Portland Cement
Admixture Source	Phoenix Cement
Marshall Stability (lb)	5013
% Air Voids	5.6
% Asphalt	4.1

set up in the aggregate pit next to the test sections. Haul distances for all AC sections were less than one and one-half mile. The AC was generally mixed at 280 F and laid between 205 F and 275 F, with the majority of values around 240 F.

Arizona DOT performed normal project tests, such as gradation/extractions and density tests. In addition to the project control testing, bulk samples of the AC mixture were collected. One 55-gallon drum of aggregate was also sampled and sent to the SHRP Materials Reference Library (MRL). Cores of the AC were taken for LTPP after construction of the surfacing was completed.

AC Construction - Section-by-Section

Details of the section by section construction are summarized in the following tables:

Table 20. Asphalt paving construction sequence by section.
Table 21. Asphalt paving times and widths.
Table 22. Uncompacted paving thicknesses by lift.
Table 23. Asphalt paving layer thicknesses.
Table 24. Asphalt paving temperatures.

In Tables 21 and 22, Pass 1 is the furthest inside lane pass, while Pass 3 is the furthest outside lane pass. Not all paving widths and times were available for Table 22. Table 23 lists the average "loose" paving layer thicknesses, as measured in the field. The loose thicknesses were generally measured at both edges of each pass, at 50' intervals longitudinally. Table 24 lists the pavement layer thicknesses measured by a survey of before and after paving elevations. Final elevations were measured at 50' intervals longitudinally and at 0, 3', 6', 9' and 12' from the centerline transversely towards the outer pavement edge. The mean, minimum and maximum paving temperatures are listed in Table 25. Any problems encountered during construction are discussed in the following sections.

Section 040115

The AC layer was placed in three lifts from July 27 until July 30. Lift 1 was placed in three passes of widths: 10'6", 16' and 14'. Lift 2 was placed in widths of 12', 14' and 13'6". Pass 1 of Lift 3 was placed on July 19 with a width of 11'6". Pass 2 was placed on July 30 in a 3" width. The Pass 3 width was not recorded. A cold joint was present in the outer wheelpath of the inside lane, the non-SHRP lane. The 6.4" average final thickness was slightly less than the specified 7" thickness.

Section 040117

Paving took place from July 27 until July 30. The average section thickness was 7.1" and was placed in three lifts. Pass widths for Lift 1 were 10'6", 15' and 14'. For Lift 2, paving

Table 21. Asphalt Paving Construction Sequence by Section

Section	Date	Lift	Pass
040115	7/27/93	1	All
	7/28/93	2	All
	7/29/93	3	1
	7/30/93	3	2,3
040117	7/27/93	1	All
	7/28/93	2	All
	7/29/93	3	1
	7/30/93	3	2,3
040124	7/27/93	1	All
	7/28/93	2	All
	7/29/93	3	1
	7/30/93	3	2,3
040123	7/27/93	1	All
	7/28/93	2	All
	7/29/93	3	1
	7/30/93	3	2,3
040119	7/27/93	1	All
	7/28/93	2	All
	7/29/93	3	1
	7/30/93	3	2,3
040114	7/27/93	1	All
	7/28/93	2	1,2
	7/29/93	2	3
	7/30/93	3	All
040116	7/28/93	1	1,2
	7/29/93	1	3
	7/30/93	2	1,2,3 (to 1072+15)
	8/5/93	2	3 (1072+15 to End)
040118	7/28/93	1	1,2
	7/29/93	1	3
	7/30/93	2	1,2
	8/5/93	2	3
040122	7/28/93	1	1,2
	7/29/93	1	3
	7/30/93	2	1,2
	8/5/93	2	3

Table 21. Asphalt Paving Construction Sequence by Section (cont'd)

Section	Date	Lift	Pass
040121	7/28/93	1	1,2
	7/29/93	1	3
	7/30/93	2	1,2
	8/5/93	2	3
040120	7/28/93	1	1,2
	7/29/93	1	3
	7/30/93	2	1,2
	8/5/93	2	3
040113	7/29/93	1	All
	8/5/93	2	All
040161	7/29/93	1	All
	8/5/93	2	All
040162	7/29/93	1	All
	8/5/93	2,3	All
040159	6/16-6/25	1,2	All

Table 22. Asphalt Paving Times (Military) and Widths

Sections: **040114**
Lift: **1**
Date: **7/27/93**

	Pass 1	Pass 2	Pass 3
Time Begin	1000	1030	1800
Time End	1025	1050	1830
Pass Width	10'9"	11'6"	14'6"

Sections: **040115, 040117, 040124, 040123, 040119**
Lift: **1**
Date: **7/27/93**

	Pass 1	Pass 2	Pass 3
Time Begin	0700	Not Available	Not Available
Time End	Not Available	Not Available	0945
Pass Width	10'6"	15'	14'

Sections: **040115, 040117, 040124, 040123, 040119**
Lift: **2**
Date: **7/28/93**

	Pass 1	Pass 2	Pass 3
Time Begin	0745	Not Available	1645
Time End	0945	1630	1845
Pass Width	12'	14'	13'6"

Table 22. Asphalt Paving Times (Military) and Widths (cont'd)

Sections: **040114, 040116, 040118, 040122, 040121, 040120**
Lift: **1, 2 (Section 14)**
Date: **7/28/93**

	Pass 1	Pass 2	Pass 3
Time Begin	1010	1300	See 7/29/93
Time End	1245	1530	See 7/29/93
Pass Width	Not Available	11	See 7/29/93

Sections: **040114, 040116, 040118, 040122, 040121, 040120**
Lift: **1, 2 (Section 14)**
Date: **7/29/93**

	Pass 1	Pass 2	Pass 3
Time Begin	See 7/28/93	See 7/28/93	0640
Time End	See 7/28/93	See 7/28/93	0945
Pass Width	See 7/28/93	See 7/28/93	11'6"

Sections: **040113, 040161, 040162**
Lift: **1**
Date: **7/29/93**

	Pass 1	Pass 2	Pass 3
Time Begin	0905	1040	1210
Time End	1030	1200	1355
Pass Width	Not Available	Not Available	Not Available

Table 22. Asphalt Paving Times (Military) and Widths (cont'd)

Sections: **040115, 040117, 040124, 040123, 040119**
Lift: **3**
Date: **7/29/93**

	Pass 1	Pass 2	Pass 3
Time Begin	1440	See 7/30/93	See 7/30/93
End	1700	See 7/30/93	See 7/30/93
Pass Width	11'6"	See 7/30/93	See 7/30/93

Sections: **040115, 040117, 040124, 040123, 040119**
Lift: **3**
Date: **7/30/93**

	Pass 1	Pass 2	Pass 3
Time Begin	See 7/29/93	1125	1400
End	See 7/29/93	1333	1520
Pass Width	See 7/29/93	13'	Not Available

Sections: **040114, 040116, 040118, 040122, 040121, 040120**
Lift: **2, 3 (Section 14)**
Date: **7/30/93**

	Pass 1	Pass 2	Pass 3
Time Begin	Not Available	Not Available	See 8/5/93
Time End	Not Available	Not Available	See 8/5/93
Pass Width	14'6"	Not Available	See 8/5/93

Note· Pass 3 was paved on Section 040114 and up to 1072+15 on Section 040116.

Table 22. Asphalt Paving Times (Military) and Widths (cont'd)

Sections: **040162**
Lift: **2**
Date: **8/5/93**

	Pass 1	Pass 2	Pass 3
Time Begin	0730	0815	0911
Time End	0805	0855	0950
Pass Width	13'	Not Available	Not Available

Sections: **040113, 040161, 040162**
Lift: **2, 3 (Section 040162)**
Date: **8/5/93**

	Pass 1	Pass 2	Pass 3
Time Begin	Not Available	Not Available	Not Available
Time End	Not Available	Not Available	Not Available
Pass Width	11'4"	12'	12'6"

Sections: **040116, 00118, 040122, 040121, 040120**
Lift: **2**
Date: **8/5/93**

	Pass 1	Pass 2	Pass 3
Time Begin	See 7/30/93	See 7/30/93	Not Available
Time End	See 7/30/93	See 7/30/93	Not Available
Pass Width	See 7/30/93	See 7/30/93	Not Available

Note: Section 040116 Pass 3 was paved from 1072+50 to the end of the section.

Table 23. Uncompacted Asphalt Paving Thicknesses by Lift

Section	Uncompacted Thickness Lift 1 (in)	Uncompacted Thickness Lift 2 (in)	Uncompacted Thickness Lift 3 (in)	Total Uncompacted Thickness (in)
040115	3.5	2.6	2.9	9
040117	3.5	2.6	3.1	9.2
040124	3.4	2.8	3.0	9.2
040123	3.5	2.7	3.0	9.2
040119	3.4	2.8	2.9	9.1
040114	3.9	2.8	3.0	9.7
040116	2.8	2.8	No Lift 3	5.6
040118	2.7	2.8	No Lift 3	5.5
040122	2.8	2.8	No Lift 3	5.6
040121	3.0	2.8	No Lift 3	5.8
040120	2.9	2.8	No Lift 3	5.7
040113	2.8	2.9	No Lift 3	5.7
040161	4.1	3.0	No Lift 3	7.1
040162	4.0	3.0	3.9	10.9
040163	No AC Lift			
040159	Unknown			

Table 24. Asphalt Layer Thicknesses

Section	Average Thickness (in)	Planned Thickness (in)	Minimum Thickness (in)	Maximum Thickness (in)	Standard Deviation (in)
15	6.4	7	6	7	0.19
17	7.1	7	6.7	7.8	0.28
24	6.8	7	6.4	7.4	0.26
23	6.7	7	6.4	7.2	0.18
19	6.2	7	5.3	7.1	0.33
14	6.9	7	6.4	7.7	0.26
16	3.7	4	3.4	4.8	0.24
18	3.8	4	3.2	4.8	0.25
22	4.0	4	3.0	4.7	0.30
21	4.2	4	3.7	4.7	0.24
20	4.2	4	3.6	5.2	0.27
13	4.2	4	3.5	5.4	0.42
61	5.6	5	4.6	6.1	0.33
62	9	7	8.4	9.7	0.30
59*	6.9	7	6.6	7.2	0.25

*Thickness based on post construction cores.

Table 25. Asphalt Paving Temperatures (F)

Section	Mean	Minimum	Maximum	Standard Deviation
040115	240	221	263	6.0
040117	239	229	259	7.3
040124	241	218	265	9.5
040119	238	216	269	11.2
040114	239	209	257	11.6
040116	240	205	270	10.1
040118	240	211	261	9.5
040122	241	224	259	6.1
040121	239	222	250	7.4
040120	239	217	257	8.9
040113	234	220	256	7.4
040161	240	218	265	9.5
040162	244	226	275	10.4
040159	unknown	unknown	unknown	unknown

widths were 12', 14' and 13'6". Pass 1 of Lift 3 was paved on July 29 and Passes 2 and 3 on July 30. Pass 1 was 11'6" wide and Pass 2, 13' wide. The width of Pass 3 was not recorded. A cold joint existed in the outer wheelpath of the inside lane, the non-SHRP lane. The paver was stopped for twelve minutes at Station 1022+00 on the third pass of Lift 1. On Lift 2, oversized aggregate was present at Station 1023+50 of the 1st pass and was removed and refilled.

Section 040124

The average section thickness was 6.8". Lift 1 was placed on July 27 in three passes of 10'6", 15' and 14'. Lift 2 was placed on July 28 in widths of 12', 14' and 13'6". Lift 3 was placed on two days, with Pass 1 on July 29 in an 11'6" width and Passes 2 and 3 on July 30. The Pass 2 width was 13' and the Pass 3 width was not recorded. A cold joint was present in the outer wheelpath of the inside lane.

Section 040123

The 6.7" section thickness was placed in three lifts. Lift 1 on July 27 in 10'9", 11'6" and 14'6" widths; Lift 2 on July 28 in 12', 14' and 13'6" widths, Pass 1 of Lift 3 on July 29 in an 11'6" width and Passes 2 and 3 of Lift 3 on July 30 in 13' and unknown widths. A cold joint was present in the outer wheelpath of the inside lane. Oversized aggregate was present at Station 1037+50 of Pass 3, Lift 1, and was removed and replaced. The paver stopped for twelve minutes at Station 1045+00 of Pass 3, Lift 1.

Section 040119

Paving took place from July 27 until July 30. The average measured section thickness of 6.2" was significantly below the 7" specified thickness. Lift 1 was placed on July 27 in 10'6", 15' and 14' widths, and Lift 2 on July 28 in 12', 14' and 13'6" widths. Pass 1 was placed on July 29 in a width of 11'6", and Passes 2 and 3 on July 30. Pass 2 measured 13' wide and the width of Pass 3 was not recorded. A cold joint existed in the outer wheelpath of the inside lane. On the first pass of Lift 1, the paver stopped six times for times ranging from one to seven minutes.

Section 040114

The average measured layer thickness was 6.9". Lift 1 was placed on July 27 in 10'9", 11'6" and 14'6" widths. Passes 1 and 2 of Lift 2 were placed on July 28. The Pass 1 width was not recorded and Pass 2 width was 11'. Pass 3 of Lift 2 was paved on July 29 with the width measured at 11'6". A cold joint existed close to midlane of the SHRP lane. Lift 3 was paved on July 30. Pass 1 measured 14'6" and no widths were recorded for Passes 2 and 3.

On Pass 2 of Lift 3, the tack coat was heavy in the vicinity of Station 1063+50 and was scraped off (photo in Appendix A).

Section 040116

The average measured layer thickness was 3.7". Passes 1 and 2 of Lift 1 were paved on July 28. The Pass 1 width was not recorded and Pass 2 width was 11'. Pass 3 was paved on July 29, the width being 11'6". A cold joint existed close to the midlane of the SHRP lane. On July 30, Passes 1 and 2 of Lift 2 were placed, with Pass 1 having a 14'6" width and Pass 2 not having a recorded width. On the third pass of Lift 2 on July 30, the paver stopped at Station 1072+15 for the day at 6:00 p.m. This left a longitudinal cold joint from Station 1072+15 to Station 1115+50, or from Section 040116 to 040120. On August 5, paving began again at Station 1072+15. An AC-30 tack coat was placed on the cold joint prior to paving, but the top of Lift 1 did not receive additional tack since it had been tacked on July 30. The cold joint fell approximately 6.5 ft. right of centerline, placing it close to midlane and within 1' of the outside wheelpath. At about Station 1074+50, the paver ran out of mix on the right hand shoulder on the slope taper. The paving crew did hand work on the taper for the next 70 ft. since the paver ran short on asphalt. Some marks and divets were left in this area. The paving width was not recorded.

The majority of the longitudinal cold joint was hand raked to knock off the rough edges. The roller did not begin compaction until about fifteen minutes after placement of the AC.

Section 040118

Passes 1 and 2 of Lift 1 were paved on July 28. The width of Pass 1 was not recorded and the width of Pass 2 was 11'. Pass 3 of Lift 1 was paved on July 29, having a 11'6" width. This left a cold joint close to the midlane of the SHRP lane. Passes 1 and 2 of Lift 2 were paved on July 30, Pass 1 having a 14'6" width and Pass 2 having an unrecorded width. A heavy tack coat was noticed close to the beginning of the section on Pass 2, Layer 2, and water was present on the tack coat at Station 1081+00 of Pass 2.

Pass 3 of Lift 2 was paved on August 5 and had the longitudinal cold joint 6.5 feet right of centerline continuing from Section 040116. The paving width was unrecorded. A new layer of tack coat was placed from the start of Pass 3, 200' into the section. The tack at Station 1084+00 was sticky and looked very heavy. The paver wheels were picking up the tack coat in this area. The heavier tack was placed approximately 400 feet into the section.

The longitudinal cold joint was hand raked and tacked with AC-30, as in Section 040116. The average measured layer thickness was 3.8".

Section 040122

Passes 1 and 2 of Lift 1 were paved on July 28. The width of Pass 1 was unrecorded and the width of Pass 2 was 11'. Pass 3 of Lift 1 was paved on July 29, having a width of 11'6". This left a cold joint at approximately the midlane of the SHRP lane. Passes 1 and 2 of Lift 2

were placed on July 30, Pass 1 having a 14'6" width and Pass 2 having an unrecorded width. On August 5, Pass 3 of Lift 2 was placed along the longitudinal cold joint. No width was recorded. The cold joint was hand raked and tacked with AC-30. The underlying Lift 1 was retacked with AC-30. The average measured layer thickness was 4.0".

Section 040121

The average measured layer thickness was 4.2". Passes 1 and 2 of Lift 1 were paved on July 28. Pass 1 had an unrecorded paving width and Pass 2 an 11' width. Pass 3 was paved on July 29 and had an 11'6" width. A cold joint was present close to the midlane of the SHRP lane. On July 30, Passes 1 and 2 of Lift 2 were paved, with Pass 1 having a 14'6" width and Pass 2 an unrecorded width. A heavy tack coat was present in the vicinity of Station 1099+50, Pass 2, Lift 2. Pass 3 of Lift 2 as paved August 5 along the existing cold joint. The cold joint was hand raked and tacked with AC-30, and the existing Lift 1 was retacked with AC-30.

Section 040120

Passes 1 and 2 of Lift 1 were placed on July 28. No width was recorded for Pass 1. Pass 2 had an 11' width. Pass 3 was placed on July 29, having an 11'6" width. This left a cold joint close to the midlane of the SHRP lane. On July 30, Passes 1 and 2 of Lift 2 were placed. Pass 1 had a 14'6" width, Pass 2 an unrecorded width. A heavy tack coat was present in the vicinity of Station 1111+00 on Pass 2 of Lift 2. Pass 3 of Lift 2 was placed on August 5. The existing cold joint on Pass 3 of Lift 2 was hand raked and tacked with AC-30 and the existing Lift 1 was re-tacked with AC-30. The cold joint starting within Section 040116 ended at the end of this section. The average measured layer thickness was 4.2".

Section 040113

Lift 1 was paved in three passes on July 29, with no recorded paving widths. Lift 2 was placed on August 5, with paving widths of 11'4", 12' and 12'6". No problems were encountered during paving. The average measured layer thickness was 4.2".

Section 040161

The paving of Lift 1 was done on July 29, with no recorded paving widths for the three passes. On August 5, Lift 2 was placed in 11'4", 12' and 12'6" widths. The average measured layer thickness was 5.6". On Pass 1 of Lift 1, the paver stopped four times for close to five minutes, but no other problems were encountered.

Section 040162

On July 29, Lift 1 was paved in 3 passes with unrecorded widths. Lift 2 was placed in three passes on August 5. Pass 1 had a 13' width and Passes 2 and 3 unrecorded widths. Lift 3

was paved later on August 5 in widths of 11'4", 12' and 12'6". Five stoppages of close to 5 minutes occurred on Pass 1 of Lift 1, and 4 stoppages of 5 minutes occurred on Pass 3 of Lift 1. Lifts 2 and 3 were placed with no delays. The average measured layer thickness was 9". This was significantly higher than the 7" specified by ADOT.

Section 040159

Paving was completed in mid-June 1993. Since this was the state "standard construction" section, it was paved at a different time than all of the SHRP and state supplemental sections. No personnel from LTPP were present for the paving operation, so data is minimal.

The pavement structure for this project consists of one 4" bottom lift and one 3" top lift of asphalt concrete over 4" of aggregate base course. The complete AC mix design is shown in Appendix C. The traffic lanes received a 0.5" asphalt friction course. Post construction cores showed an average section thickness of 6.9".

A lot of asphalt produced on June 16, 1993 had a higher than specified asphalt content, and the acceptance test was rejected. This lot consisted of 2,577 tons of mix in the bottom 4" lift, placed in two phases. The first pass extended 515 feet into the section, with 8' of the 12.5' pass in the east shoulder. The second pass was the middle 12.5' pass, and covered the entire section. Arizona DOT test results indicated that all mix characteristics for this lot of asphalt were acceptable except for percent asphalt.

CONCRETE SECTION 040160

This section consisted of 10" of portland cement concrete pavement (PCCP) over 4" of aggregate base (AB). Within the section, a weigh-in-motion (WIM) system was installed. The system includes equipment and software for collecting, processing, storing, transmitting and manipulating information related to the counting, classifying and speed monitoring of all vehicles and the weighing of trucks and buses. The WIM station was located at the leave end of Section 040160, from Station 5+40 to 6+00. The function of this PCCP section was to allow traffic a smooth ride before crossing the WIM station and, therefore, preventing false readings from traffic dynamics across the WIM station. The WIM station was placed following PCCP construction. Photos of the in-place WIM station and cabinet are shown in Appendix A. The details of the PCCP construction are discussed in the following sections.

PCC Construction

Placement of the PCC surface layer occurred in two stages. The leave end, Stations 1005+00 to 1009+50, was paved on May 19, and the remainder on May 24.

The concrete was a jointed plain concrete with joints spaced at 15'/13'/15'/17' intervals. Table 26 shows the location of the transverse joints in this section. Skewed joints were not used.

Table 26. Location of Transverse Joints, PCC Section 040160

Joint No.	Distance from South End of Slab	Joint No.	Distance from South End of Slab
1	10'4"	27	392'8"*
2	27'4"	28	401'11"
3	42'3"	29	414'11"
4	55'3"	30	429'9"
5	70'3"	31	446'9"
6	87'3"	32	462'
7	102'3"	33	474'10"
8	115'2"	34	489'9"
9	130'3"	35	506'8"
10	147'3"	36	521'8"
11	162'3"	37	534'9"
12	175'2"	38	549'8"
13	190'2"	39	565'8"
14	207'2"	40	581'6"
15	222'1"	41	594'7"
16	235'1"	42	609'6"
17	250'1"	43	626'5"
18	267'	44	641'5"
19	282'	45	654'6"
20	295'	46	669'6"
21	310'1"	47	686'5"
22	327'	48	701'5"
23	342'	49	714'5"
24	355'	50	729'3"
25	369'11"	51	746'4"
26	387'	52	761'3"

Table 26. Location of Transverse Joints, PCC Section 040160 (cont'd)

Joint No.	Distance from South End of Slab	Joint No.	Distance from South End of Slab
53	774'3"	56	821'3"
54	789'3"	57	834'3"
55	806'4"	58	849'3"**

* Construction Joint
** North End of Slab

Epoxy coated 1.25" dowel bars 18" long and spaced 12" apart were placed using transverse dowel baskets which were nailed down to the AB (Appendix A). Longitudinal tie bars were placed using baskets fabricated with #3 longitudinal and #4 transverse bars with wire chairs. The tie bars were 1/2" diameter and spaced 18" apart (Appendix A).

A Bidwell twin auger side form paver with heavy duty 10" forms was used (Appendix A). The paver consisted of two rubber rollers, a 4 foot spinning finishing drum, a burlap drag and a tinning bar (Appendix A). Two hand pan floats were also used for finishing.

The PCC concrete was brought to the site in standard rotating drum 9 and 12 yd^3 concrete trucks (Appendix A). The concrete was batched at a plant approximately one mile (five minutes) away. Travel time from batching to site to departure was recorded by ADOT personnel with a low of ten minutes to a high of twenty minutes.

The concrete occasionally had to be moved down the concrete truck chute using a vibrator. Vibration of the placed PCC was done with a hand vibrator. The vibrator was not always inserted perpendicular to the placement plane, and was occasionally drug through the mix for consolidation. The vibrator was also used to move concrete around instead of shoveling it. Several times during vibration work, the workers stepped on the longitudinal dowel baskets pushing them down or collapsing them.

Following placement, a curing compound, was placed by hand from the Bidwell paver finishing deck (Appendix A). The compound was a WR Meadows, "Sealtight" 1600 water based white pigmented solution, meeting ASTM C-309, Type II, Class A specifications. Fifty-five gallon drums of the curing compound were emptied into a 250 gallon trailer mounted tank and a pump and hose brought the compound to the finishing deck for application.

Tining of the PCC surface was done twice transversely to obtain 7/8" deep cuts (Appendix A). Sawing of longitudinal and transverse joints was done eight to ten hours following placement by Blade Runners Contracting (Appendix A). Two saws were used, one longitudinally and one transversely to obtain approximately 3" cuts. Following the primary cut, a 1.5" reservoir cut was sawn. Both longitudinal and transverse joints, as well as the top of the slab, were then water jetted (Appendix A). The jetting removed excess cuttings from the joints and the surface. (This ensured that the profilometer would have a clean surface to take readings on.) The joints were allowed to air dry and were then sandblasted and air blow clean (Appendix A).

A 1/2" backer rod (Hot Rod XL made in Canada, lot #C2934), was placed in all longitudinal and transverse joints (Appendix A). A Crafco non-slump grey silicone sealant was then placed on top of the backer rod (Appendix A). It was fairly windy during placement and some fines were blown onto the sealant prior to its skinning over, but not a significant amount to cause problems. Arizona DOT personnel measured all reservoir cuts before and after backer rod installation and found the depths to be all within specifications.

Materials

A type 1P Portland-Pozzolan cement was used with a 1" maximum size aggregate for the mix design on this project. A 4000 psi, 28 day design strength with a 2.5" slump was specified. Table 27 summarizes the mix design. Table 28 lists the measured on site slumps and entrained air contents and the 28 day average compressive strengths obtained from lab tests. The complete mix design and concrete compressive strengths obtained are shown in Appendix E.

Detailed Construction

Construction problems occurred during both days of PCC placement and will be discussed in the following sections.

May 19th

The slump value from the first truck at the site measured 1 to 2". The second truck had a 2.5" slump. Approximately 20% into the pour, the slump had increased to the 3 to 3.5" range. As the pour progressed, the slump continued to increase and a slump of 6" was measured at 11:30 a.m. at Station 1007+85.

There were several instances where concrete on one side of the forms had a 1.5 to 2" slump, while the adjacent load was 4". The placement went slowly, taking from 7:40 a.m. until 5:25 p.m.

The majority of the concrete was placed at the upper end of the slump specification and some was placed over the specification. At the conclusion of the pour, the construction supervisor from F-N-F informed LTPP personnel that varying cement temperatures at the plant caused the fluctuation in slump values. The cement was hot at the plant so the aggregate stockpiles were being soaked with water to bring the concrete temperatures down. A second area of concern was the vibration was not performed perpendicular to the surface, and the vibrator was usually drug through the section.

At the end of the pour, #9 tie bars on 30" centers were placed in the perpendicular face of the slab at the construction joint. No one checked to make sure that the bars were square with the slab vertically and horizontally. Following placement of the tie bars, the third bar from the left was cracked in a "V" shape upwards to the surface. No expansion material was used on the construction joint.

Several of the longitudinal dowel baskets collapsed during placement due to the weight of the concrete and instability of the baskets. After the forms were stripped from the slab, there was a large amount of honeycombing along the edges, possibly due to the poor vibrating techniques used.

Table 27. Concrete Mix Design Summary

Cement Type:	Type 1P Portland-Pozzolan
Fine Aggregate:	45%
Air Content:	4.5%
Air Entraining Agent:	9.1 oz/yd
Water Reducing Agent:	24.4 oz/yd
Specified Strength:	4000 psi @ 28 days
Specified Slump:	2.5"

Table 28. Concrete Slumps, Air Contents, Compressive Strengths

Date	Time	Station	Measured Slump (in)	Slump Specification (in)	Entrained Air Content (%)	Entrained Air Specification (%)	Average 28-Day Strength (psi)	Required Strength (psi)
5/19/93	8 38 am	1009+20	2.5	0.5-4.5	5.5	4-7	5166	4000
5/19/93	11:30 am	1007+85	6.0	0.5-4.5	6.5	4-7	3887	4000
5/24/93	7:20 am	1004+50	4.5	0.5-4.5	6	4-7	4077	4000
5/24/93	8:50 am	1003+00	4.3	0.5-4.5	5.2	4-7	5096	4000

May 24th

Concrete placement started at 6:40 a.m. The contractor placed concrete over the longitudinal dowel baskets about 50' in front of placement so that the basket would be "encased" as the pour progressed, preventing collapsing as occurred on the first pour (Appendix A). The contractors were being more careful about collapsing the longitudinal baskets, but still occasionally stepped on the baskets during spreading and vibrating of the concrete.

For this pour, the aggregate stockpiles were pre-wet to try to stabilize the concrete temperatures and slump. There was not as much variability in slump from truck to truck as on May 19, but the concrete was generally wetter. The first sample taken by ADOT had a 5.5" slump and the second a 3.5" slump. The 5.5" slump sample looked typical of the PCC placed on this day.

Vibrating on this day was still inadequate. The vibrating head was tossed into the PCC mix and drug back, and was also used to move the concrete around in the forms. Sometimes the vibrator was left in one spot for a minute or more, and other times it was drug quickly through the mix.

The curing compound was applied using a "watering the yard" technique and appeared to be applied more heavily on this second pour.

Following construction, the Arizona Transportation Research Center required that the section be ground and reprofiled as specified in the specifications, to ensure that the entire section met the 3" per mile Profile Index requirement. This was done and the section met the Profile Index requirement upon reprofiling.

ROLLER COMPACTED CONCRETE

This section consisted of 15" of roller compacted concrete (RCC) placed over the subgrade. A 1" asphalt concrete friction course was placed over the RCC. The RCC was placed in three lifts, Lift 1 on August 6, 1993 and Lifts 2 and 3 on August 7.

The RCC had a design gradation similar to asphalt concrete as shown in Table 29. Five percent of minus 3/8" natural sand was used in combination with 95% minus 1" natural sand, to form a composite gradation. A cold feed belt sample taken on August 6 had a gradation as shown in Table 30. Table 31 summarizes the mix design for the RCC section. Densities taken on Lifts 1, 2 and 3 are shown in Table 32.

The complete RCC mix design is shown in Appendix F. No LTPP personnel were present during construction of the RCC section, therefore, specific construction details are not available.

Table 29. RCC Design Aggregate Gradation

Original Gradation (% Passing)			Composite (% Passing)	Mix Design Targets
Sieve	Minus 3/8" Natural Sand (5%)	Minus 1" Natural Sand (95%)	Combined	
3"	100	100	100	100
1"	100	100	100	
3/4"	100	97.7	98	
1/2"	100	90.9	91	
3/8"	100	85.5	86	
1/4"	99.4	77.4	79	
#4	96.1	72.8	74	55-80
#8	81.8	60.9	62	
#10	77.8	57.4	58	
#16	64.9	47.3	48	
#30	48.7	35.4	36	
#40	40.3	29.1	30	
#50	32.2	23.1	24	
#100	21.2	15.0	15	
#200	14.0	10.1	10.3	5-15

Table 30. Roller Compacted Concrete Cold Feed Gradation, August 6, 1993

Sieve Site	% Passing	Specification
2"	100	100
1-1/2"	98	
1"	89	
3/4"	85	
1/2"	77	
3/8"	71	
1/4"	63	
#4	59	55-80
#8	50	
#10	48	
#16	40	
#30	30	
#40	25	
#50	20	
#100	13	
#200	8.7	5-15

Plasticity Index: Non-Plastic

Table 31. Summary of RCC Mix Design

Cement Type:	Type II Portland/Phoenix Cement
Cement Content:*	8.5% minimum by weight of mix
Design Strength:	1250 psi at 7 days
Optimum Moisture Content:	9%
Maximum Dry Density:	135.2 PCF

*Cement content contains additional 1% cement as a minimum safety factor.

Table 32. Roller Compacted Concrete Densities

Station	Lift	Percent Compaction
1141+00	2	99.5
1142+00	2	101.8
1142+10	1	99.2
1142+20	1	100.6
1142+80	1	100.2
1143+00	2	100.3
1143+10	3	99.7
1143+75	1	99.1
1144+00	3	98.8
1144+20	2	97.5
1145+10	1	100.8
1146+00	1	100.6

IV. SUMMARY

The construction of the Arizona SPS-1 project, Strategic Study of Structural Factors for Flexible Pavements, began on November 5, 1992, with the preparation of the subgrade. The subgrade was completed by the end of May. The subgrade consisted of well graded sands and gravels with some sections of silty sands with gravel. The majority of the project consisted of fill material with depths of up to 10'. Several cut sections occurred from Sta. 113+00 to the end of the project. The subgrade fill was built with roadway excavation and borrow material.

There was excessive rain during the subgrade preparation and some concern about compaction methods. These subgrade problems and other problems and deviations throughout the duration of the project are discussed in Section V (Key Observations).

Aggregate base construction was completed during the first two weeks of June 1993. The aggregate base was constructed on ten of the test sections, and thicknesses varied from 4" to 12". The material used was a crushed aggregate from the FNF (contractor) stockpile. Construction of the longitudinal edge drains and the transverse intercepter drains began June 17th and were completed June 30th. The edge drain system was comprised of a longitudinal drain running parallel to the roadway along the outside edge of the shoulder, outlet drains approximately 250' apart and transverse interceptor drains.

Placement of the PBTB started on June 29, 1993 and was completed on July 14, 1993. All PBTB was placed in one 4" compacted lift.

BTB construction began July 15, 1993 and continued through July 23rd. Thicknesses varied from 4" to 12" and up to three lifts of BTB were placed.

Fifteen of the seventeen test sections received an asphalt concrete surface course with construction beginning on July 27, 1993 and continuing through August 5th. The AC thicknesses ranged from 4" to 7".

At the far south end of the test sections, a 10" PCC section over 4" of aggregate base was placed from May 19th to May 24th. At the north end of the PCC section, a weigh-in-motion system was installed to monitor traffic.

A special roller compacted concrete section was constructed consisting of 1" of an asphalt friction course over 15" of a roller compacted concrete mix. The paving took place in August of 1993.

The project was completed on time with only a few minor problems, as discussed in the next section.

V. KEY OBSERVATIONS

Key observations within each layer will be discussed in the following sections.

SUBGRADE

During placement of the subgrade, rain delayed operations for several days and caused the subgrade to become excessively saturated. The contractor was careful to remove all saturated "pumping" areas prior to placing another layer of fill, and all compaction tests following placement were within specifications.

Although all compaction tests passed for the subgrade, there is some concern that all of the "wet" subgrade material may not have been removed or dried out sufficiently, mostly in the underlying layers of the fill. Also, the compaction method using loaded scrapers and haul trucks may not have given uniform densities throughout the project, even though all densities passed specifications.

The FWD deflection analysis in Appendix H shows the subgrade variation, and shows several sections, 040115, 040120, 040113, 040161 and 040162, with high deflection variations which may indicate soft spots still existed at the time of testing.

DENSE GRADED AGGREGATE BASE

Placement operations went well and the final average measured thicknesses were close to the specified thicknesses. Section 040114 had a fairly high thickness range, with a low of 9.5 and a high of 14.9.

PERMEABLE BITUMINOUS TREATED BASE (PBTB)

A minor discrepancy between the LTPP requirements and as constructed was that the transverse interceptor drains were installed perpendicular to the roadway rather than at an acute angle. The average measured layer thicknesses were close to the specified thicknesses.

The fabric underlying the PBTB sections was generally overlapped one foot, not two feet as specified by SHRP.

While paving Section 040119, from Sta. 2+30 to Sta. 3+25, the paver wheels were within 1-1/2' of the edge drain trench and caused the base material to "hump-up" 2" to 3" next to the trench. This may inhibit the drainage in this area.

On Section 040123, from Sta. 8+00 to Sta. 8+50, the paver was breaking down the edge of the trench. This caused the paver to spin its wheels, causing the fabric to be pulled and stretched, resulting in some separation at the overlapped portions. The fabric was re-nailed when possible.

BITUMINOUS TREATED BASE (BTB)

While paving Sections 040122, 040123 and 040124, the fabric was not wrapped around the edge of the PBTB as specified by SHRP. The Arizona Specifications, page 22, do not show an overlap of the fabric either.

The average measured layer thicknesses for the BTB sections were all close to the specified thicknesses, with all standard deviations falling below 0.42.

ASPHALT CONCRETE (AC)

During paving, the paver had several stops of up to five minutes. On two occasions, both passes 3 of lift 1 on Sections 040117 and 040123, the paver was stopped for twelve minutes. The stationing was 1022+00 on Section 040117, and 1045+00 on Section 040123. Section 040114 had a cold joint close to the midlane of the SHRP lane. This occurred between pass 2 and pass 3 of lift 2.

On the third pass of lift 2 on July 30th, the paver stopped at Sta. 1072+15 for the day. This left a cold joint from Sta. 1072+15 to Sta. 1115+50, or from within Section 040116 to the end of Section 040120. The sections having the cold joint were 040116, 040118, 040122, 040121 and 040120. The cold joint fell approximately 6.5' right of centerline, placing it close to midlane, and also within 1' of the outside wheelpath. The sections were not completed until August 5th. A tack coat was placed along the cold joint edge to obtain bond strength with the subsequent overlay. Future LTPP personnel performing distress surveys should take note of this cold joint area.

Section 040119 had an average thickness of 6.2", significantly below the specified 7" specified by SHRP. Section 040162, a State Supplemental Section, had an average thickness of 9", significantly higher than the 7" specified by ADOT.

The tack coat within Sections 040114 and 040120 was heavy in areas and scraped off as much as possible. These sections should be monitored in the future for bleeding areas. A heavy tack coat was present close to the beginning of Section 040118 on Pass 2 of Lift 2. A heavy tack coat was placed 400' into the section on Pass 3 of Lift 2. This section should also be monitored in the future for bleeding.

One lot of asphalt with a high asphalt content was placed in the bottom 4" lift of Section 040159. All of the mix characteristics were acceptable by ADOT standards except for the higher than average AC contents.

PORTLAND CEMENT CONCRETE (PCC)

The vibration of the PCC during placement was not done uniformly and honeycombing was noticed along the edges of the slab in areas. In some areas, vibrating was done for several minutes, while in others, the vibrator was quickly drug through the mix.

During placement, workers occasionally stepped on longitudinal dowel baskets, collapsing them. Due to the PCC being already placed, the baskets were not replaced.

The majority of PCC placed fell at the upper end of the 4 to 7% slump specification range.

ROLLER COMPACTED CONCRETE (RCC)

No details were available for construction of the RCC section.

APPENDIX A

PHOTOGRAPHS OF SPS-1 CONSTRUCTION

Photo 1. Aggregate Pit

Photo 2. AC Hot Plant

Photo 3. Cedar Rapids Crusher

Photo 4. Aggregate Base Stockpile

Photo 5. Subgrade Belly Dumps

Photo 6. Subgrade Processing

Photo 7. Finished Subgrade

Photo 8. Aggregate Base Placement

Photo 9. Finished Aggregate Base

Photo 10. Edge Drain Placement Next to PATB Section

Photo 11. Close-up of Slotted Edge Drain Pipe

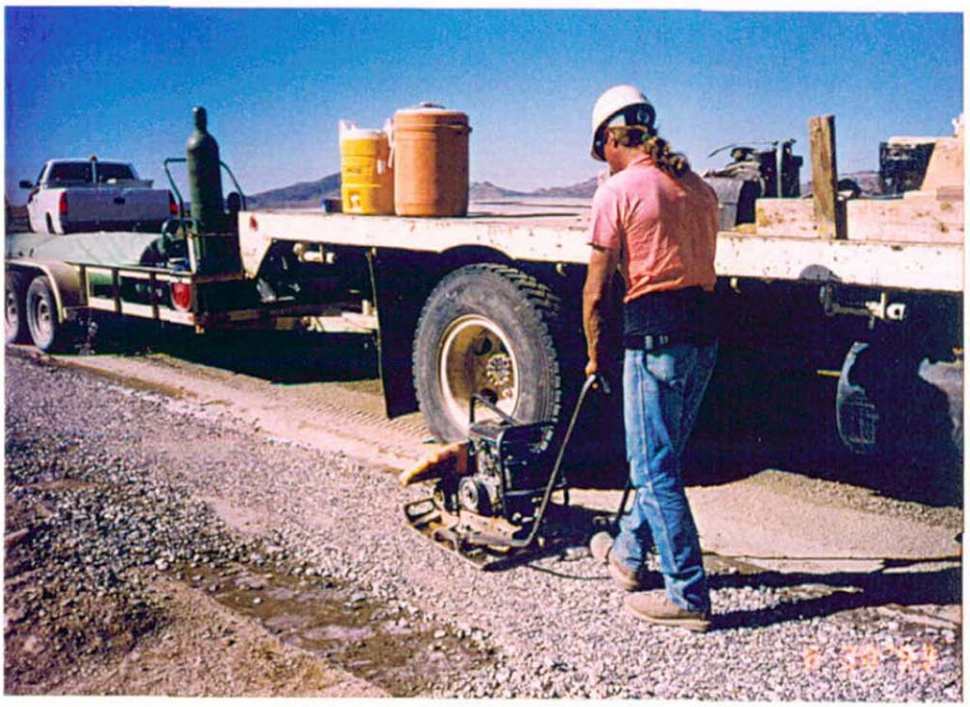


Photo 12. Compaction of Covered Edge Drain

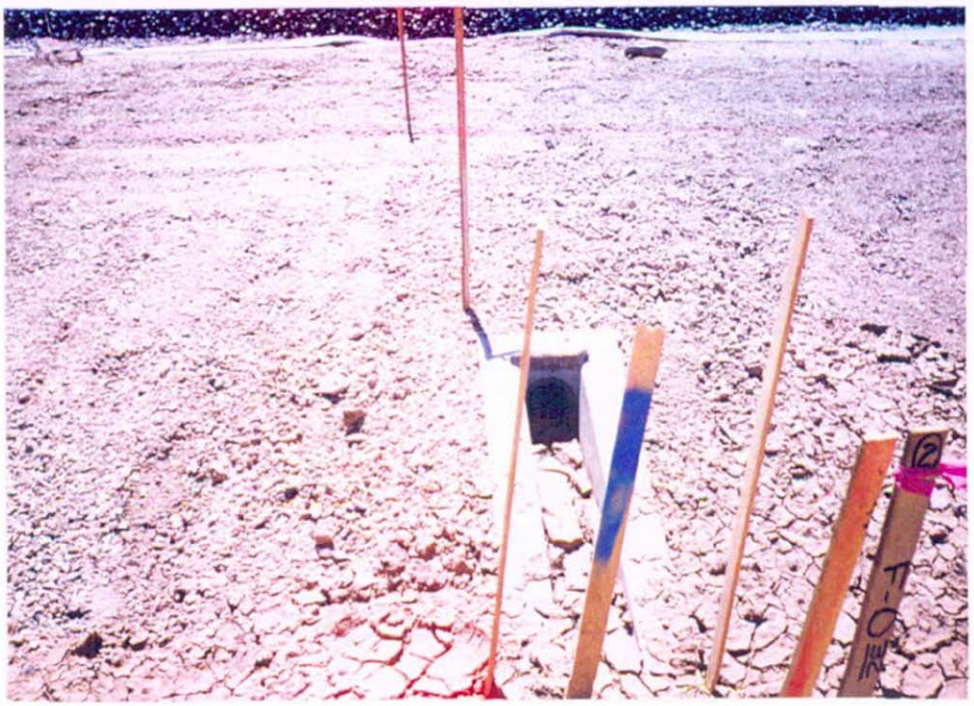


Photo 13. Typical Edge Drain Outlet

Photo 14. PATB Placement with Rubber-Tired Paver

Photo 15. PATB One Day After Placement

Photo 16. BTB Windrow in Front of Paver

Photo 17. PATB Digout of Slotted Pipe

Photo 18. BTB Paver

Photo 19. Shoulder of Section 040116, Showing 3 Lifts of BTB

Photo 20. AC Lift Placed Over BTB

Photo 21. Placing Second Lift of AC

Photo 22. Third Lift, Middle Pass, Section 040124

Photo 23. Heavy Tack Coat, Section 040117, Middle Pass, Right Edge

Photo 24. Excessive Tack Coat Between Middle and Top Lift
SHRP Lane, Section 040114

Photo 25. Section 040160 PCC Being Placed with Cement Truck

Photo 26. Section 040160 Transverse Dowel Baskets and Encased (with PCC) Longitudinal Tie Bar Baskets

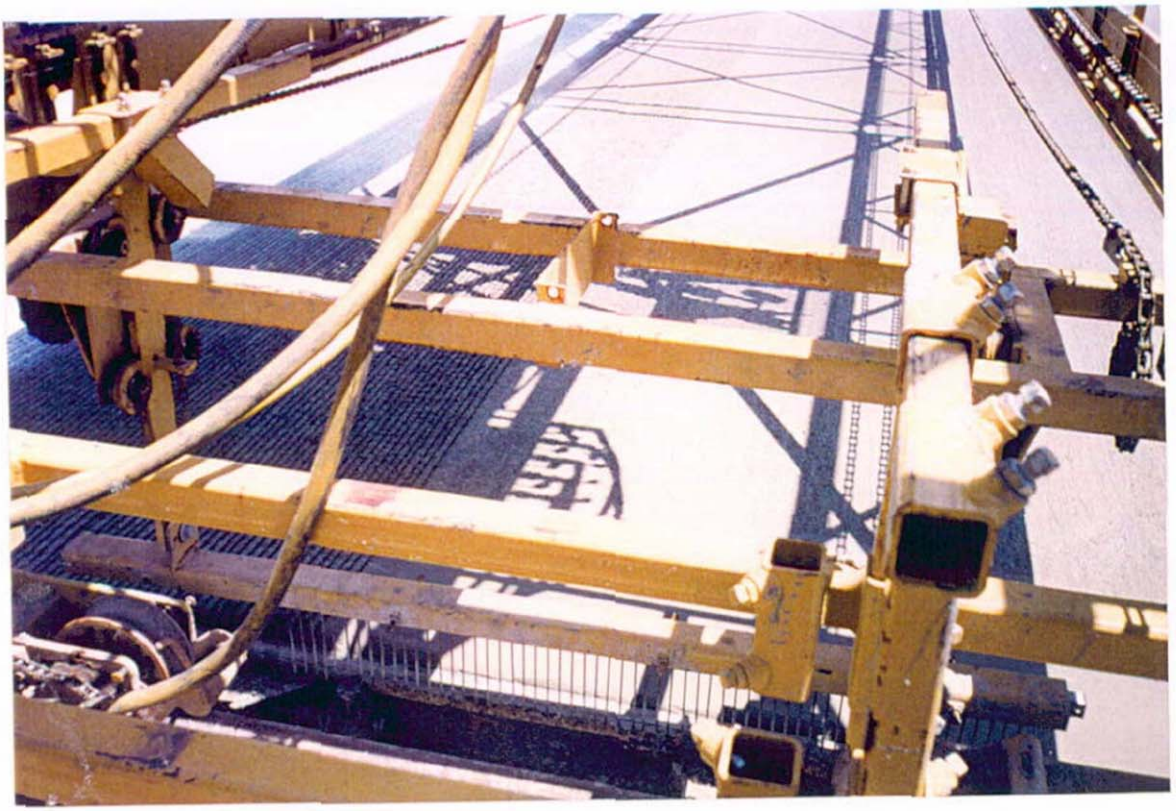


Photo 27. Section 040160 Tining PCC Surfacae

Photo 28. Section 040160 Heavy Duty Side Forms

Photo 29. Section 040160 Spraying Curing Compound by Hand

Photo 30. Section 040160 Sawing Transverse Joints

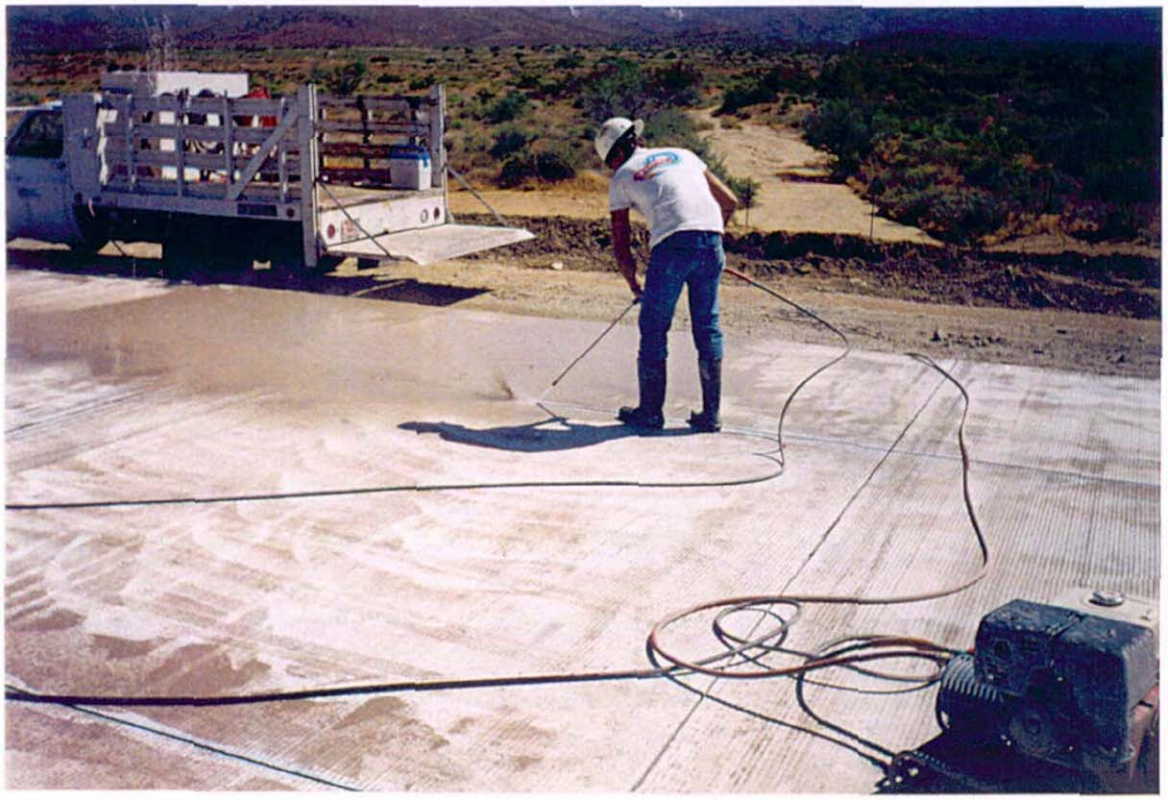


Photo 31. Section 040160 Water Jetting Longitudinal Joint

Photo 32. Section 040160 Airblowing Transverse Joint

Photo 33. Section 040160 Sealed Longitudinal Joint and Backer Rod (Dark) in Transverse Joint

Photo 34. Weather Station and WIM Cabinet

Photo 35. WIM Station

Photo 36. Close-Up of WIM Pad

APPENDIX B

ADOT 406 3/4" MIX DESIGN

Coronado Engineering & Consulting

127 South Weber Drive, Suite B-1, Chandler, AZ 85226 Phone 602-940-0276 Fax 602-940-0263

TECHNICAL REPORT

MARSHALL MIX DESIGN

CLIENT FNF CONSTRUCTION, INC

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

MIX DESIGNATION ADOT 406 3/4 INCH MIX

SAMPLE SOURCE STOCKPILES

LAB NO 9306082

DATE 6/28/93

PROJECT NO F-039-1-509

SOURCE OF MAT'L FNF PIT

SAMPLED BY CLIENT

% MINERAL ADMIX 2 0

COMPOSITE GRADATION

MATERIAL I D		% USED W/O ADMIX	% USED W/ADMIX
COARSE	CRUSH F	10	9 8
NATURAL	SAND	35	34 3
WASHED	SAND	25	24 5
INTER	AGG	10	9 8
-1 WASHED	AGG	20	19 6
ADMIX			2 0

SIEVE	W/O ADMIX % PASSING	W/ADMIX % PASSING	SPEC LIMITS
1-1/4	100	100	100
1'	100	100	100
[illegible]	97	97	90-100
	86	87	
[illegible]	78	79	65-80
1/4'	67	67	
#4	61	62	
#8	43	44	41-50
#10	39	41	
#16	31	32	
#30	22	23	
#40	17	19	13-21
#50	13	14	
#100	7	9	
#200	4 2	6 1	3 0-6 5

AGGREGATE PROPERTIES

	COARSE	FINE	COMBINED	SPEC
BULK OD SP GR	2 660	2 637	2 646	2 35-2 85
SSD SP GR	2 696	2 658	2 673	
APPARENT SP GR	2 759	2 694	2 719	
ABSORPTION	1 341	0 806	0 954	0-2 50
SAND EQUIVALENT			52	45 min
PLASTICITY INDEX			NP	
CRUSHED FACES			72	60 min
L A ABRASION				
100 REV % LOSS			6	9 max
500 REV % LOSS			25	40 max

DESIGN DATA

SPECIMEN	1	2	4	3	SPEC
BIT GRADE/SP GR	AC 30	1 044			
% OF BITUMEN	4 0	4 5	4 6	5 0	
BULK DENSITY (pcf)	144 5	146 5	146 8	148 0	
MARSHALL STABILITY (lb)	3529	4279	4347	4616	2000 min
FLOW	12	13	13	13	8-16
% AIR VOIDS	7 9	6 0	5 6	4 3	5 3 5 7
% VMA	16 1	15 4	15 3	15 0	15 0-18 0
% AIR VOIDS FILLED	50 7	61 2	63 2	71 2	
% EFF ASP TOTAL MIX	3 68	4 18	4 28	4 68	

IMMERSION COMPRESSION

SAMPLE	AIR PSI	H2O PSI	RETENTION	% AC	% ADMIX
NO 1	413 0	233 9	56 6	4 6	2 0
NO 2					
SPEC		150 min	50 min		

RECOMMENDED BITUMEN CONTENT (%) = 4.6

ADDITIONAL DATA

MAXIMUM DENSITY = 155 6 PCF @ 4 6 %

ASPHALT ABSORPTION ON DRY AGG (%) = 0 34

ASPHALT TYPE AC-30

ASPHALT SOURCE CONOCO

ADMIX TYPE TYPE II PORTLAND

ADMIX SOURCE PHOENIX CEMENT

Registered Professional Engineer (Civil) CERTIFICATE NO. 23216 DONALD L. CORNELISON Date Signed 7-6-93 ARIZONA, U.S.A.

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ARSHALL MIX DESIGN DATA

TECHNICAL REPORT

CLIENT	FNF CONSTRUCTION, INC	DATE	6/28/93
PROJECT	HOOVER DAM - KINGMAN HWY (US 93)	PROJECT NO	F-039-1-509
MIX DESIGNATION	ADOT 406 3/4 INCH MIX	SOURCE OF MAT'L	FNF PIT
SAMPLE SOURCE	STOCKPILES	SAMPLED BY	CLIENT
LAB NO	9306082	% MINERAL ADMIX	2 0

PERCENT ASPHALT	PERCENT ADMIX	SPECIMEN NUMBER	SSD WEIGHT	H2O WEIGHT	AIR WEIGHT	SPECIFIC GRAVITY	BULK DENSITY	HEIGHT (inches)	STABILITY (pounds)	CORRECTION FACTOR	CORRECTED STABILITY	FLOW
		1	1159 7	660 4	1158 2	2 320	144 5	2 465	3630	1 02	3703	12
4 00	2 00%	2	1166 5	664 2	1164 0	2 317	144 4	2 485	3495	1 01	3530	12
		3	1160 4	662 5	1155 4	2 321	144 6	2 477	3290	1 02	3356	12
		AVG				2 319	144 5				3529	12
		1	1175 7	675 8	1172 4	2 345	146 1	2 463	4000	1 02	4080	14
4 50	2 00%	2	1168 6	674 4	1165 4	2 358	146 9	2 432	4150	1 04	4316	14
		3	1170 8	674 1	1168 4	2 352	146 5	2 469	4355	1 02	4442	12
		AVG				2 352	146 5				4279	13
		1	1175 9	682 9	1174 3	2 382	148 4	2 425	4295	1 05	4510	14
5 00	2 00%	2	1166 8	675 9	1165 2	2 374	147 9	2 429	4225	1 05	4436	12
		3	1182 9	685 8	1179 3	2 372	147 8	2 455	4760	1 03	4903	13
		AVG				2 376	148 0				4616	13

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...IX DESIGN VOID CALCULATIONS

TECHNICAL REPORT

CLIENT FNF CONSTRUCTION, INC

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

MIX DESIGNATION ADOT 406 3/4 INCH MIX

SAMPLE SOURCE STOCKPILES

LAB NO 9306082

DATE 6/28/93

PROJECT NO F-039-1-509

SOURCE OF MAT L FNF PIT

SAMPLED BY CLIENT

% MINERAL ADMIX 2 0

SPECIFIC GRAVITY DATA

	COARSE AGG	FINE AGG	COMBINED AGG
BULK OD	2 660	2 637	2 646
SSD	2 696	2 658	2 673
APPARENT	2 759	2 694	2 719
ABSORPTION	1 341	0 806	0 954

RICE TEST DATA

MAX SP GR	MAX DENSITY	%AC	ASPHALT SP GR	EFFECTIVE SP GR	ASPHALT ABSORPTION	ADMIX SP GR
2 441	152 1	6 0	1 0440	2 669	0 344	3 14

VOID CALCULATIONS

PERCENT ASPHALT	SPECIFIC GRAVITY	BULK DENSITY	PERCENT AGG	PERCENT ADMIX	TOTAL % ADMIX	AGG VOLUME	ADMIX VOLUME	EFFECTIVE ASPHALT	ASPHALT VOLUME	VMA	EFFECTIVE VOIDS	VOIDS FILLED
4 0	2 319	144 5	94 118	2 0	1 882	82 495	1 390	3 676	8 167	16 115	7 948	50 681
4 5	2 352	146 5	93 627	2 0	1 873	83 224	1 403	4 178	9 413	15 374	5 961	61 225
5 0	2 376	148 0	93 137	2 0	1 863	83 635	1 409	4 680	10 651	14 956	4 305	71 214
4 6	2 357	146 8	93 529	2 0	1 871	83 307	1 404	4 278	9 658	15 289	5 631	63 170
4 7	2 362	147 1	93 431	2 0	1 869	83 389	1 405	4 379	9 905	15 205	5 300	65 141

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EFFECT OF WATER ON COHESION OF BITUMINOUS MIXTURES **TECHNICAL REPORT**

CLIENT FNF CONSTRUCTION, INC

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

MIX DESIGNATION ADOT 406 3/4 INCH MIX

SAMPLE SOURCE STOCKPILES

LAB NO 9306082

DATE 6/28/93

PROJECT NO F-039-1-509

SOURCE OF MAT'L FNF PIT

SAMPLED BY CLIENT

% MINERAL ADMIX 2 0

PERCENT ASPHALT 4 6

SPECIMEN NUMBER	HEIGHT	SSD WT	H2O WT	AIR WT	SPECIFIC GRAVITY	BULK DENSITY	AVG SP GR	AVG DENSITY
1	4 080	1853 6	1029 8	1850 2	2 246	139 9		
2	4 062	1858 1	1032 3	1850 4	2 241	139 6		
3	4 045	1859 9	1035 7	1851 0	2 246	139 9	2 238	139 4
4	4 053	1858 1	1028 1	1850 6	2 230	138 9		
5	4 088	1857 3	1028 9	1850 4	2 234	139 2		
6	4 092	1858 0	1028 7	1851 0	2 232	139 1		

DESIGN DENSITY OF STABILITY SPECIMENS = 146 8

% OF LAB DENSITY = IMC DENSITY/MARSHALL DENSITY x 100 = 95 0

LOAD = 2750 PSI

COMPRESSIVE STRENGTH OF DRY SPECIMENS

SPECIMEN NUMBER	LOAD FAIL POINT	AVG LOAD FAIL POINT	PSI
1	4984		
2	5344	5191	413 0
4	5246		

COMPRESSIVE STRENGTH OF WET SPECIMENS

SPECIMEN NUMBER	LOAD FAIL POINT	AVG LOAD FAIL POINT	PSI
3	2984		
5	2918	2940	233 9
6	2918		

INDEX OF RETAINED STRENGTH = PSI (WET)/PSI (DRY) x 100 = 56 6

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TECHNICAL REPORT

COMPOSITE GRADATION

CLIENT FNF CONSTRUCTION, INC

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

MIX DESIGNATION ADOT 406 3/4 INCH MIX

SAMPLE SOURCE STOCKPILES

LAB NO 9306082

DATE 6/28/93

PROJECT NO F 039 1 509

SOURCE OF MAT L FNF PIT

SAMPLED BY CLIENT

% MINERAL ADMIX 2 0

ORIGINAL GRADATION - % PASSING

MAT L NAME	MAT L 1 COARSE CRUSH F	MAT L 2 NATURAL SAND	MAT L 3 WASHED SAND	MAT L 4 INTER AGG	MAT'L 5 -1" WASHED AGG	MAT'L 6	COMPOSITE % PASS (w/o ADMIX)	COMPOSITE % PASS (w/ADMIX)	GRADATION SPECS	SIEVE
% USED	10	35	25	10	20					
SIEVE										
1-1/4"	100 0	100 0	100 0	100 0	100 0		100	100	100	1-1/4"
1"	100 0	100 0	100 0	100 0	100 0		100	100	100	1"
3/4"	100 0	97 7	100 0	100 0	89 5		97	97	90-100	3/4"
1/2"	100 0	90 9	100 0	100 0	47 2		86	87		1/2"
3/8"	100 0	85 5	100 0	85 4	25 0		78	79	65-80	3/8"
1/4"	100 0	77 4	98 6	38 2	5 5		67	67		1/4"
#4	98 3	72 8	93 2	20 0	3 0		61	62		#4
#8	24 6	60 9	74 5	4 3	2 0		43	44	41-50	#8
#10	12 5	57 4	69 1	3 7	1 9		39	41		#10
	4 7	47 3	53 5	2 8	1 7		31	32		#16
	3 1	35 4	34 7	2 3	1 5		22	23		#30
#40	2 7	29 1	24 6	2 2	1 4		17	19	13-21	#40
#50	2 3	23 1	15 6	2 0	1 3		13	14		#50
#100	1 7	15 0	4 4	1 7	1 0		7	9		#100
#200	1 2	10 1	1 1	1 3	0 7		4 2	6 1	3 0-6 5	#200

MAT L 1 =
MAT L 2 =
MAT L 3 =
MAT L 4 =
MAT L 5 =
MAT L 6 =

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TECHNICAL REPORT

ADDITIONAL TEST DATA

CLIENT FNF CONSTRUCTION, INC

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

MIX DESIGNATION ADOT 406 3/4 INCH MIX

SAMPLE SOURCE STOCKPILES

LAB NO 9306082

DATE 6/28/93

PROJECT NO F-039-1-509

SOURCE OF MAT L FNF PIT

SAMPLED BY CLIENT

% MINERAL ADMIX 2 0

AGGREGATE SPECIFIC GRAVITIES

MAT'L	COARSE AGGREGATE	FINE AGGREGATE
S S D WT	3868 2	500 0
O D WT	3817 0	496 0
IMMERSED WT	2433 4	982 9
FLASK & H2O	-	671 0
BULK O D SP GR	2 660	2 637
S S D SP GR	2 696	2 658
APPARENT SP GR	2 759	2 694
% ABSORPTION	1 341	0 806

RICE TEST

	SAMPLE WT (DRY)	FLASK + H2O	SAMPLE + FLASK + H2O	SAMPLE WT (S S D)	SAMPLE VOLUME	MAXIMUM SP GR	MAXIMUM DENSITY
1	1080 7	3438 5	4079 8	1083 9	442 6	2 442	152 1
2	1051 5	3426 6	4050 4	1055 0	431 2	2 439	151 9
3	1055 0	3379 3	4006 3	1058 8	431 8	2 443	152 2
AVG						2 441	152 1

SAND EQUIVALENT

	SAMPLE # 1	SAMPLE # 2	SAMPLE # 3	AVERAGE
SAND	3 7	3 7	3 6	
CLAY	6 8	7 7	7 1	
S E	55	49	51	52

CRUSHED FACES

TOTAL SAMPLE WT	WT CRUSHED	% CRUSHED FACES
300 4	215 2	71 6

APPENDIX C

ADOT STANDARD AC MIX DESIGN (SECTION 040159)

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TECHNICAL REPORT

MARSHALL MIX DESIGN

CLIENT FNF CONSTRUCTION, INC

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

MIX DESIGNATION ADOT BASE MIX

SAMPLE SOURCE STOCKPILES

LAB NO 9305080

DATE 6/1/93

PROJECT NO F-039-1-509

SOURCE OF MAT'L 0

SAMPLED BY CLIENT

% MINERAL ADMIX 2 0

COMPOSITE GRADATION

MATERIAL I D		% USED W/O ADMIX	% USED W/ADMIX
COARSE	CRUSH F	5	4 9
CRUSHER	FINES	15	14 7
WASHED	SAND	33	32 4
3/8" MINUS	SAND	5	4 9
INTER	AGG	14	13 7
COARSE	AGG	28	27 5
ADMIX			2 0

SIEVE	W/O ADMIX % PASSING	W/ADMIX % PASSING	SPEC LIMITS
-1/4'	100	100	100
"	99	99	90-100
3/4"	92	92	85-95
1/2"	82	83	
3/8"	74	75	60-75
1/4"	63	64	
#4	57	58	
#8	41	42	36-46
#10	38	39	
#16	30	31	
#30	21	23	
#40	17	18	10-18
#50	13	14	
#100	7	8	
#200	3 4	5 3	2 0-5 5

AGGREGATE PROPERTIES

	COARSE	FINE	COMBINED	SPEC
BULK OD SP GR	2 705	2 649	2 673	2 35-2 85
SSD SP GR	2 728	2 668	2 693	
APPARENT SP GR	2 768	2 700	2 728	
ABSORPTION	0 838	0 705	0 756	0-2 50
SAND EQUIVALENT			64	45 min
PLASTICITY INDEX			NP	
CRUSHED FACES			98	70 min
L A ABRASION				
100 REV % LOSS			6	9 max
500 REV % LOSS			25	40 max

DESIGN DATA

SPECIMEN	1	4	2	3	SPEC
BIT GRADE/SP GR	AC-30	1 044			
% OF BITUMEN	4 0	4 1	4 5	5 0	
BULK DENSITY (pcf)	148 5	148 9	150 6	151 7	
MARSHALL STABILITY (lb)	4955	5013	5246	5590	3000 min
FLOW	10	10	9	12	8-16
% AIR VOIDS	6 0	5 6	3 9	2 5	5 3-5 7
% VMA	14 6	14 5	13 9	13 7	14 5-17 0
% AIR VOIDS FILLED	59 0	61 4	71 6	81 4	
% EFF ASP TOTAL MIX	3 78	3 88	4 29	4 79	

IMMERSION COMPRESSION

SAMPLE	AIR PSI	H2O PS	RETENTION	% AC	% ADMIX
NO 1	426 0	357 5	83 9	4 1	2 0
NO 2					
SPEC	250 min	150 min	50 min		

RECOMMENDED BITUMEN CONTENT (%) = 4.1

ADDITIONAL DATA

MAXIMUM DENSITY = 157 7 PCF @ 4 1 %

ASPHALT ABSORPTION ON DRY AGG (%) = 0 23

ASPHALT TYPE AC-30

ASPHALT SOURCE CONOCO

ADMIX TYPE TYPE II PORTLAND

ADMIX SOURCE PHOENIX CEMENT

Registered Professional Engineer (Civil) CERTIFICATE NO 23216 DONALD L. CORNELISON Date Signed 6-7-93 ARIZONA, U.S.A.

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TECHNICAL REPORT

MARSHALL MIX DESIGN DATA

CLIENT FNF CONSTRUCTION, INC

DATE 6/1/93

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

PROJECT NO F-039-1-509

MIX DESIGNATION ADOT BASE MIX

SOURCE OF MAT'L 1/0/00

SAMPLE SOURCE STOCKPILES

SAMPLED BY CLIENT

LAB NO 9305080

% MINERAL ADMIX 2 0

PERCENT ASPHALT	PERCENT ADMIX	SPECIMEN NUMBER	SSD WEIGHT	H2O WEIGHT	AIR WEIGHT	SPECIFIC GRAVITY	BULK DENSITY	HEIGHT (inches)	STABILITY (pounds)	CORRECTION FACTOR	CORRECTED STABILITY	FLOW
		1	1167 6	680 8	1164 9	2 393	149 1	2 398	4740	1 07	5072	10
4 00	2 00%	2	1173 8	682 0	1171 6	2 382	148 4	2 382	4650	1 08	5022	10
		3	1161 7	673 8	1159 2	2 376	148 0	2 412	4500	1 06	4770	11
		AVG				2 384	148 5				4955	10
		1	1175 1	689 5	1174 0	2 418	150 6	2 390	4870	1 08	5260	11
4 50	2 00%	2	1169 7	686 6	1168 2	2 418	150 6	2 388	4700	1 08	5076	9
		3	1160 3	681 4	1158 1	2 418	150 7	2 397	5050	1 07	5404	8
		AVG				2 418	150 6				5246	9
		1	1176 0	691 9	1175 3	2 428	151 3	2 371	5010	1 09	5461	12
5 00	2 00%	2	1180 7	695 2	1179 4	2 429	151 3	2 389	5200	1 08	5616	12
		3	1180 4	698 7	1179 2	2 448	152 5	2 352	5130	1 11	5694	12
		AVG				2 435	151 7				5590	12

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TECHNICAL REPORT

MIX DESIGN VOID CALCULATIONS

CLIENT FNF CONSTRUCTION, INC

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

MIX DESIGNATION ADOT BASE MIX

SAMPLE SOURCE STOCKPILES

LAB NO 9305080

DATE 6/1/93

PROJECT NO F-039-1-509

SOURCE OF MAT L 0

SAMPLED BY CLIENT

% MINERAL ADMIX 2 0

SPECIFIC GRAVITY DATA

	COARSE AGG	FINE AGG	COMBINED AGG
BULK OD	2 705	2 649	2 673
SSD	2 728	2 668	2 693
APPARENT	2 768	2 700	2 728
ABSORPTION	0 838	0 705	0 756

RICE TEST DATA

MAX SP GR	MAX DENSITY	%AC	ASPHALT SP GR	EFFECTIVE SP GR	ASPHALT ABSORPTION	ADMIX SP GR
2 456	153 0	6 0	1 044	2 689	0 230	3 14

VOID CALCULATIONS

PERCENT ASPHALT	SPECIFIC GRAVITY	BULK DENSITY	PERCENT AGG	PERCENT ADMIX	TOTAL % ADMIX	AGG VOLUME	ADMIX VOLUME	EFFECTIVE ASPHALT	ASPHALT VOLUME	VMA	EFFECTIVE VOIDS	VOIDS FILLED
4 0	2 384	148 5	94 118	2 0	1 882	83 936	1 429	3 784	8 640	14 635	5 995	59 035
4 5	2 418	150 6	93 627	2 0	1 873	84 700	1 442	4 285	9 925	13 858	3 933	71 617
5 0	2 435	151 7	93 137	2 0	1 863	84 849	1 445	4 786	11 163	13 706	2 543	81 448
4 1	2 391	148 9	94 020	2 0	1 880	84 090	1 432	3 884	8 894	14 478	5 584	61 430
4 2	2 397	149 4	93 922	2 0	1 878	84 243	1 434	3 984	9 150	14 323	5 173	63 883

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TECHNICAL REPORT

EFFECT OF WATER ON COHESION OF BITUMINOUS MIXTURES

CLIENT FNF CONSTRUCTION, INC

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

MIX DESIGNATION ADOT BASE MIX

SAMPLE SOURCE STOCKPILES

LAB NO 9305080

DATE 6/1/93

PROJECT NO F-039-1-509

SOURCE OF MAT'L 0

SAMPLED BY CLIENT

% MINERAL ADMIX 2 0

PERCENT ASPHALT 4 1

SPECIMEN NUMBER	HEIGHT	SSD WT	H2O WT	AIR WT	SPECIFIC GRAVITY	BULK DENSITY	AVG SP GR	AVG DENSITY
1	4 051	1868 6	1052 3	1855 1	2 273	141 6		
2	4 076	1879 6	1056 2	1866 8	2 267	141 2		
3	4 034	1868 6	1048 3	1857 1	2 264	141 0	2 270	141 4
4	4 064	1869 2	1046 2	1862 3	2 263	141 0		
5	4 029	1868 3	1050 8	1860 7	2 276	141 8		
6	4 024	1866 2	1051 4	1855 1	2 277	141 8		

DESIGN DENSITY OF STABILITY SPECIMENS = 148 9

% OF LAB DENSITY = IMC DENSITY/MARSHALL DENSITY x 100 = 95 0

LOAD = 2750 PSI

COMPRESSIVE STRENGTH OF DRY SPECIMENS

SPECIMEN NUMBER	LOAD FAIL POINT	AVG LOAD FAIL POINT	PSI
2	5672		
3	4918	5355	426 0
5	5475		

COMPRESSIVE STRENGTH OF WET SPECIMENS

SPECIMEN NUMBER	LOAD FAIL POINT	AVG LOAD FAIL POINT	PSI
1	4170		
4	4525	4494	357 5
6	4787		

INDEX OF RETAINED STRENGTH = PSI (WET)/PSI (DRY) x 100 = 83 9

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TECHNICAL REPORT

COMPOSITE GRADATION

CLIENT FNF CONSTRUCTION, INC

DATE 6/1/93

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

PROJECT NO F-039-1-509

MIX DESIGNATION ADOT BASE MIX

SOURCE OF MAT'L

SAMPLE SOURCE STOCKPILES

SAMPLED BY CLIENT

LAB NO 9305080

% MINERAL ADMIX 2 0

ORIGINAL GRADATION - % PASSING

	MAT'L 1	MAT'L 2	MAT L 3	MAT'L 4	MAT'L 5	MAT'L 6				
MAT'L NAME	COARSE CRUSH F	CRUSHER FINES	WASHED SAND	3/8" MINUS SAND	INTER AGG	COARSE AGG	COMPOSITE % PASS (w/o ADMIX)	COMPOSITE % PASS (w/ADMIX)	GRADATION SPECS	SIEVE
% USED	5	15	33	5	14	28				
SIEVE										
1-1/4"	100 0	100 0	100 0	100 0	100 0	100 0	100	100	100	1-1/4"
1"	100 0	100 0	100 0	100 0	100 0	94 9	99	99	90-100	1"
3/4"	100 0	100 0	100 0	100 0	100 0	72 3	92	92	85-95	3/4"
1/2'	100 0	100 0	100 0	100 0	100 0	36 6	82	83		1/2"
3/8"	100 0	100 0	100 0	100 0	85 4	15 7	74	75	60-75	3/8"
1/4"	100 0	97 6	99 0	99 4	38 2	2 8	63	64		1/4"
#4	98 3	91 1	92 7	96 1	20 0	2 0	57	58		#4
	24 6	67 4	74 5	81 8	4 3	1 2	41	42	36-46	#8
	12 5	61 3	69 8	77 8	3 7	1 1	38	39		#10
#16	4 7	47 1	56 0	64 9	2 8	1 0	30	31		#16
#30	3 1	34 6	38 9	48 7	2 3	0 8	21	23		#30
#40	2 7	29 2	29 7	40 3	2 2	0 8	17	18	10-18	#40
#50	2 3	24 3	20 6	32 2	2 0	0 7	13	14		#50
#100	1 7	16 5	7 6	21 2	1 7	0 6	7	8		#100
#200	1 2	10 0	2 7	14 0	1 3	0 4	3 4	5 3	2 0-5 5	#200

MAT'L 1 =
MAT'L 2 =
MAT'L 3 =
MAT L 4 =
MAT'L 5 =
MAT'L 6 =

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TECHNICAL REPORT

ADDITIONAL TEST DATA

CLIENT FNF CONSTRUCTION, INC

DATE 6/1/93

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

PROJECT NO F-039-1-509

MIX DESIGNATION ADOT BASE MIX

SOURCE OF MAT'L 0

SAMPLE SOURCE STOCKPILES

SAMPLED BY CLIENT

LAB NO 9305080

% MINERAL ADMIX 2 0

AGGREGATE SPECIFIC GRAVITIES

MAT'L	COARSE AGGREGATE	FINE AGGREGATE
S S D WT	4017 1	500 0
O D WT	3983 7	496 5
IMMERSED WT	2544 4	983 6
FLASK & H2O	-	671 0
BULK O D SP GR	2 705	2 649
S S D SP GR	2 728	2 668
APPARENT SP GR	2 768	2 700
% ABSORPTION	0 838	0 705

RICE TEST

	SAMPLE WT (DRY)	FLASK + H2O	SAMPLE + FLASK + H2O	SAMPLE WT (S S D)	SAMPLE VOLUME	MAXIMUM SP GR	MAXIMUM DENSITY
1	1047 0	3468 7	4090 1	1048 4	427 0	2 452	152 8
2	1065 5	3379 3	4013 6	1067 5	433 2	2 460	153 2
3	1069 4	3438 5	4074 7	1071 3	435 1	2 458	153 1
AVG						2 456	153 0

SAND EQUIVALENT

	SAMPLE # 1	SAMPLE # 2	SAMPLE # 3	AVERAGE
SAND	4 2	4 1	4 1	
CLAY	7 1	6 5	6 3	
S E	60	64	66	64

CRUSHED FACES

TOTAL SAMPLE WT	WT CRUSHED	% CRUSHED FACES
300 6	295 7	98 4

APPENDIX D

BITUMINOUS TREATED BASE MIX DESIGN

Coronado Engineering & Consulting

127 South Weber Drive, Suite B-1, Chandler, AZ 85226 Phone 602-940-0276 Fax 602-940-0263

TECHNICAL REPORT

MARSHALL MIX DESIGN

CLIENT FNF CONSTRUCTION, INC

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

MIX DESIGNATION ADOT BITUMINOUS TREATED BASE MIX

SAMPLE SOURCE STOCKPILES

LAB NO 9306061

DATE 6/1/93

PROJECT NO F-039-1-509

SOURCE OF MAT'L 0

SAMPLED BY CLIENT

% MINERAL ADMIX 2 0

COMPOSITE GRADATION

MATERIAL I D		% USED W/O ADMIX	% USED W/ADMIX
1 1/2"	MINUS	10	9 8
1 1/4"	MINUS	25	24 5
3/8" MINUS	NAT SAND	5	4 9
WASH	SAND	40	39 2
ACFC	CHIPS	20	19 6
ADMIX			2 0

SIEVE	W/O ADMIX % PASSING	W/ADMIX % PASSING	SPEC LIMITS
1-1/2"	100	100	100
[illegible]	93	93	85-95
[illegible]	83	84	80-90
[illegible]	74	75	
3/8"	69	70	60-70
1/4	59	60	
#4	49	50	
#8	35	36	31-41
#10	33	34	
#16	26	28	
#30	19	20	
#40	15	16	9-16
#50	10	12	
#100	5	6	
#200	2 1	4 1	2 0-5 5

AGGREGATE PROPERTIES

	COARSE	FINE	COMBINED	SPEC
BULK OD SP GR	2 677	2 648	2 663	2 35-2 85
SSD SP GR	2 711	2 672	2 692	
APPARENT SP GR	2 770	2 715	2 742	
ABSORPTION	1 255	0 929	1 070	0 2 50
SAND EQUIVALENT			58	45 min
PLASTICITY INDEX			NP	
CRUSHED FACES			95	60 min
L A ABRASION				
100 REV % LOSS			6	9 max
500 REV % LOSS			25	40 max

DESIGN DATA

SPECIMEN	1	5	2	3	SPEC
BIT GRADE/SP GR	AC 30	1 044			
% OF BITUMEN	4 5	4 9	5 0	5 5	
BULK DENSITY (pcf)	147 6	149 8	150 4	151 2	
MARSHALL STABILITY (lb)	3626	4302	4471	4072	1000 min
FLOW	11	12	12	12	8-16
% AIR VOIDS	6 2	4 2	3 7	2 5	3 8-4 2
% VMA	15 3	14 3	14 1	14 1	14 0-17 0
% AIR VOIDS FILLED	59 2	70 6	73 7	82 4	
% EFF ASP TOTAL MIX	3 99	4 40	4 50	5 00	

IMMERSION COMPRESSION

SAMPLE	AIR PSI	H2O PSI	RETENTION	% AC	% ADMIX
NO 1	486 0	372 1	76 6	4 9	2 0
NO 2					
SPEC		150 min	50 min		

RECOMMENDED BITUMEN CONTENT (%) = 4.9

ADDITIONAL DATA

MAXIMUM DENSITY = 156 4 PCF @ 4 9 %

ASPHALT ABSORPTION ON DRY AGG (%) = 0 54

ASPHALT TYPE AC-30

ASPHALT SOURCE CONOCO

ADMIX TYPE TYPE II PORTLAND

ADMIX SOURCE PHOENIX CEMENT

Registered Professional Engineer (Civil) CERTIFICATE NO 23216 DONALD L CORNELISON Date Signed 6-28-93 ARIZONA, U.S.A.

Coronado Engineering & Consulting

127 South Weber Drive, Suite B-1, Chandler, AZ 85226 Phone 602-940-0276 Fax 602-940-0263

MARSHALL MIX DESIGN DATA

TECHNICAL REPORT

CLIENT FNF CONSTRUCTION, INC

DATE 6/1/93

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

PROJECT NO F-039-1-509

MIX DESIGNATION ADOT BITUMINOUS TREATED BASE MIX

SOURCE OF MAT'L 1/0/00

SAMPLE SOURCE STOCKPILES

SAMPLED BY CLIENT

LAB NO 9306061

% MINERAL ADMIX 2 0

PERCENT ASPHALT	PERCENT ADMIX	SPECIMEN NUMBER	SSD WEIGHT	H2O WEIGHT	AIR WEIGHT	SPECIFIC GRAVITY	BULK DENSITY	HEIGHT (inches)	STABILITY (pounds)	CORRECTION FACTOR	CORRECTED STABILITY	FLOW
		1	1166 2	675 4	1163 3	2 370	147 7	2 434	3625	1 04	3770	11
4 50	2 00%	2	1168 2	675 9	1163 5	2 363	147 2	2 448	3800	1 03	3914	11
		3	1173 8	681 0	1168 8	2 372	147 8	2 452	3100	1 03	3193	11
		AVG				2 368	147 6				3626	11
		1	1176 9	691 0	1175 4	2 419	150 7	2 384	4435	1 08	4790	13
5 00	2 00%	2	1177 1	689 8	1176 0	2 413	150 3	2 406	3715	1 06	3938	12
		3	1180 8	691 6	1179 5	2 411	150 2	2 413	4420	1 06	4685	12
		AVG				2 414	150 4				4471	12
		1	1177 0	692 6	1176 4	2 429	151 3	2 404	4200	1 07	4494	14
	2 00%	2	1183 6	694 9	1182 8	2 420	150 8	2 415	3215	1 06	3408	10
		3	1180 6	695 5	1180 2	2 433	151 6	2 393	3995	1 08	4315	12
		AVG				2 427	151 2				4072	12

Coronado Engineering & Consulting

127 South Weber Drive, Suite B-1, Chandler, AZ 85226 Phone 602-940-0276 Fax 602-940-0263

MIX DESIGN VOID CALCULATIONS

TECHNICAL REPORT

CLIENT ENF CONSTRUCTION INC

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

MIX DESIGNATION ADOT BITUMINOUS TREATED BASE MIX

SAMPLE SOURCE STOCKPILES

LAB NO 9306061

DATE 6/1/93

PROJECT NO F-039 1-509

SOURCE OF MAT'L 0

SAMPLED BY CLIENT

% MINERAL ADMIX 2 0

SPECIFIC GRAVITY DATA

	COARSE AGG	FINE AGG	COMBINED AGG
BULK OD	2 677	2 648	2 663
SSD	2 711	2 672	2 692
APPARENT	2 770	2 715	2 742
ABSORPTION	1 255	0 929	1 070

RICE TEST DATA

MAX R	MAX DENSITY	%AC	ASPHALT SP GR	EFFECTIVE SP GR	ASPHALT ABSORPTION	ADMIX SP GR
2 465	153 6	6 0	1 044	2 700	0 540	3 14

VOID CALCULATIONS

PERCENT ASPHALT	SPECIFIC GRAVITY	BULK DENSITY	PERCENT AGG	PERCENT ADMIX	TOTAL % ADMIX	AGG VOLUME	ADMIX VOLUME	EFFECTIVE ASPHALT	ASPHALT VOLUME	VMA	EFFECTIVE VOIDS	VOIDS FILLED
4 5	2 368	147 6	93 627	2 0	1 873	83 287	1 412	3 995	9 063	15 300	6 238	59 231
5 0	2 414	150 4	93 137	2 0	1 863	84 461	1 432	4 497	10 401	14 107	3 706	73 730
5 5	2 427	151 2	92 647	2 0	1 853	84 461	1 432	5 000	11 625	14 107	2 482	82 408
4 8	2 396	149 3	93 333	2 0	1 867	83 993	1 424	4 296	9 860	14 582	4 722	67 619
4 9	2 405	149 8	93 235	2 0	1 865	84 227	1 428	4 397	10 130	14 344	4 214	70 619
4 7	2 387	148 7	93 431	2 0	1 869	83 758	1 420	4 196	9 593	14 821	5 228	64 724

Coronado Engineering & Consulting

127 South Weber Drive, Suite B-1, Chandler, AZ 85226 Phone 602-940-0276 Fax 602-940-0263

TECHNICAL REPORT

COMPOSITE GRADATION

CLIENT	FNF CONSTRUCTION, INC	DATE	6/1/93
PROJECT	HOOVER DAM KINGMAN HWY (US 93)	PROJECT NO	F 039-1 509
MIX DESIGNATION	ADOT BITUMINOUS TREATED BASE MIX	SOURCE OF MAT'L	
SAMPLE SOURCE	STOCKPILES	SAMPLED BY	CLIENT
LAB NO	9306061	% MINERAL ADMIX	2 0

ORIGINAL GRADATION - % PASSING

	MAT'L 1	MAT'L 2	MAT'L 3	MAT'L 4	MAT'L 5	MAT'L 6				
MAT'L	1 1/2"	1 1/4"	3/8" MINUS	WASH	ACFC		COMPOSITE	COMPOSITE	GRADATION	
SIZE	MINUS	MINUS	NAT SAND	SAND	CHIPS		% PASS	% PASS	SPECS	SIEVE
% USED	10	25	5	40	20		(w/o ADMIX)	(w/ADMIX)		
SIEVE										
1/2	100 0	100 0	100 0	100 0	100 0	100 0	100	100	100	1-1/2"
	45 9	94 9	100 0	100 0	100 0	100 0	93	93	85-95	1"
[illegible]	4 1	72 3	100 0	100 0	100 0	100 0	83	84	80-90	3/4"
1/2"	2 1	36 6	100 0	100 0	100 0	100 0	74	75		1/2"
[illegible]	1 7	15 7	100 0	100 0	100 0	100 0	69	70	60-70	3/8
1/4"	1 4	2 8	99 4	99 0	69 7	100 0	59	60		1/4"
	1 3	2 0	96 1	92 7	33 8	100 0	49	50		#4
[illegible]	1 2	1 2	81 8	74 5	3 5	100 0	35	36	31 41	#8
10	1 2	1 1	77 8	69 8	2 9	100 0	33	34		#10
16	1 1	1 0	64 9	56 0	2 3	100 0	26	28		#16
30	1 0	0 8	48 7	38 9	2 0	100 0	19	20		#30
[illegible]	0 9	0 8	40 3	29 7	1 9	100 0	15	16	9-16	#40
[illegible]	0 8	0 7	32 2	20 6	1 8	100 0	10	12		#50
100	0 6	0 6	21 2	7 6	1 5	100 0	5	6		#100
200	0 4	0 4	14 0	2 7	1 1	100 0	2 1	4 1	2 0-5 5	#200

**MAT'L 1 =
**MAT'L 2 =
**MAT'L 3 =
**MAT'L 4 =
**MAT'L 5 =
**MAT'L 6 =

Coronado Engineering & Consulting

127 South Weber Drive, Suite B-1, Chandler, AZ 85226 Phone 602-940-0276 Fax 602-940-0263

TECHNICAL REPORT

ADDITIONAL TEST DATA

CLIENT FNF CONSTRUCTION, INC

DATE 6/1/93

PROJECT HOOVER DAM - KINGMAN HWY (US 93)

PROJECT NO F 039-1-509

MIX DESIGNATION ADOT BITUMINOUS TREATED BASE MIX

SOURCE OF MAT'L 0

SAMPLE SOURCE STOCKPILES

SAMPLED BY CLIENT

LAB NO 9306061

% MINERAL ADMIX 2 0

AGGREGATE SPECIFIC GRAVITIES

MAT'L	COARSE AGGREGATE	FINE AGGREGATE
S S D WT	4009 2	500 0
O D WT	3959 5	495 4
IMMERSED WT	2530 1	977 8
FLASK & H2O	-	664 9
BULK O D SP GR	2 677	2 648
S S D SP GR	2 711	2 672
APPARENT SP GR	2 770	2 715
% ABSORPTION	1 255	0 929

'E TEST

	SAMPLE WT (DRY)	FLASK + H2O	SAMPLE + FLASK + H2O	SAMPLE WT (S S D)	SAMPLE VOLUME	MAXIMUM SP GR	MAXIMUM DENSITY
1	1059 7	3438 5	4071 5	1061 9	428 9	2 471	153 9
2	1050 0	3426 6	4052 2	1052 1	426 5	2 462	153 4
3	1071 5	3379 3	4018 3	1074 1	435 1	2 463	153 4
AVG						2 465	153 6

SAND EQUIVALENT

	SAMPLE # 1	SAMPLE # 2	SAMPLE # 3	AVERAGE
SAND	3 9	4 0	3 9	
CLAY	6 8	7 2	6 7	
S E	58	56	59	58

CRUSHED FACES

TOTAL SAMPLE WT	WT CRUSHED	% CRUSHED FACES
300 0	285 0	95 0

ARIZONA DEPARTMENT OF TRANSPORTATION

OFFICE MEMO

BITUMINOUS MIX DESIGN REPORT AND TRANSMITTAL

Date 07/09/93

To: Gordon Senzek
Trans. Engineer Team Leader
District Three

RECEIVED
JUL 19 1993
ORG: 4342

From: Don Corum
Materials Testing Engineer
Materials Section

Project No.: F-039-1-509 TRACS No: H228401C

Contractor: FNF Construction, INC.

Mix Design Originating Lab: Coronado Engineering & Consulting

Originating Lab Mix Design Date: 06/28/93

Mix Design Type:

____ 3/4" AC (VERIFICATION - SPEC. 406)

____ 1/2" AC (VERIFICATION - SPEC. 406)

____ MAG 3/4" AC (VERIFICATION - SPEC. ACPHX 406)

____ MAG 1/2" AC (VERIFICATION - SPEC. ACPHX 406)

____ RECYCLED AC (SPEC. 408)

____ A.C.F.C. (SPEC. 407)

XX OTHER, BITUMINOUS TREATED BASE

Attached is a copy of our test results identified as Lab No. 93-383A. This mix design is XX Acceptable ____ Unacceptable.

Remarks:

Don Corum

cc: Mark Clark
Dave Sikes
Construction File

MATERIALS SECTION
ASPHALTIC CONCRETE MIX DESIGN: BTB

PROJECT NUMBER: F-039-1-509 CONTRACTOR: FNF CONTRACTING
DEVELOPED BY: CORONADO LAB NO: 93-383A DATE: 07/09/93

TYPE	-11/2"	-11/4"	CHIPS	-3/8NS	W.SAND
SOURCE	C-1285	C-1285	C-1285	C-1285	C-1285
% USE	10	25	20	5	40

	TYPE	SOURCE	PERCENT	SP. GR.
ASPHALT CEMENT:	AC-30	CONOCO	4.9	1.036
ADMIXTURE:	TYPE 11	PHOENIX	2.0	3.14

SIEVE SIZE	GRADATION W/O ADMIX.	GRADATION WITH ADMIX.	VERIFICATION BAND W/O ADMIX.	CONTRACTORS TARGET W/ ADMIX.	GRADATION BAND W/ ADMIX.
1.25 IN.	100	100	100	100	100
1 IN.	93	93	100	93	85 - 95
3/4 IN.	81	81	80 - 86	84	80 - 90
1/2 IN.	72	73		75	
3/8 IN.	68	69	66 - 72	70	60 - 70
1/4 IN.	59	60		60	
#4	48	49		50	
#8	35	36	33 - 37	36	31 - 41
#10	32	33		34	
#16	25	26		28	
#30	17	19		20	
#40	13	15	14 - 18	16	9 - 16
#50	10	12		12	
#100	4	6		6	
#200	2.0	3.9	1.6 - 2.6	4.1	2.0 - 5.5

AGGREGATE PROPERTIES: % ABRASION AT 100 REV: 7 AT 500 REV: 27
SAND EQUIVALENT: 68 CRUSHED FACES: 100

SPECIFIC GRAVITIES:(O.D.)	COARSE	FINE	COMBINED	COMB. WATER ABS.
	2.658	2.630	2.644	1.36 %

MIX PROPERTIES	ADOT RESULT	VERIFICATION BAND	CONTRACTORS RESULT	SPECIFICATION REQUIREMENT
STABILITY	3153	750 +	4302	1000 +
FLOW	13	7 - 17	12	8 - 16
VMA	14.5	13.5 - 15.8	14.3	14.0 - 17.0
AIR VOIDS	4.5	3.2 - 5.2	4.2	3.8 - 4.2
RETAINED STR.	62	35 +	76.6	50 +
WET STRENGTH	241	140 +	372	150 +
ASPHALT ABSORP.	0.60	< 1.0	0.54	< 1.0
BULK DENSITY	148.5		149.8	
MAXIMUM DENSITY	155.5	AT 4.9 % ASPH.	156.4	AT 4.9 % ASPH.
% VOIDS FILLED	69.0			
EFFECTIVE ASPH.	4.3			
FILM THICKNESS	12			

REMARKS ON DESIGN:
THIS DESIGN IS A BTB
MARSHALLS COMPACTED AT 50 BLOWS PER SIDE

APPROVED
Dave Simpson

TEST RESULTS FOR AC BASE MIX DESIGN, LAB # 93-383A , PROJECT NUMBER: F-039-1-509

AGGREGATE SAMPLES:

LAB #	TYPE	FROM	DATE	SOURCE	1"	3/4"	1/2"	3/8"	1/4"	#4	#8	#40	#200
93-383	-11/2"	STOCKPILES	06/29/93	C-1285	47.0	4.0	2.0	2.0	2.0	2.0	2.0	2.0	0.60
93-382	-11/4"	STOCKPILES	06/29/93	C-1285	95.0	64.0	27.0	12.0	3.0	2.0	1.0	1.0	0.70
93-381	CHIPS	STOCKPILES	06/29/93	C-1285	100.0	100.0	100.0	100.0	67.0	31 0	2.0	1.0	0.90
93-380	-3/8NS	STOCKPILES	06/29/93	C-1285	100.0	100.0	100.0	100.0	99.0	95.0	82.0	40.0	12.30
93-379	W.SAND	STOCKPILES	06/29/93	C-1285	100.0	100 0	100.0	100.0	99.0	92.0	74 0	27.0	2.20

AGGREGATE SOURCES:
SOURCE NO: C-1285 DESCRIPTION: FNF PIT

SPECIFIC GRAVITY TEST(S):

TEST #	TYPE	SOURCE NO.	OD SP. GR.	SSD SP. GR.	WATER ABSORPTION	USED IN DESIGN?	TYPE OF TEST
1	FINE	C-1285	2.630	2.660	1.13 %	YES	-#4
1	COARSE	C-1285	2.658	2.699	1.55 %	YES	+#4

MARSHALL TESTS:

TEST #	METHOD	DATE	% ASPHALT	%ADMIX	BULK DENSITY	STABILITY	FLOW	USED IN DESIGN?
1	MECH	07/06/93	4.9	2.0	150.2	3835	13	NO
2	HAND	07/08/93	4.9	2.0	148.5	3153	13	YES

RICE TESTS: (WITHOUT ADMIXTURE)

TEST #	DATE	% ASPHALT	MAXIMUM DENSITY	EFFECTIVE SP. GR.	USED IN DESIGN?	TYPE OF TEST
1	07/06/93	5.5	153.8	2.685	YES	FLASK METHOD

IMMERSION COMPRESSION TESTS:

TEST #	DATE	% ASPHALT	LOAD	MARSH. DENSITY	% OF MARSH. DENSITY	DRY STR.	WET STR.	RETAINED STR. %	USED IN DESIGN?
1	07/07/93	4.9	2300	148.5	96.7	389	241	62.0	YES

PRIVATE LAB MIX DESIGN TABULATION

DESIGN LAB # 93-383 DATE 06/28/93 ORIGINATING LAB: CORONADO
MIX TYPE AC BASE PROJECT NUMBER: F-039-1-509

GRADATION TARGETS-- % PASSING

SIEVE	W/O ADMIX	W/ ADMIX
1.25 IN.	0	100
1 IN.	93	93
3/4 IN.	83	84
1/2 IN.	74	75
3/8 IN.	69	70
1/4 IN.	59	60
#4	49	50
#8	35	36
#10	33	34
#16	26	28
#30	19	20
#40	15	16
#50	10	12
#100	5	6
#200	2.1	4.1

DESIGN INFORMATION

ADMIXTURE: TYPE II DRY SOURCE: PHOENIX PERCENT: 2.00

ASPHALT: AC-30 SOURCE: CONOCO SPECIFIC GRAVITY: 1.044

AGGREGATE: SAND EQUIVALENT 58 LOSS FROM ABRASION: 100 REV 6% 500 REV 25%
CRUSHED FACES 95
O.D. SP. GR.: COARSE 2.677 FINE 2.648 COMBINED 2.663
ABSORPTION: WATER 1.07% ASPHALT 0.54%

MIX: % ASPHALT 4.9 BULK DENSITY 149.8 #/FT^3 STABILITY 4302 FLOW 12
VMA 14.3% AIR VOIDS 4.2% RETAINED STRENGTH 76.6% WET STRENGTH 372 PSI

MAXIMUM THEORETICAL DENSITY IS 156.4 #/FT^3 AT 4.9 % ASPHALT

REMARKS:

APPENDIX E

PCCP MIX DESIGN

Coronado Engineering & Consulting
127 South Weber Drive, Suite B-1, Chandler, AZ 85226 Phone: 602-940-0276 Fax: 602-940-0263

TECHNICAL REPORT

CONCRETE MIX DESIGN

CLIENT: FNF CONSTRUCTION, INC.

ADDRESS: P.O. BOX 5005; TEMPE, AZ 85280

CODE: ADOT CLASS P CONCRETE (PCCP)

CEMENT TYPE: TYPE IP PORTLAND-POZZOLAN CEMENT

FINE AGGREGATE % = 45.00

COARSE AGG. #1 % = 100.00

COARSE AGG. #2 % = 0.00

AIR ENTRAINING AGENT: DAREX II AEA

WATER REDUCING AGENT: WRDA-64

OTHER ADMIXTURE TYPE:

WATER CEMENT RATIO: 0.44

PROJECT: HOOVER DAM - KINGMAN HWY; F-039-1-509

MIX DESIGN DATE: 3/2/93

STRENGTH: 4000 PSI @ 28 DAYS

SOURCE: PHOENIX CEMENT COMPANY

SOURCE: FNF

SOURCE: CANYON SAND

MAX SIZE = 1 INCH ASTM C-33 # 57

SOURCE: W.R. GRACE RATE: 1.5 OZ./CWT.

SOURCE: W.R. GRACE RATE: 4.0 OZ./CWT.

SOURCE: RATE: OZ./CWT.

MATERIALS	WEIGHT/CU YD		SPECIFIC GRAVITY	VOLUME/CU YD (CU FT)
CEMENT	611	LB.	3.00	3.26
POZZOLAN	0	LB.	2.30	0.00
WATER	268	LB.	1.00	4.29
FINE AGGREGATE	1346	LB.	2.63	8.20
COARSE AGGREGATE # 1	1601	LB.	2.56	10.02
COARSE AGGREGATE # 2	0	LB.	0.00	0.00
AIR CONTENT	4.50	%		1.22
AIR ENTRAINING AGENT:	9.165	OZS/YD		
WATER REDUCING AGENT:	24.44	OZS/YD		
TOTAL =	3826	LBS.		27.00

SLUMP = 2.50 INCHES

Coronado Engineering & Consulting
127 South Weber Drive, Suite B-1, Chandler, AZ 85226 Phone: 602-940-0276 Fax: 602-940-0263

TECHNICAL REPORT

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

CLIENT:	FNF CONSTRUCTION, INC.	REPORT DATE:	4/1/93
PROJECT:	HOOVER DAM - KINGMAN HWY (US 93)	DATE MADE:	3/2/93
PROJECT NO:	F-039-1-509	PRODUCT CODE:	ADOT CLASS P
LOCATION:	COTTONWOOD RD - MP 59	TICKET NO:	N/A
SAMPLE SOURCE:	LAB MIXER	BATCH SIZE:	2.0 CU FT
SLUMP:	2.75 in.	DESIGN STRENGTH:	4000 @ 28 DAYS
SLUMP ORDERED:	2.5 in.	NO. OF CYLINDERS MADE:	12
TRUCK NO:	N/A	CONCRETE TEMPERATURE:	68 °F
MAX AGG SIZE:	1"	AMBIENT TEMPERATURE:	69 °F
TIME BATCHED:	15:00	WATER ADDED:	0
TIME SAMPLED:	15:15	SAMPLED BY:	KEC
CYLINDER SIZE:	4" x 8"	REQUESTED BY:	CLIENT
CONVERSION FACTOR:	12.566	DATE RECEIVED:	N/A
PLASTIC UNIT WEIGHT (pcf):	139.7	PERCENT AIR:	4.5

LAB NO	TEST DATE	AGE	FORCE (LBS)	PSI	AVG	TESTED BY
93078	3/3/93	1	23592	1880		
	3/3/93	1	23889	1900	1890	FV
	3/5/93	3	45333	3610		
	3/5/93	3	45693	3640	3630	DW
	3/9/93	7	55179	4390		
	3/9/93	7	56137	4470	4430	DW
	3/16/93	14	58230	4630		
	3/16/93	14	59541	4740	4690	DW
	3/30/93	28	66612	5300		
	3/30/93	28	69156	5500	5400	DW

REMARKS:
ALL TESTING PERFORMED IN ACCORDANCE WITH APPROPRIATE ADOT & AASHTO PROCEDURES.

APPENDIX F

ROLLER COMPACTED CONCRETE MIX DESIGN

Coronado Engineering & Consulting
127 South Weber Drive, Suite B-1, Chandler, AZ 85226 Phone. 602-940-0276 Fax: 602-940-0263

July 26, 1993
Lab Number 9307027

Mr. Will Garrison
FNF Construction, Inc.
P.O. Box 5005
Tempe, Arizona 85280-5005

Re: Hoover Dam - Kingman Highway (US 93)
Cottonwood Road - M.P. 59
ADOT Project Number F-039-1-509

Dear Sir:

As requested, we have completed a roller compacted concrete pavement mix design meeting the ADOT design criteria for the above project.

The aggregates used in the design were sampled by FNF personnel. The aggregates submitted were designated as a minus 1 inch natural sand and a minus 3/8 inch natural sand. The cement used was Type II Portland Cement supplied by Phoenix Cement Company from their Clarkdale plant.

mpressive strength, preliminary maximum density and optimum moisture and pertinent aggregate test results are enclosed on the mix design report. All testing was performed in accordance with appropriate ADOT procedures.

Based on the results obtained, it appears that the minimum design strength of 1250 psi can be met using 7.5% cement by weight of the dry RCCP. However, we strongly recommend adding at least an additional one percent cement to provide a reasonable factor of safety. If this is acceptable, please let me know so that the final maximum density and optimum moisture determination can be performed.

The results shown were obtained using specific materials and procedures. If there is any significant change in any of the constituent materials or, if the mix is to be utilized for other applications or projects, additional study and/or testing should be performed.

If you have any questions regarding this matter, please do not hesitate to call.

Respectfully submitted,

CORONADO ENGINEERING & CONSULTING

Donald L. Cornelison

Donald L. Cornelison, P.E.

Coronado Engineering & Consulting
127 South Weber Drive, Suite B-1, Chandler, AZ 85226 Phone: 602-940-0276 Fax: 602-940-0263

TECHNICAL REPORT

ROLLER COMPACTED CONCRETE DESIGN DATA

IENT: FNF CONSTRUCTION, INC. REPORT DATE: 7/26/93

ROJECT: HOOVER DAM - KINGMAN HIGHWAY DATE TESTED: 7/22/93

CATION: COTTONWOOD ROAD - MP 59 DATE RECEIVED: 5/25/93

ATERIAL: BROWN SAND AND GRAVEL LAB NO: 9307027

MENT TYPE/SOURCE: TYPE II PORTLAND/PHOENIX CEMENT FLYASH: N/A

SIGN STRENGTH: 1250 psi @ 7 DAYS

SOIL CEMENT TEST DATA

SPECIMEN NUMBER	PERCENT CEMENT	SPECIMEN DENSITY (pcf)	SPECIMEN MOISTURE (%)	COMPRESSIVE STRENGTH (psi)
1	4.0	133.5	9.1	529
2	4.0	133.5	9.1	561
AVERAGE	**4.0**	**133.5**	**9.1**	**545**
3	6.0	132.2	9.4	919
4	6.0	132.8	9.4	923
AVERAGE	**6.0**	**132.5**	**9.4**	**921**
5	8.0	133.6	9.7	1478
6	8.0	133.7	9.7	1498
AVERAGE	**8.0**	**133.7**	**9.7**	**1488**
7	10.0	133.8	9.5	2133
8	10.0	133.3	9.5	2058
AVERAGE	**10.0**	**133.6**	**9.5**	**2096**
9	12.0	132.9	9.0	2750
10	12.0	131.7	9.0	2865
AVERAGE	**12.0**	**132.3**	**9.0**	**2808**

COMMENDED MINIMUM TOTAL CEMENT CONTENT BY WEIGHT OF MIX = 8.5% *

TE: RECOMMENDATION CONTAINS ADDITIONAL 1% CEMENT AS A MINIMUM SAFETY FACTOR.

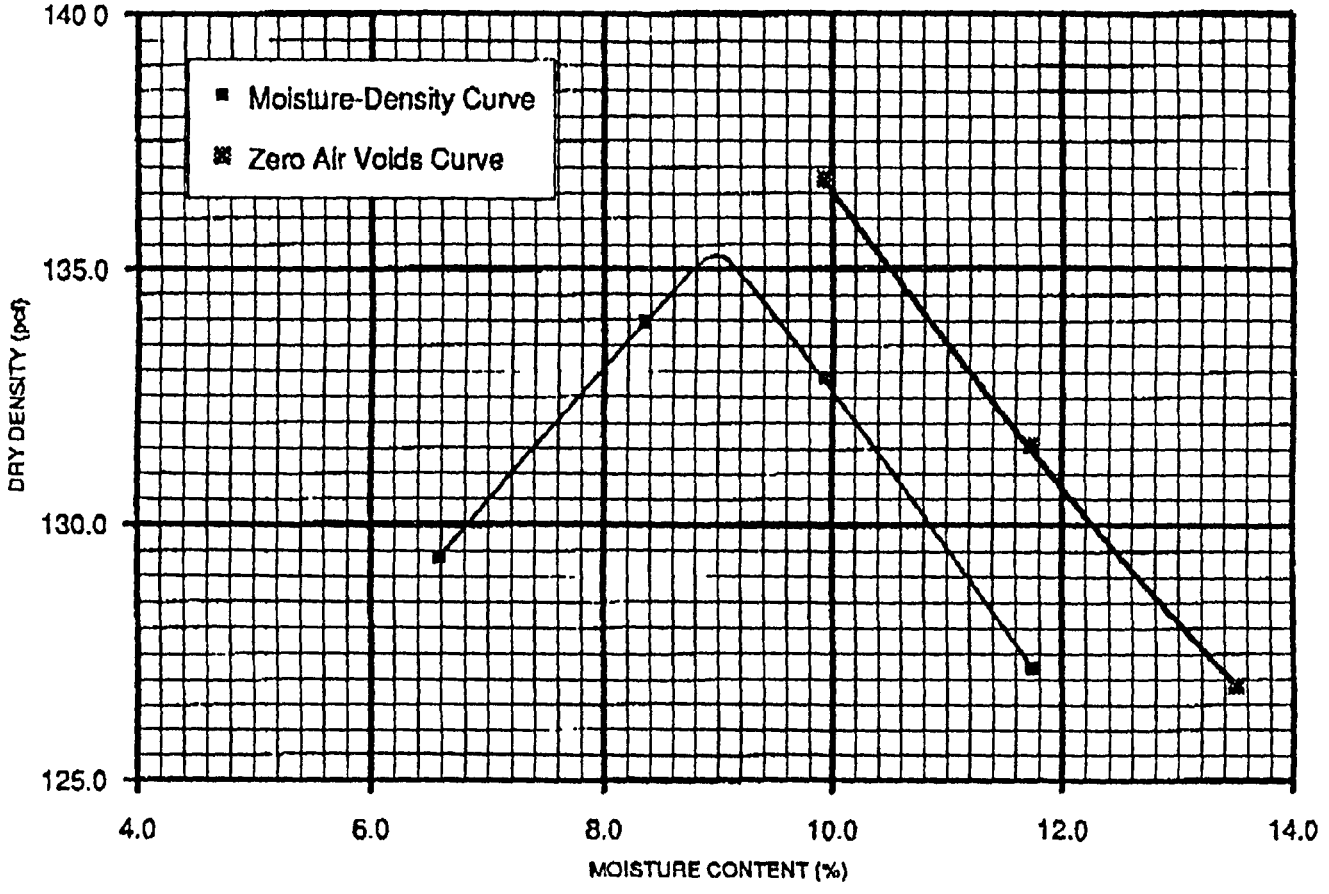
*A. STRENGTH SPECIMENS TESTED IN ACCORDANCE WITH ARIZ 241a; STRENGTH SPECIMENS PREPARED & MOISTURE DENSITY RELATIONSHIPS DEVELOPED IN ACCORDANCE WITH ARIZ 220; OVERALL MIXTURE & DESIGN PARAMETERS ARE THOSE INDICATED IN SPECIAL PROVISIONS

Coronado Engineering & Consulting
127 South Weber Drive, Suite B-1, Chandler, AZ 85226 Phone: 602-940-0276 Fax: 602-940-0263

TECHNICAL REPORT

OPTIMUM MOISTURE - MAXIMUM DENSITY DETERMINATION

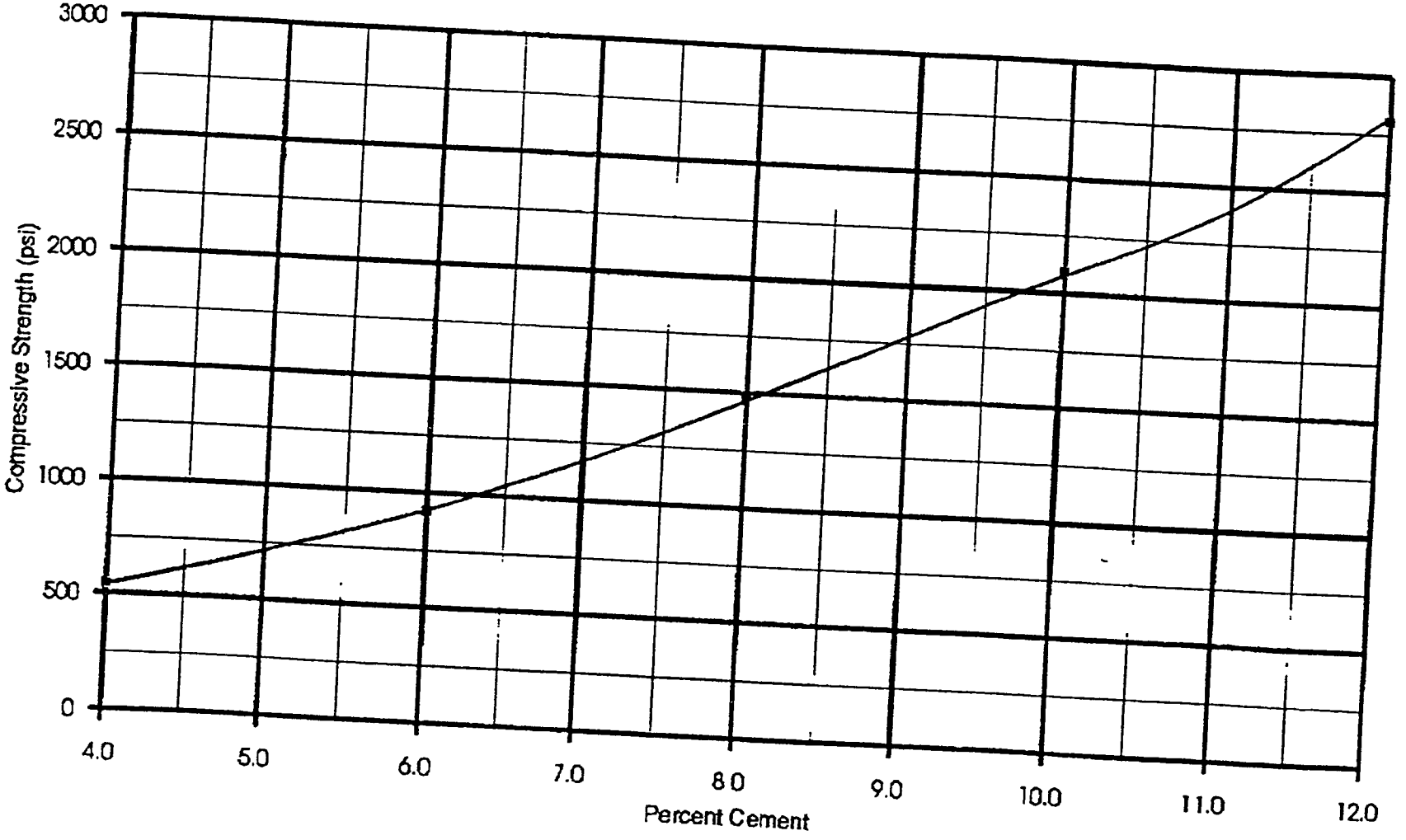
CLIENT:	FNF CONSTRUCTION, INC.	REPORT DATE:	07/26/93
PROJECT:	HOOVER DAM - KINGMAN HIGHWAY	PROJECT NO:	F-039-1-509
LOCATION:	COTTONWOOD ROAD - MP 59	TEST DATE:	07/12/93
TESTED BY:	B. FULLERTON	REVIEWED BY:	D. CORNELISON
SOURCE OF SAMPLE:	STOCKPILE ON JOB SITE	SAMPLED BY:	CLIENT
TEST DESIGNATION:	AASHTO T-134	LAB NO:	9307027
MATERIAL:	RCCP; BROWN SAND WITH GRAVEL; 8.0% CEMENT		
* PRELIMINARY PROCTOR FOR % CEMENT DETERMINATION		PLUS #4 MATERIAL:	26%



XIMUM DRY DENSITY (PCF) = 135.2 OPTIMUM MOISTURE CONTENT (%) = 9.0

Coronado Eng ering and Consulting

ROLLER COMPACTED CONCRETE STRENGTH CURVE
Cottonwood Road - MP 59



Client: FNF Construction, Inc.

Lab Number 9307027

ADOT Project Number F-039-1-509

Coronado Engineering & Consulting
127 South Weber Drive, Suite B-1, Chandler, AZ 85226 Phone. 602-940-0276 Fax: 602-940-0263

TECHNICAL REPORT

AGGREGATE COMPOSITE GRADATION

CLIENT: FNF CONSTRUCTION, INC. DATE: 7/26/93

PROJECT: HOOVER DAM - KINGMAN HIGHWAY (US 93) PROJECT NO: F-039-1-509

MIX DESIGNATION: ROLLER COMPACTED CONCRETE PAVEMENT SOURCE OF MAT'L: FNF PIT

SOURCE OF SAMPLES: STOCKPILES SAMPLED BY: CLIENT

LAB NO: 9307027 % MINERAL ADMIX: 0.0

	ORIGINAL GRADATION-% PASSING MAT'L 1	MAT'L 2	MAT'L 3				
MAT'L NAME % USED	MINUS 3/8" NAT. SAND 5	MINUS 1" NAT. SAND 95		COMPOSITE % PASS (w/o ADMIX)	COMPOSITE % PASS (w/ADMIX)	MIX DESIGN TARGETS	SIEVE
SIEVE							
6"	100.0	100.0		100	100	100	6"
3"	100.0	100.0		100	100	100	3"
2"	100.0	100.0		100	100		2"
1-1/2"	100.0	100.0		100	100		1-1/2"
1"	100.0	100.0		100	100		1"
3/4"	100.0	97.7		98	98		3/4"
1/2"	100.0	90.9		91	91		1/2"
3/8"	100.0	85.5		86	86		3/8"
1/4"	99.4	77.4		79	79		1/4"
#4	96.1	72.8		74	74	55-80	#4
#8	81.8	60.9		62	62		#8
#10	77.8	57.4		58	58		#10
#16	64.9	47.3		48	48		#16
#30	48.7	35.4		36	36		#30
#40	40.3	29.1		30	30		#40
#50	32.2	23.1		24	24		#50
#100	21.2	15.0		15	15		#100
#200	14.0	10.1		10.3	10.3	5-15	#200

USE CAPITAL LETTERS

SAMPLE TABULA
SOIL, AGGREGATE, & BITU US MIXES

LAB NUMBER	PROJ CODE	MATL	TYPE	PURPOSE	LAB	SPEC #	SIZE	%
G 1	3468	MA	CB	A	P			

TEST NO.	LOT OR SUFFIX	SAMPLED BY	MO	DAY	YEAR	TIME
1		CONTR	08	06	93	1100

LIFT NO.	SAMPLED FROM	RDWY	STATION	PLUS
	COLD FEED BELT			

IF MILEPOST INPUT DECIMAL IN COL 69

P = PIT
E = EXC
I = IN PLACE

ORIGINAL SOURCE

RDWY	STATION OR PIT NO.	PROJECT NUMBER	PROJECT ENGINEER
P	FNF I	F 039-1-509	G. SENZEK

IF MILEPOST INPUT DECIMAL IN COL 78

USE CAPITAL LETTERS!

REMARKS

G 2 WITNESS DANKEL FOR R.C.C.P.

IAS-1-P

KEYPUNCH INSTRUCTIONS Duplicate col. 3 thru 7 on all cards

KEYPUNCH INSTRUCTIONS Duplicate col 3 thru 7 on all cards

T = AASHTO Tests

% OVERSIZE ARIZ 201

G 3 | 3 ☐ 8 9 | 6 ☐ 11 | COARSE FACTOR [illegible] (no punch)

	WEIGHTS RETAINED	% RET	% PASS	SPECS	CUMULATIVE % RET FINENESS MODULUS
3					
2½					
2			100	100	
1½	[illegible]	2	98		
1	1027	9	89		
3/4	491	4	85		
1/2	886	8	77		
3/8	676	6	71		
1/4	879	8	63		
#4	505	4			
4	6777		59	55/80	59
Total	11459				

1-P

100

Liquid Limit, (LL)	T-89		
Plastic Limit (PL)	T-90		
Plasticity Index (PI) = LL − PL	T 90	NP	SPECS NP
Abrasion (A,B,C,D,)	T 96		
@ 100 Revolutions		%	%
@ 500 Revolutions		%	%
Absorption, H_2O	ARIZ 211 T 85	%	
Specific Gravity, SSD			
Specific Gravity, OD			
Sand Equivalent,	T 176 ARIZ 242 (MAFC)		
Fractured Faces Weight (W_f)	(np)	g	
Total Sample Weight (W_a)	(np)	g	
Fractured Faces FF = $\frac{W_f}{W_a} \times 100$	ARIZ 212	%	%
Wet Weight (W)	(np)	g	
Dry Weight (D)	(np)	g	
Moisture Content = $\frac{W-D}{D} \times 100$	T 255	%	
FLAKINESS INDEX	ARIZ 233	%	%
ph	Ariz 236 or 237		
Resistivity (ohm cm)	Ariz 236		
Soluable Salts (PPM)	Ariz 237		

G 4 | WT PASS #4 SPLIT 551 | FINE SIEVE FACTOR 10.078 (no punch)

	WEIGHTS RETAINED	% RET	% PASS		
#8	87	9	50		
10	20	1	48		
16	71	7	40		
#30	91	10	30		
40	50	5	25		
50	48	5	20		
100	65	7	13		
200	36	4			
- 200	6		8.7	5/15	7.9
Total	476 Dry Weight				
Elutriation	75				

FINENESS MODULUS = $\frac{\text{TOTAL CUMULATIVE \% RET}}{100}$

NECESSARY FOR ALL FA & CA

TEST OPERATOR

LABMAN, PROJECT SUPERVISOR OR RESIDENT ENGINEER

SEE BACK ALSO

11 9353 R12/89

ARIZONA DEPARTMENT OF TRANSPORTATION
PROCTOR DENSITY
ARIZ. TESTS 220, 225, 226, and 232

Proctor For RCCP #1

LAB NUMBER RCCP #1

RECEIVED DATE

NOTE THE PURPOSE CODE IS "D" ON THE SAMPLE TABULATION

METHOD D = 0.02939

c = Weight of Mold 6601.7 e = Volume Factor - 02939 A & C = 0.06614

a.	b.	d.	f.	MOISTURE DETERMINATION g.	h.	i.	j.	
Approximate Percent of Water Added	Wet Weight of Mold & Sample	Wet Weight of Sample b - c	Wet Density lb/cu ft d x e	Wet Weight of Sample	Dry Weight of Sample	Weight of Water g - h	Percent Moisture $\frac{i}{h} \times 100$	Dry Density lb/cu ft $\frac{100 \times f}{(100 + j)}$
10 %	11470.6	4868.9	143.1	540.3	488.1	52.2	10.7	129.3
12 %	11413.9	4812.2	141.4	568.8	511.3	57.5	11.2	127.2
8 %	11511.7	4910.0	144.3	480.4	442.7	37.7	8.5	133.0
6 %	11378.3	4776.6	140.4	517.5	490.1	27.4	5.6	133.0

SPECIFIC GRAVITY AND ABSORPTION OF COARSE AGGREGATES (OVEN-DRY BASIS) AASHTO T-85

A = weight of oven-dry sample in air
B = weight of saturated-surface-dry sample in air
C = weight of saturated sample in water

$$\text{Sp. Gr.} = \frac{A}{B - C} = \frac{(\quad)}{(\quad) - (\quad)}$$

G 3 O.D. Sp. Gr. = [8] . [11]

Percent Absorption = $\frac{B - A}{A} \times 100$

$= \frac{(\quad)(\quad)}{(\quad)}$ ABS. = [12] . [15] %

Proctor Method (A,C,D,E) [16] D

Family of Curves # [17] [18]

Retained on #4 Sieve [19] 26.0 %

Optimum Moisture [23] 8.2 %

Maximum Dry Density [1] 133.0 lb./cu.ft.

Dry Density lb./cu.ft.

Percent Moisture

TESTED BY [signature]

11 39 05 03 89

APPENDIX G

ARIZONA SPS-1 MATERIALS SAMPLING AND TESTING LAYOUTS

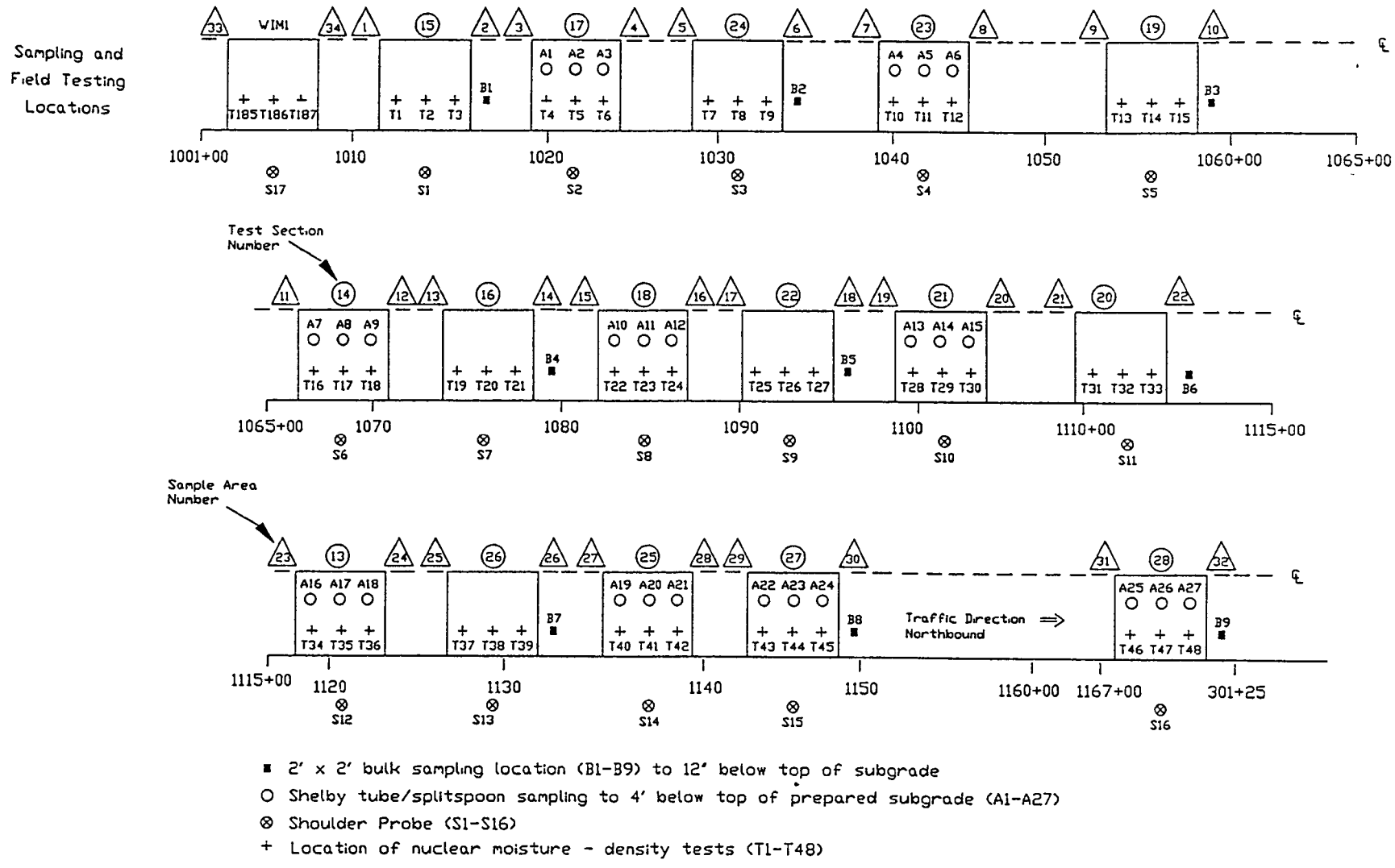


Figure 2. Overview of material sampling and testing on prepared **Subgrade**, SPS-1 Arizona.

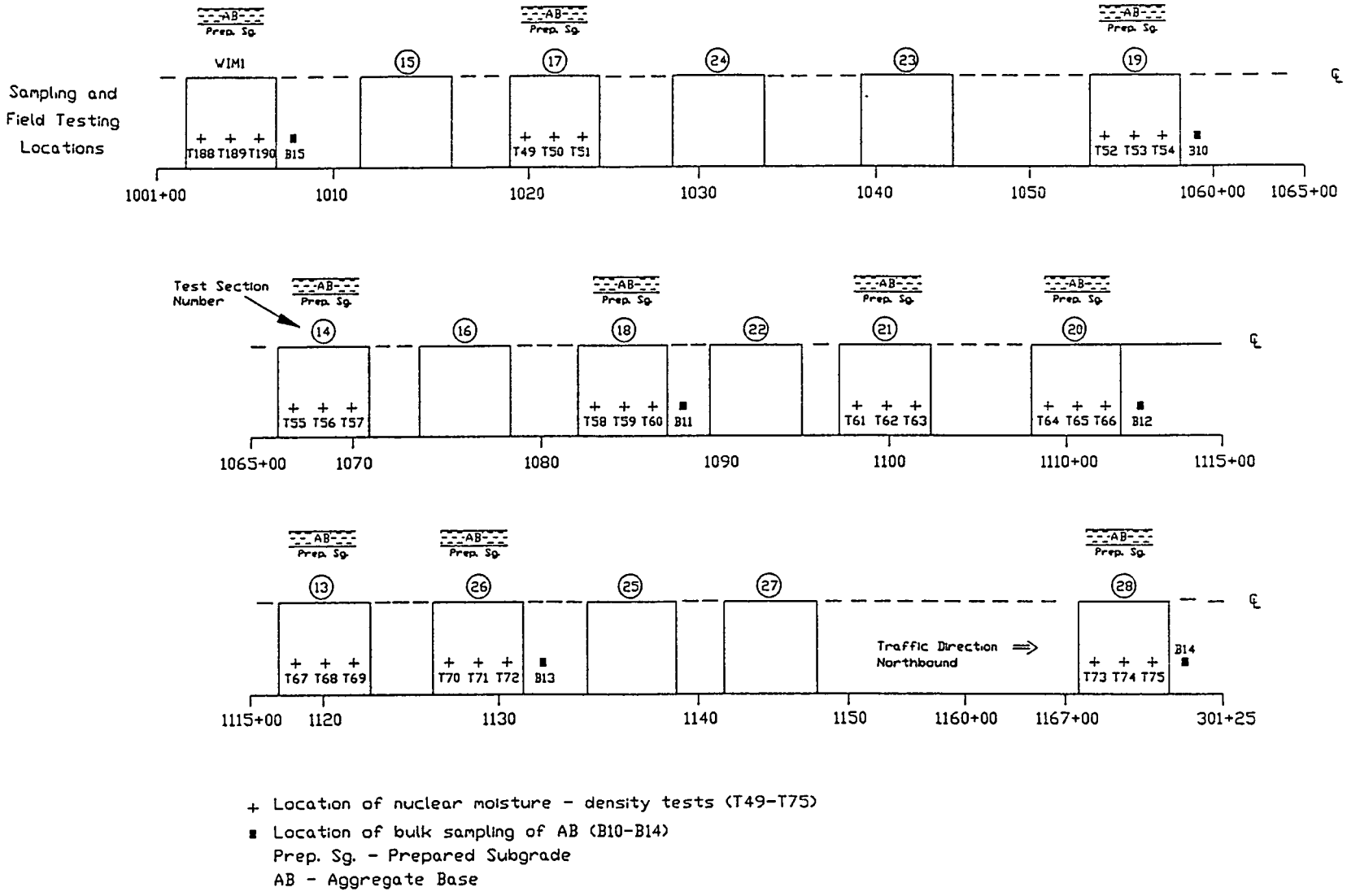


Figure 3. Overview of material sampling and testing on **Aggregate Base**, SPS-1 Arizona.

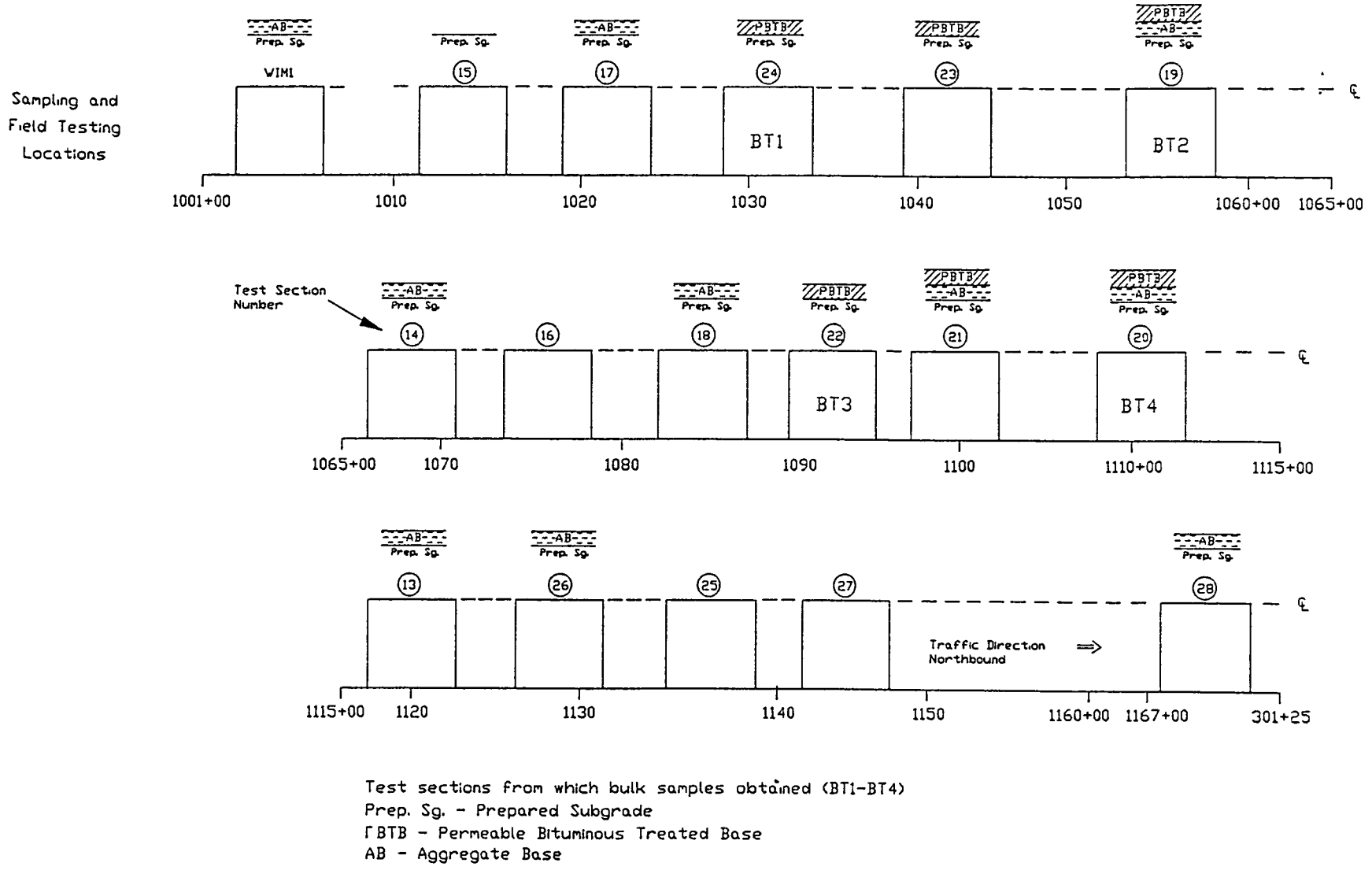
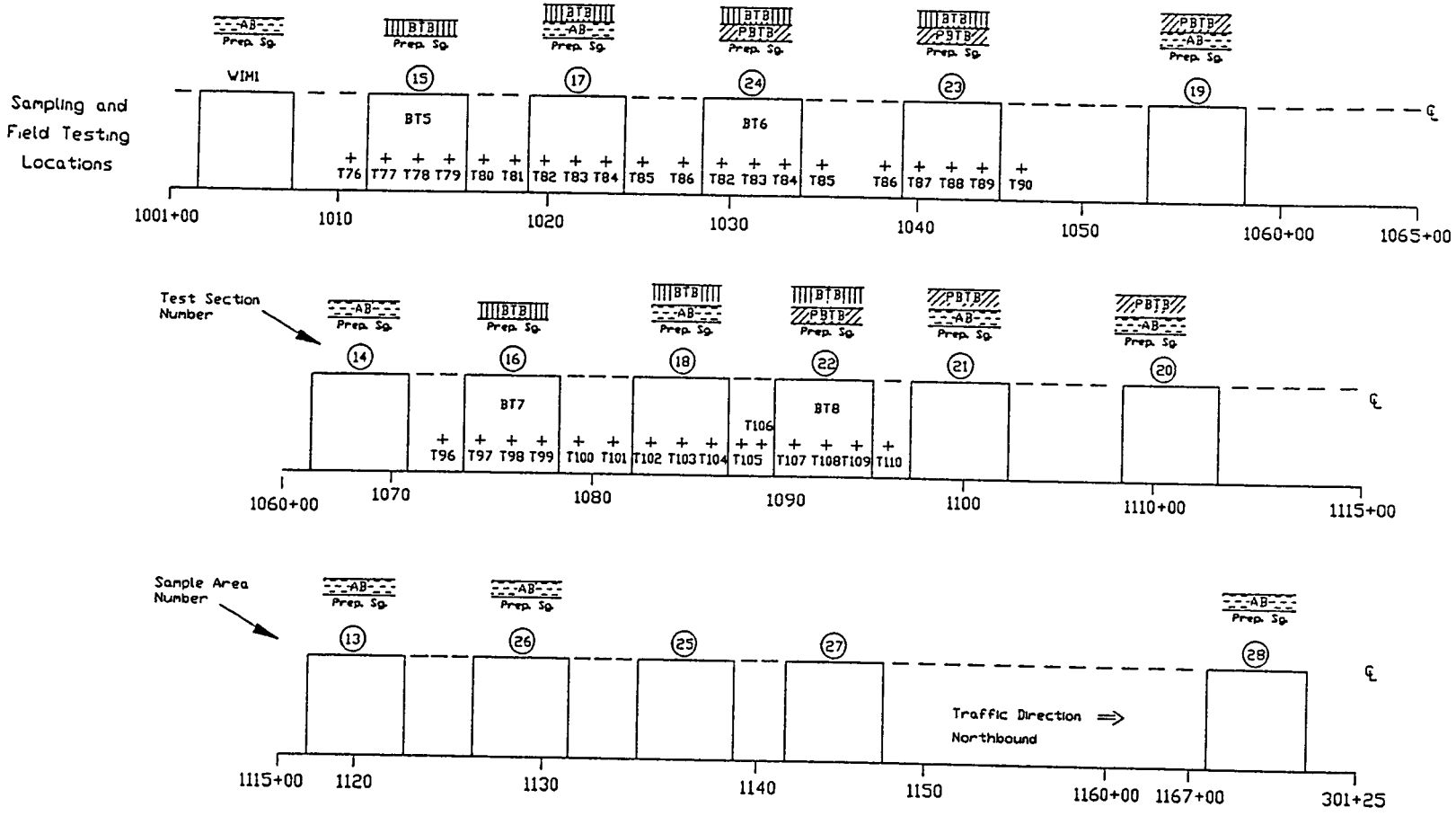


Figure 4. Overview of sampling and testing of **Permeable Bituminous Treated Base**, SPS-1 Arizona.



+ Location of nuclear density tests (T76-T96)
Test sections from which bulk samples obtained (BT5-BT8)
Prep. Sg. - Prepared Subgrade
PBTB - Permeable Bituminous Treated Base
AB - Aggregate Base
BTB - Bituminous Treated Base

Figure 5. Overview of sampling and testing of **Bituminous Treated Base**, SPS-1 Arizona.

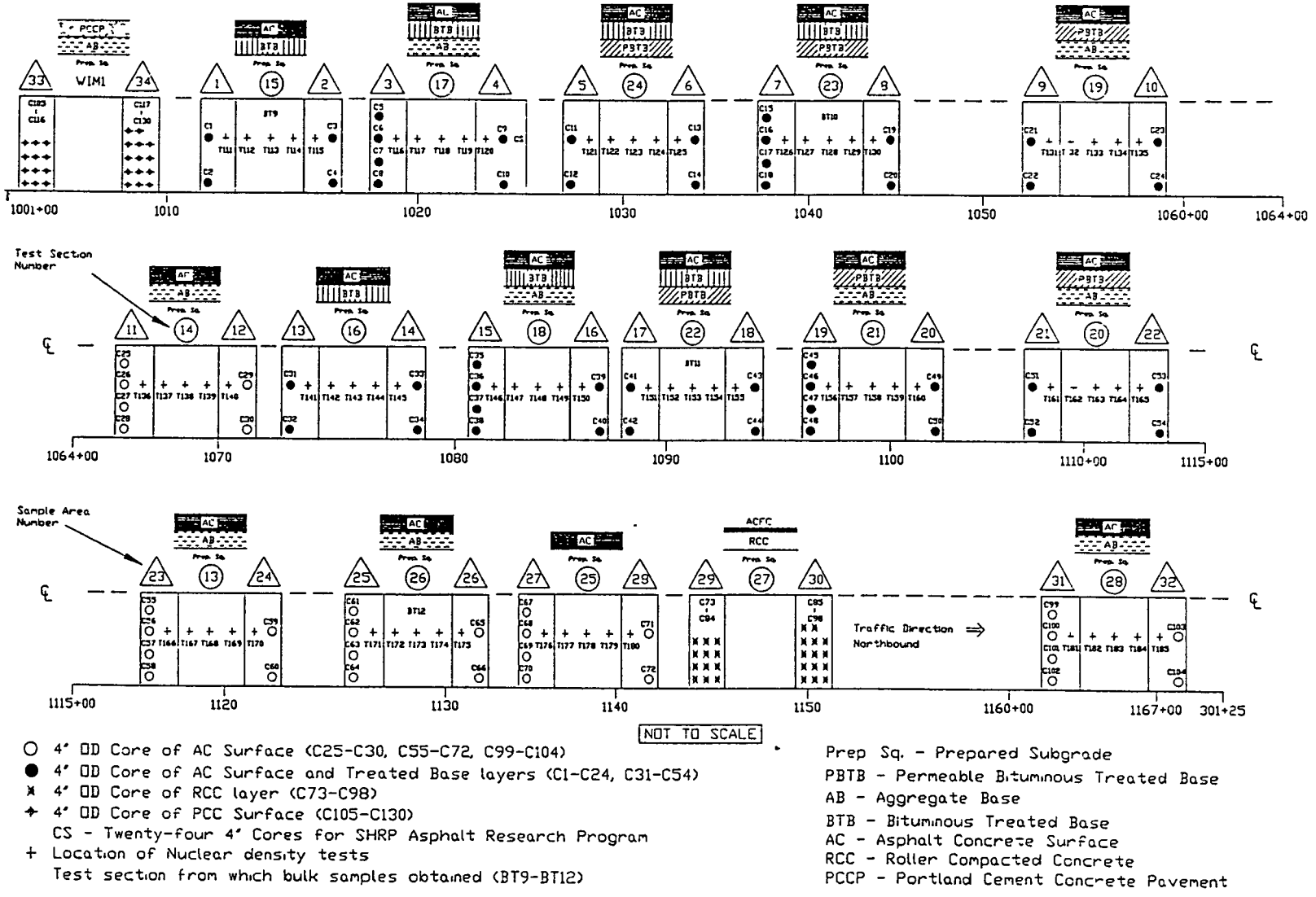
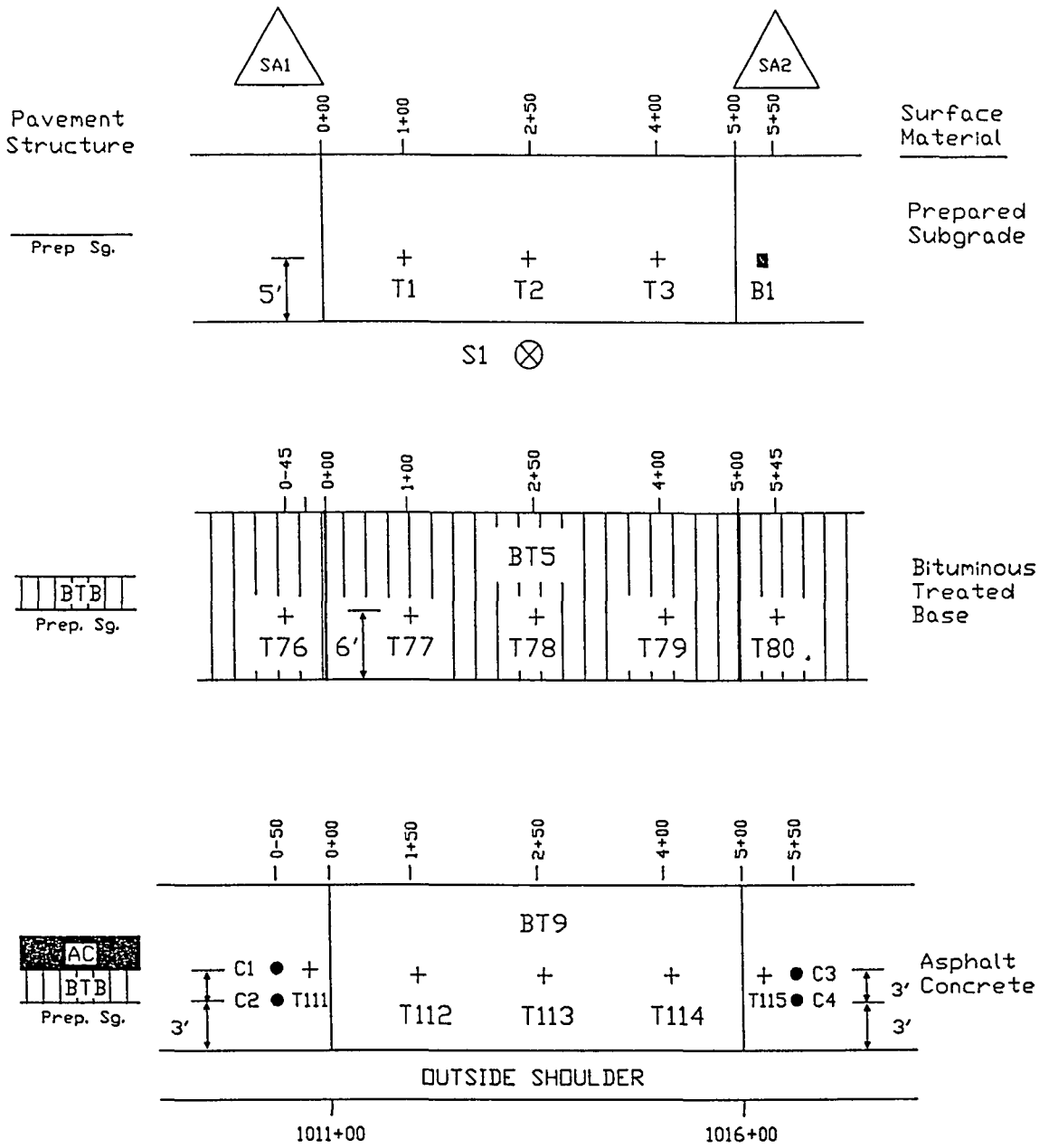


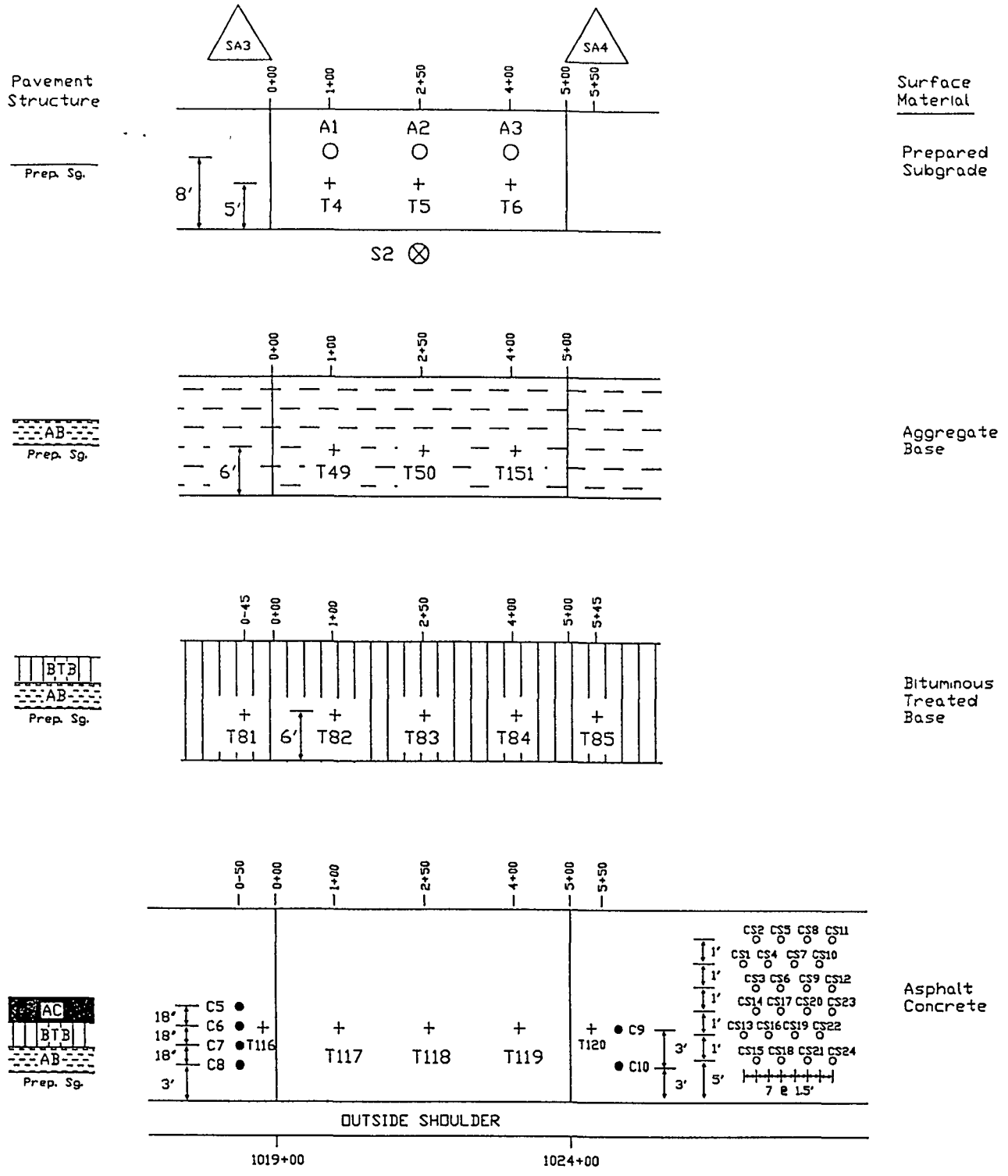
Figure 6. Sampling and Testing Locations for AC Surface

Figure 6. Overview of sampling, testing, and coring plan for sections on SPS-1 Arizona project.



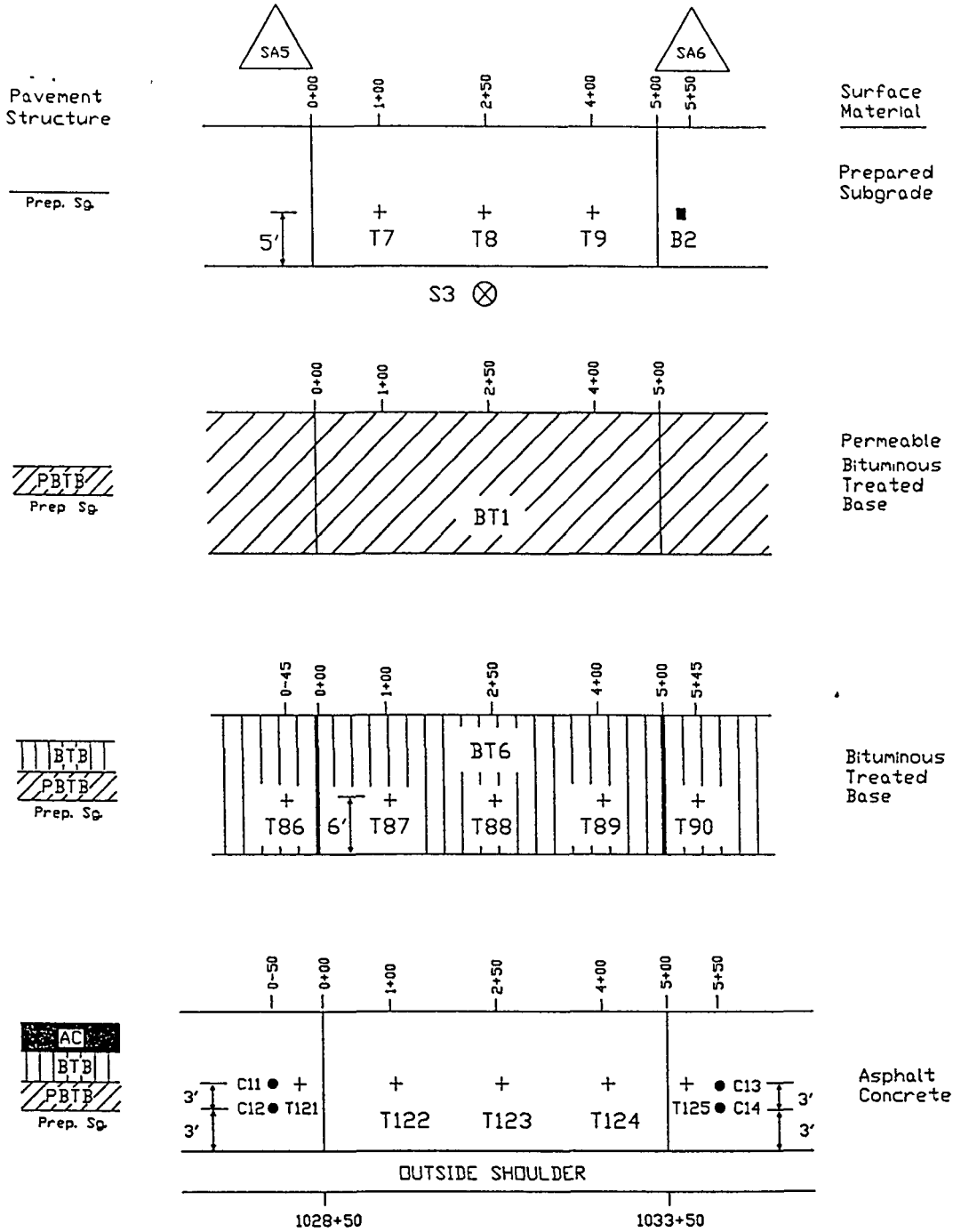
S1 - 20' shoulder probe
T1-T3 - Moisture-density tests on subgrade
B1 - Bulk sample of subgrade
T76-T80 - Density tests on BTB
BT5 - Bulk sample of BTB
T111-T115 - Density tests on AC
BT9 - Bulk sample of AC
C1-C4 - Cores of AC surface and BTB layer

Figure 7. Sampling and test plan for test section 040115, SPS-1 Arizona.



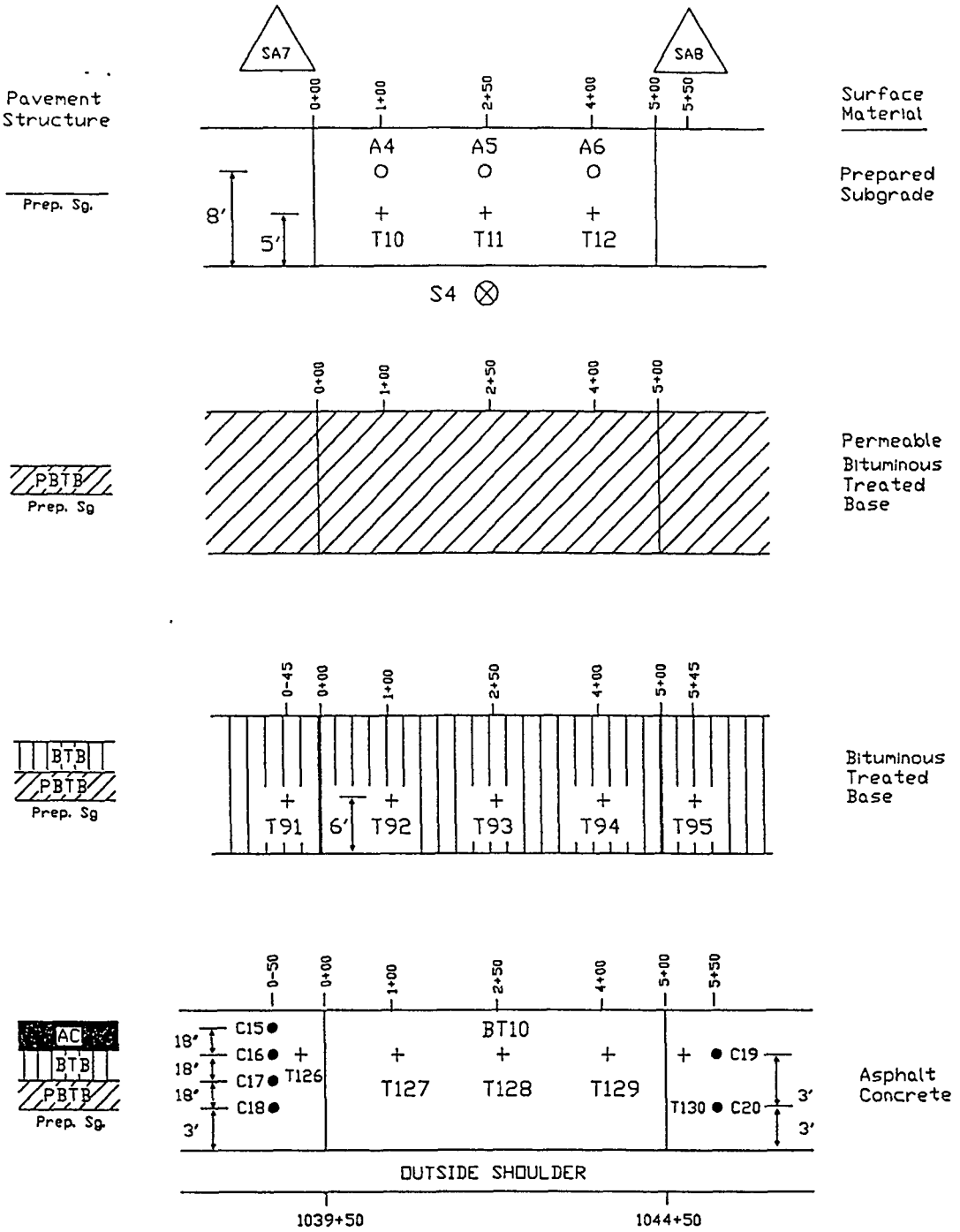
S2 - 20' shoulder probe
A1-A3 - Thinwall tube samples of subgrade
T4-T6 - Moisture-density tests on subgrade
T49-T51 - Moisture-density tests on AB
T81-T85 - Density tests on BTB
T116-T120 - Density tests on AC
C5-C10 - Cores of AC surface and BTB layer
CS1-CS24 - Cores of AC surface for SHRP asphalt program

Figure 8. Sampling and test plan for test section 040117, SPS-1 Arizona.



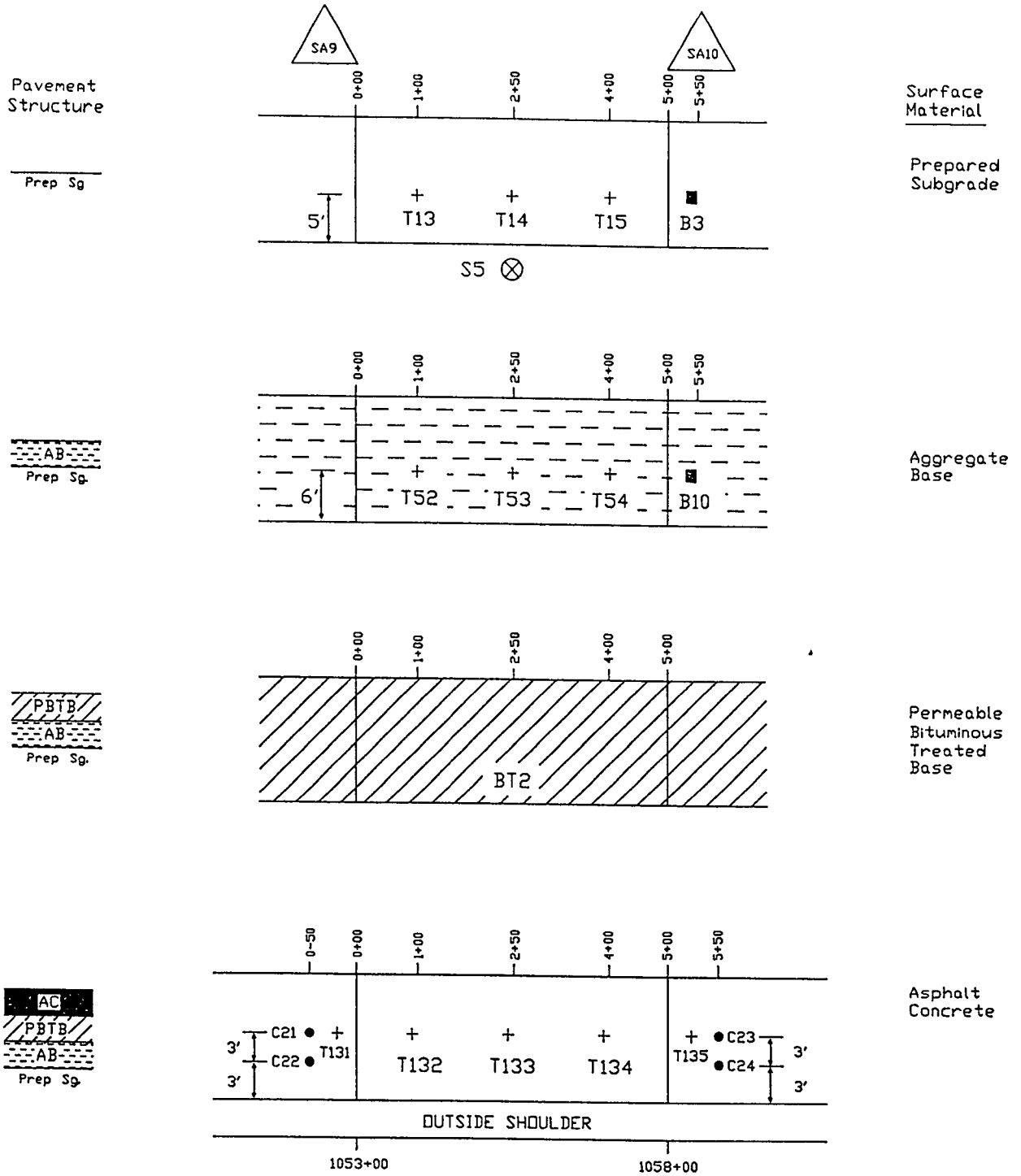
S3 - 20' shoulder probe
T7-T9 - Moisture-density tests on subgrade
B2 - Bulk sample of subgrade
BT1 - Bulk sample of PBTB
T86-T90 - Density tests on BTB
BT6 - Bulk sample of BTB
T121-T125 - Density tests on AC
C11-C14 - Cores of AC surface, BTB and PBTB layers

Figure 9. Sampling and test plan for test section 040124, SPS-1 Arizona.



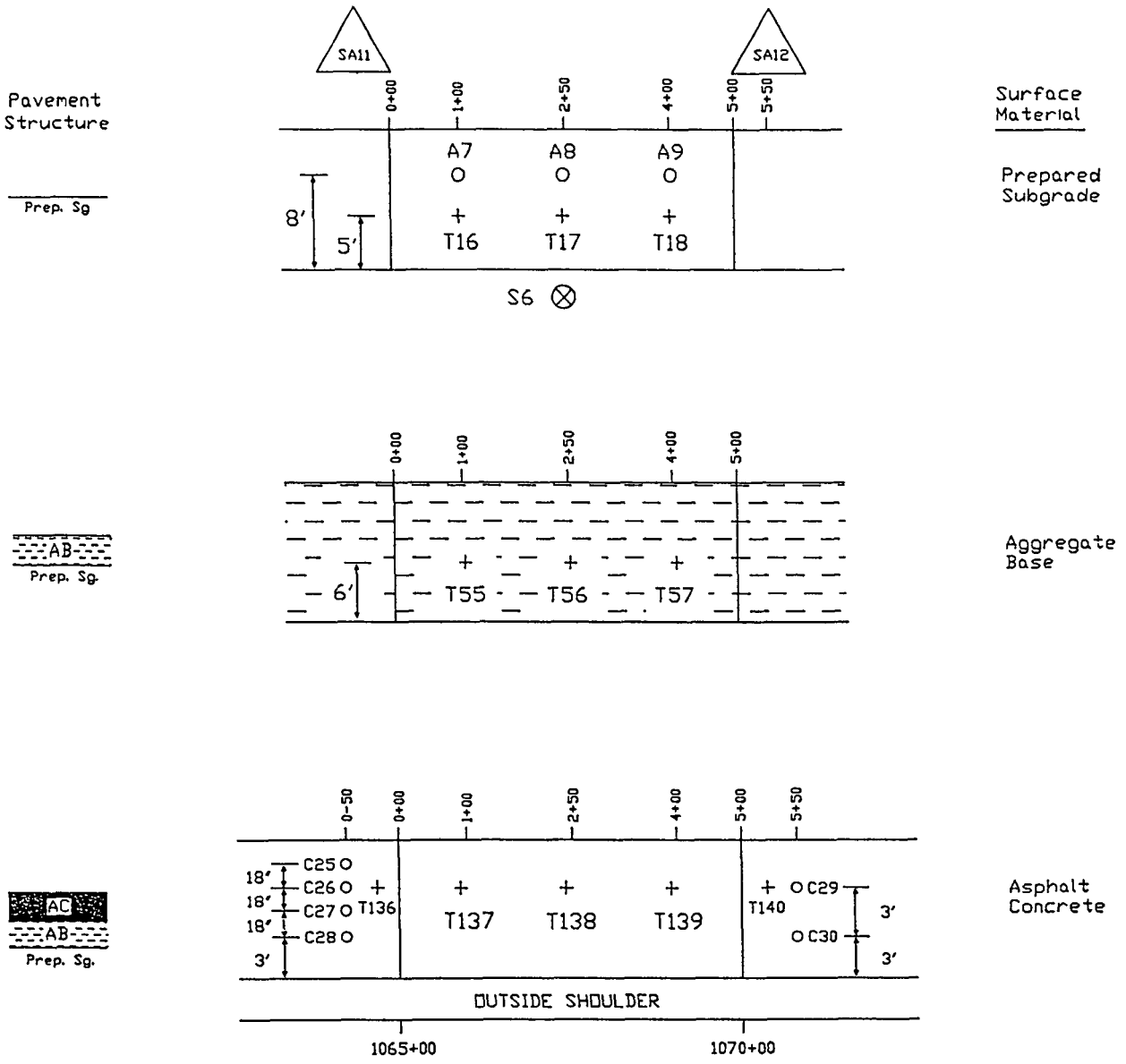
S4 - 20' shoulder probe
A4-A6 - Thinwall tube samples of subgrade
T10-T12 - Moisture-density tests on subgrade
T91-T95 - Density tests on BTB
T126-T130 - Density tests on AC
BT10 - Bulk sample of AC
C15-C20 - Cores of AC surface, BTB and PBTB layers

Figure 10. Sampling and test plan for test section 040123, SPS-1 Arizona.



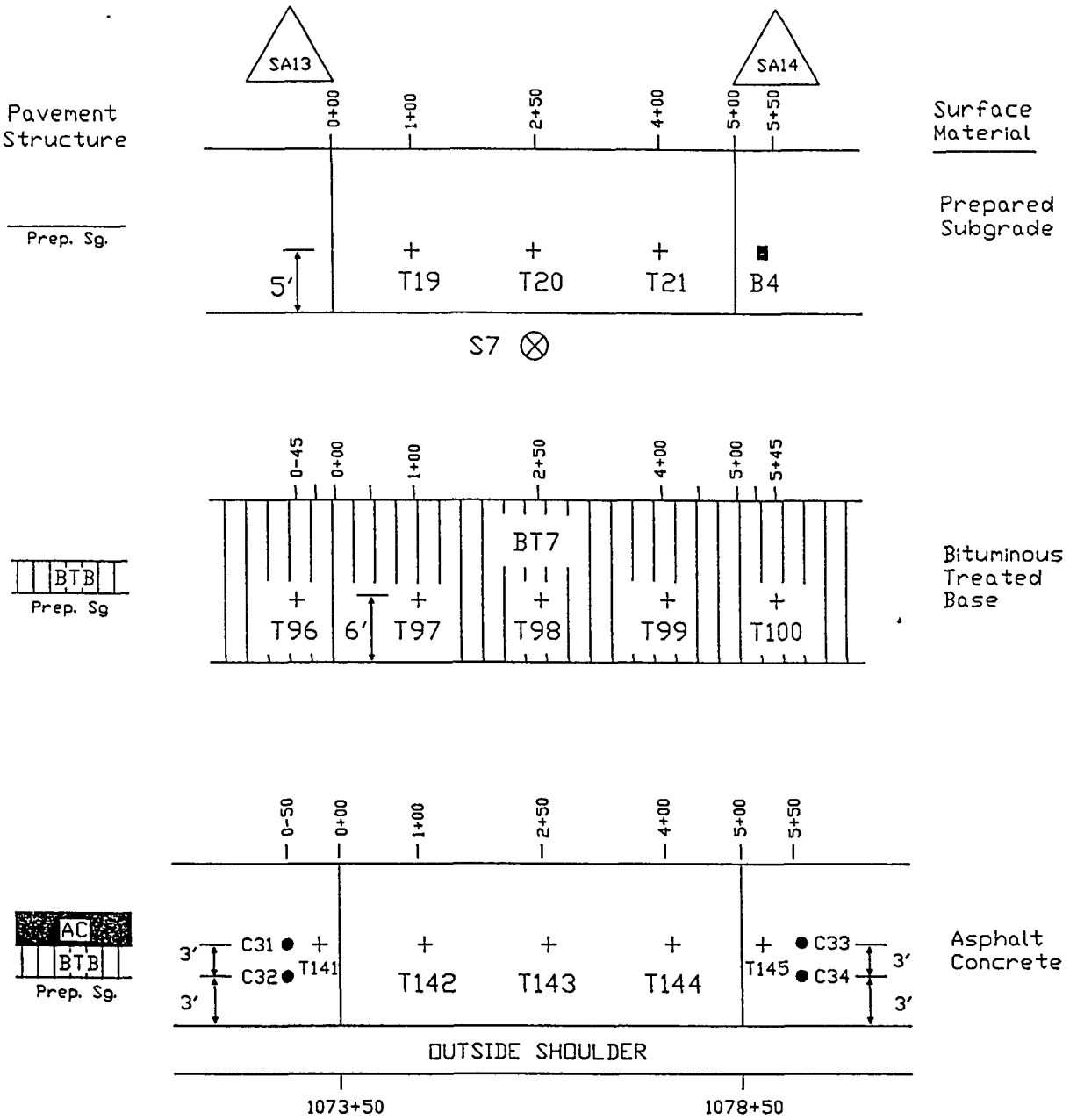
S5- 20' shoulder probe
T13-T15 - Moisture-density tests on subgrade
B3 - Bulk sample of subgrade
T52-T54 - Density tests on AB
B10 - Bulk sample of AB
BT2 - Bulk sample of PBTB
T131-T135 - Density tests on AC
C21-C24 - Cores of AC surface and PBTB layer

Figure 11. Sampling and test plan for test section 040119, SPS-1 Arizona.



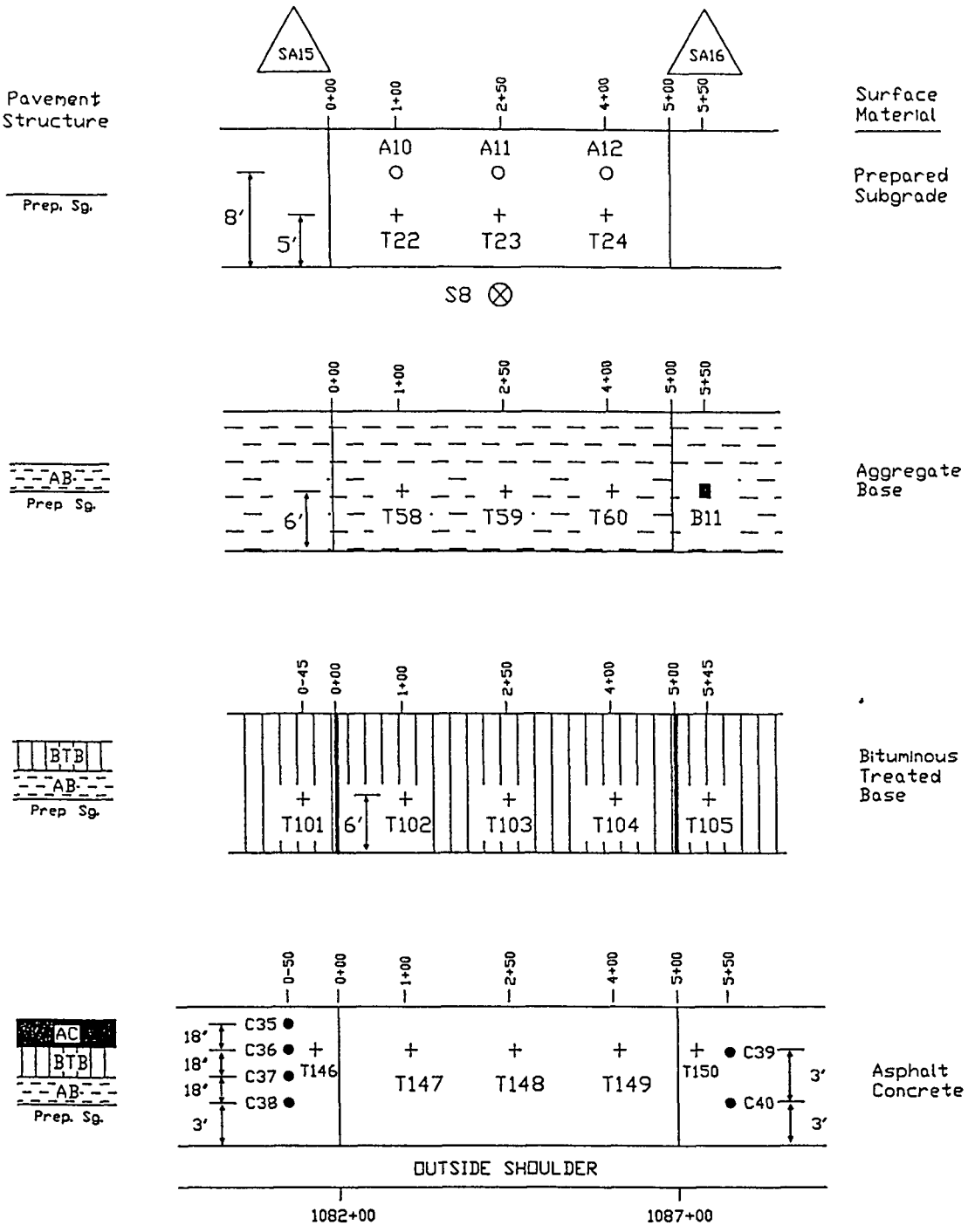
S6 - 20' shoulder probe
A7-A9 - Thinwall tube samples of subgrade
T16-T18 - Moisture-density tests on subgrade
T55-T57 - Moisture-density tests on AB
T136-T140 - Density tests on AC
C25-C30 - Cores of AC surface

Figure 12. Sampling and test plan for test section 040114, SPS-1 Arizona.



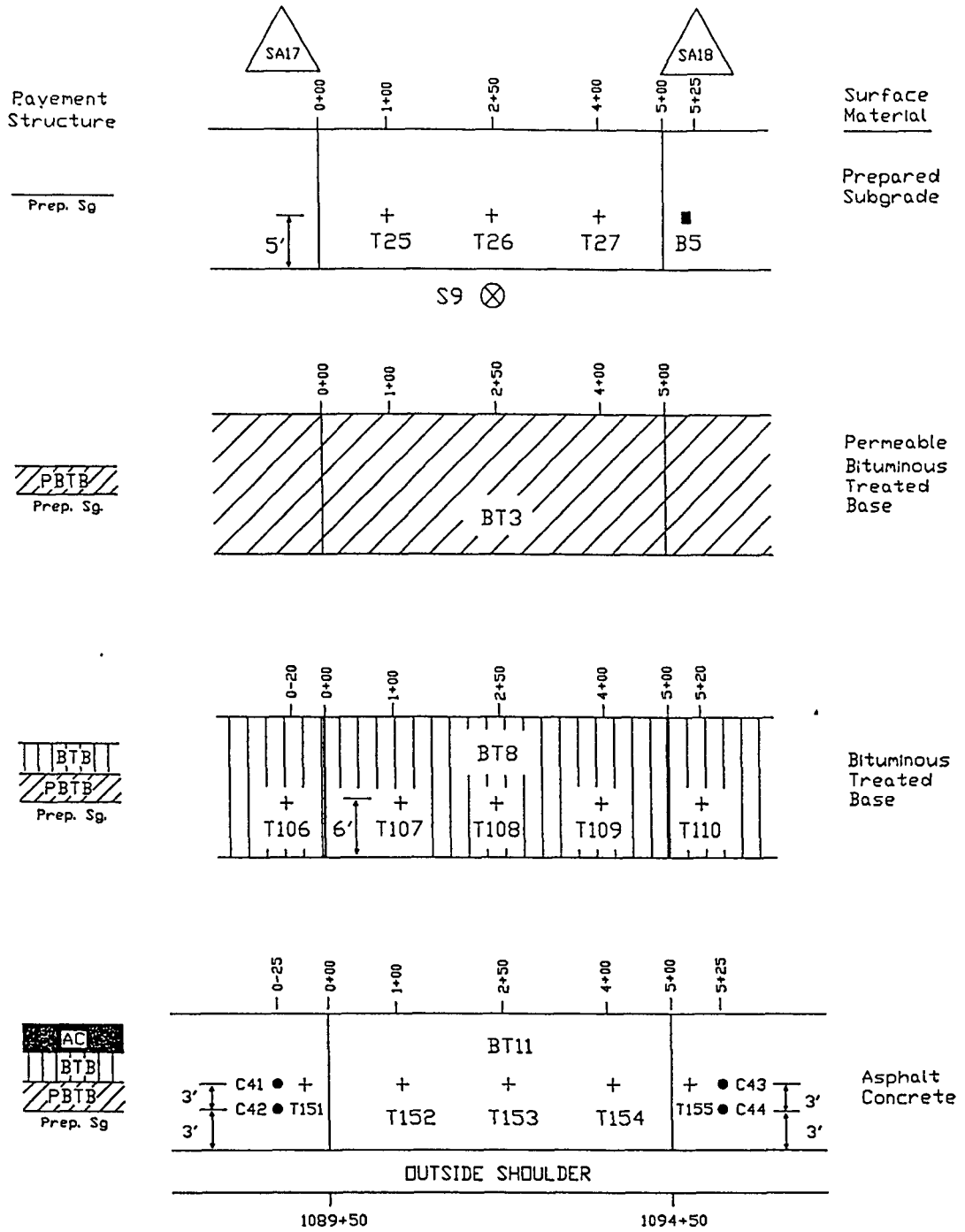
S7 - 20' shoulder probe
T19-T21 - Moisture-density tests on subgrade
B4 - Bulk sample of subgrade
T96-T100 - Density tests on BTB
BT7 - Bulk sample of BTB
T141-T145 - Density tests on AC
C31-C34 - Cores of AC surface and BTB layer

Figure 13. Sampling and test plan for test section 040116, SPS-1 Arizona.



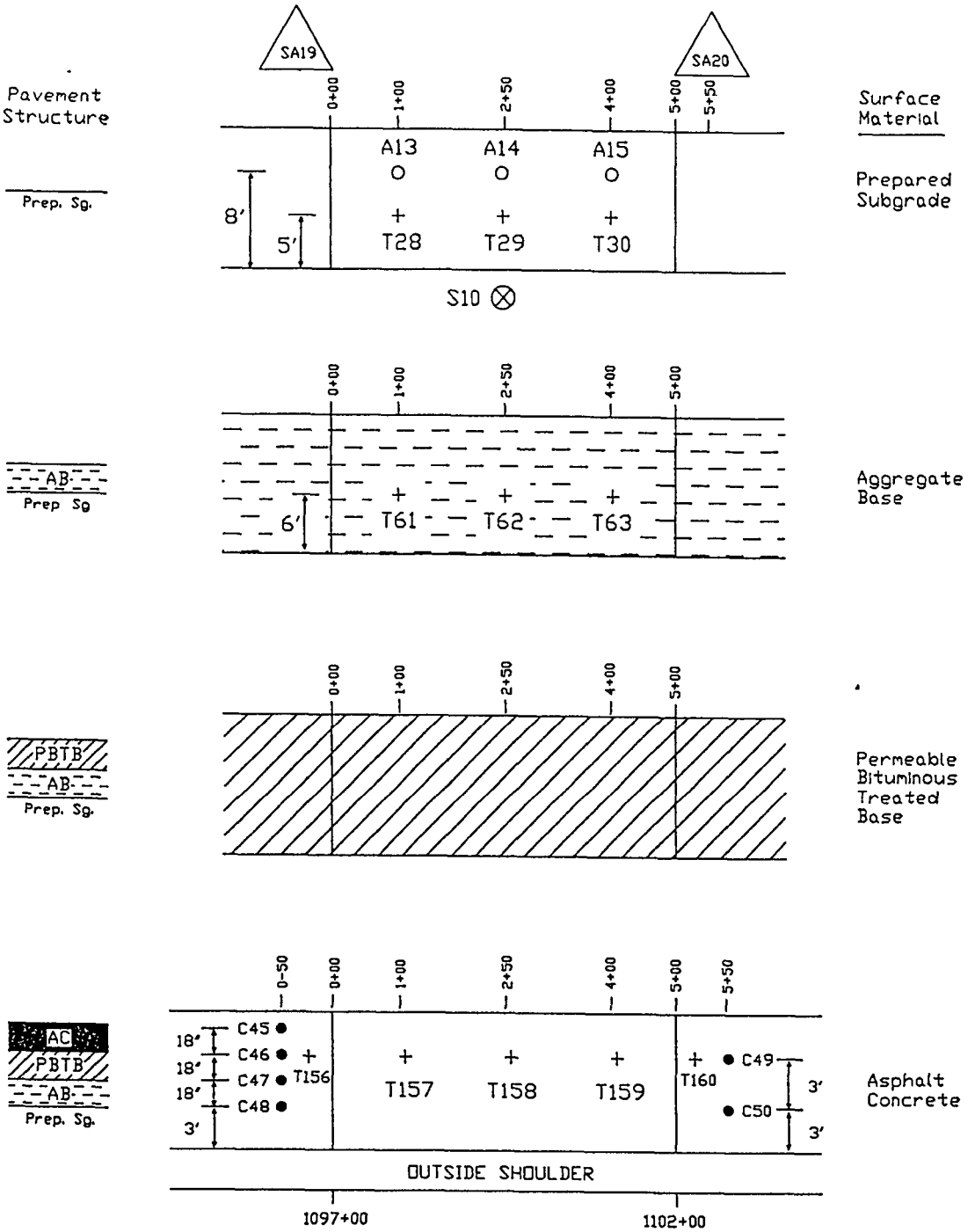
S8 - 20' shoulder probe
A10-A12 - Thinwall tube samples of subgrade
T22-T24 - Moisture-density tests on subgrade
T58-T60 - Moisture-density tests on AB
B11 - Bulk sample of AB
T101-T105 - Density tests on AC
T146-T150 - Density tests on AC
C35-C40 - Cores of AC surface and BTB layer

Figure 14. Sampling and test plan for test section 040118, SPS-1 Arizona.



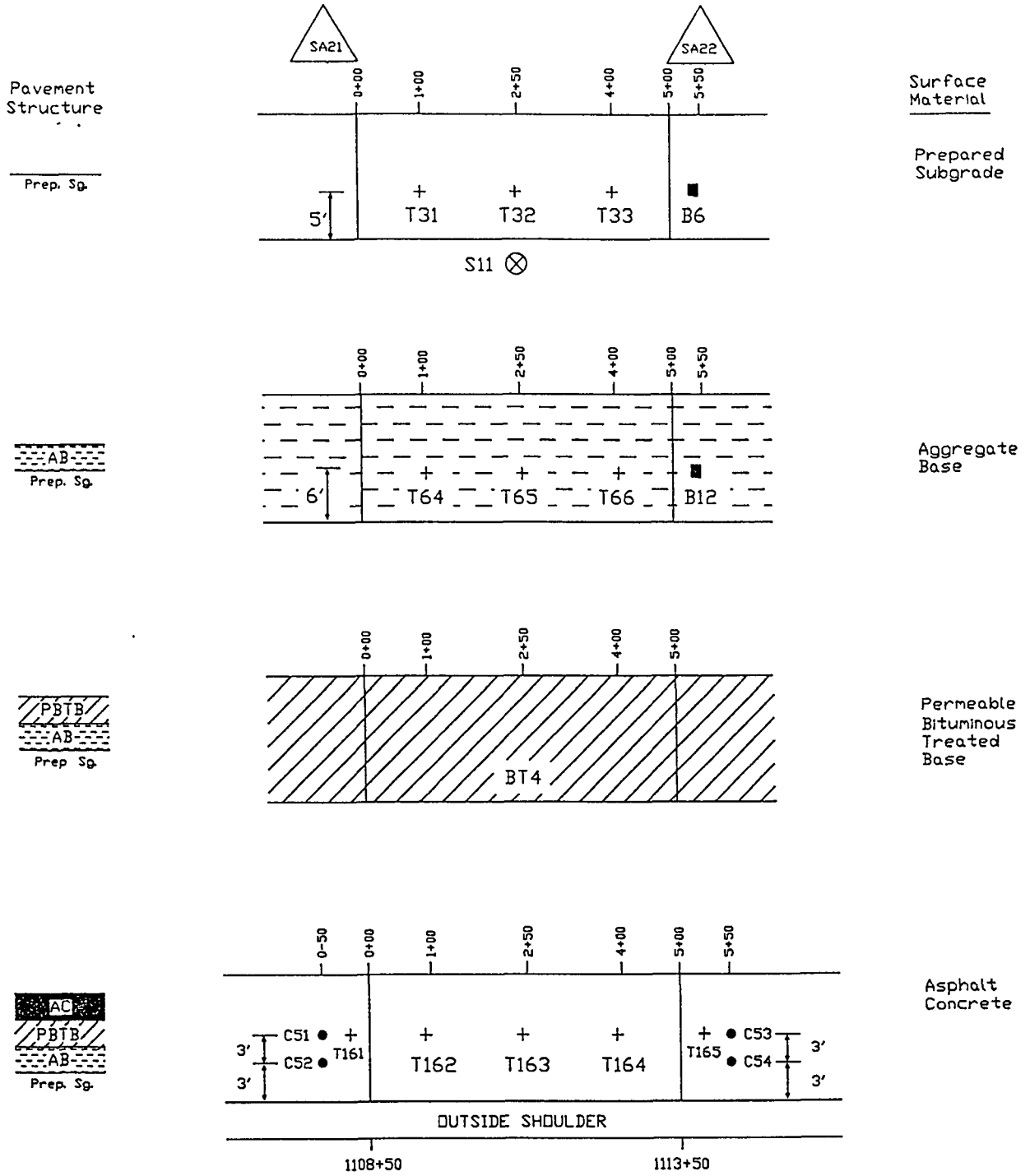
S9 - 20' shoulder probe
T25-T27 - Moisture-density tests on subgrade
B5 - Bulk sample of subgrade
BT3 - Bulk sample of PBTB
T106-T110 - Density tests on BTB
BT8 - Bulk sample of BTB
T151-T155 - Density tests on AC
BT11 - Bulk sample of AC
C41-C44 - Cores of AC surface, BTB and PBTB layers

Figure 15. Sampling and test plan for test section 040122, SPS-1 Arizona.



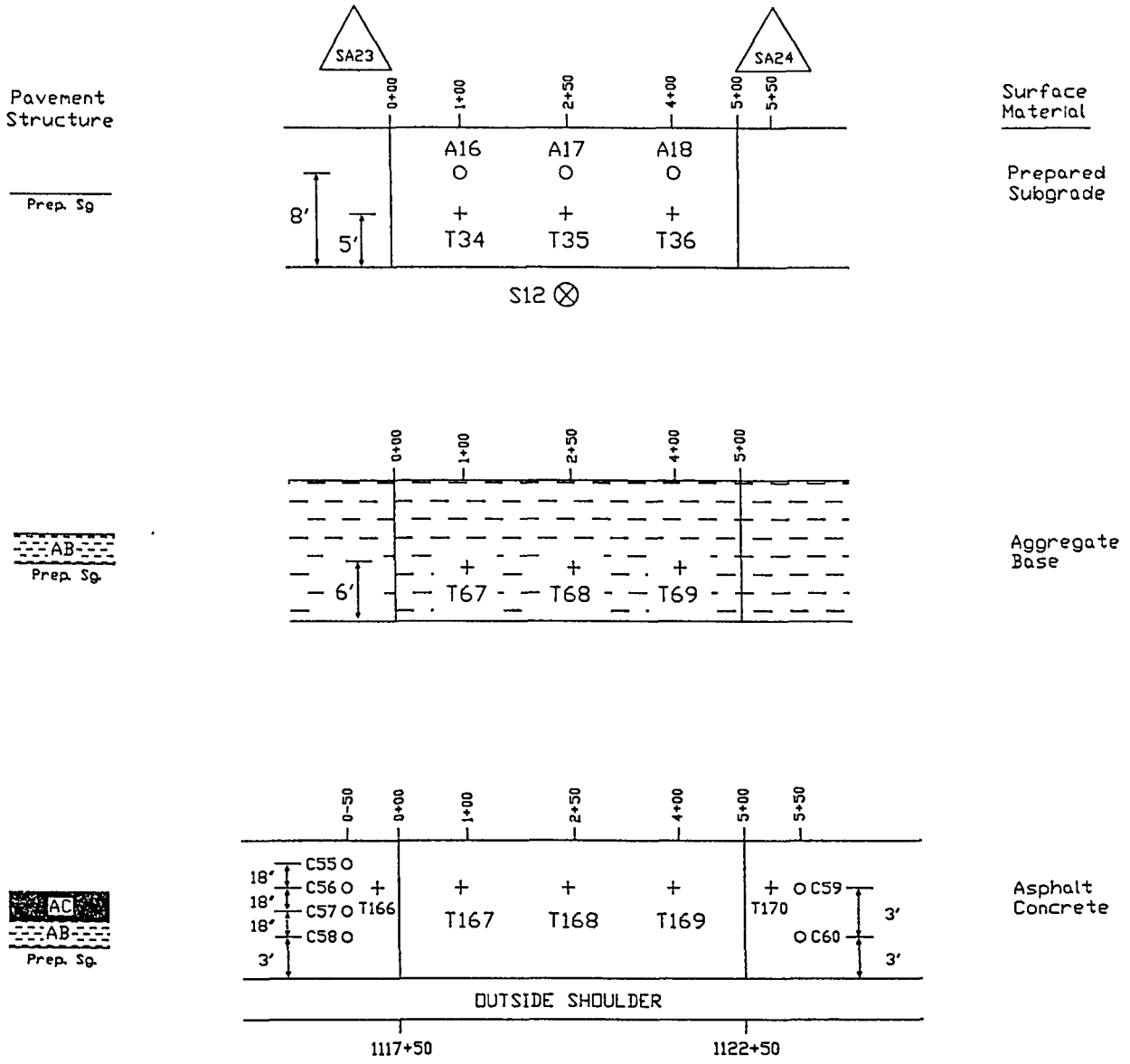
S10 - 20' shoulder probe
A13-A15 - Thinwall tube samples of subgrade
T28-T30 - Moisture-density tests on subgrade
T61-T63 - Moisture-density tests on AB
T156-T160 - Density tests on AC
C45-C50 - Cores of AC surface BTB layer

Figure 16. Sampling and test plan for test section 040121, SPS-1 Arizona.



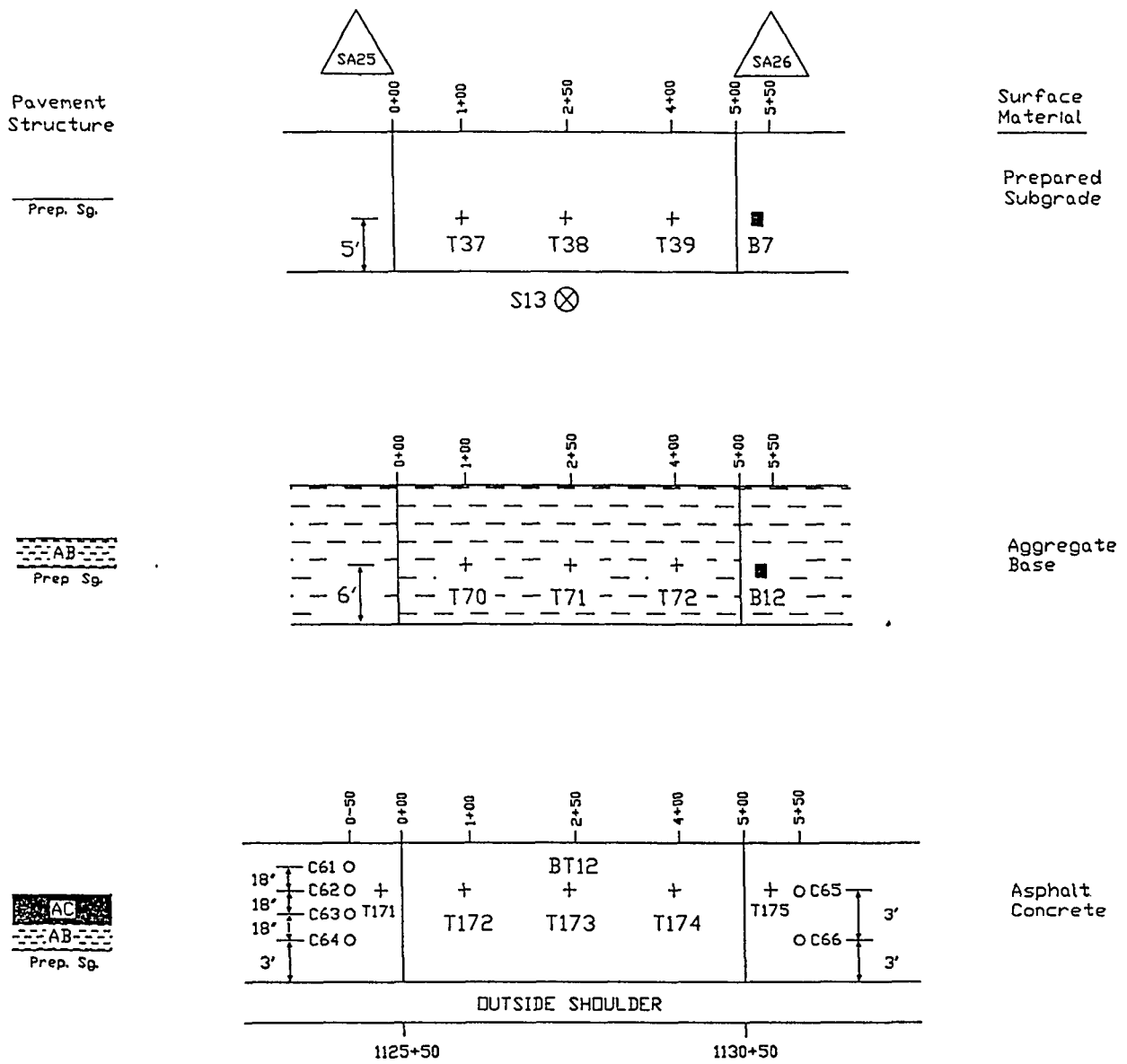
S11 - 20' shoulder probe
T31-T33 - Moisture-density tests on subgrade
B6 - Bulk sample of subgrade
T64-T66 - Moisture-density tests on AB
B12 - Bulk sample of AB
BT4 - Bulk sample of PBTB
T161-T165 - Density tests on AC
C51-C54 - Cores of AC surface and PBTB layer

Figure 17. Sampling and test plan for test section 040120, SPS-1 Arizona.



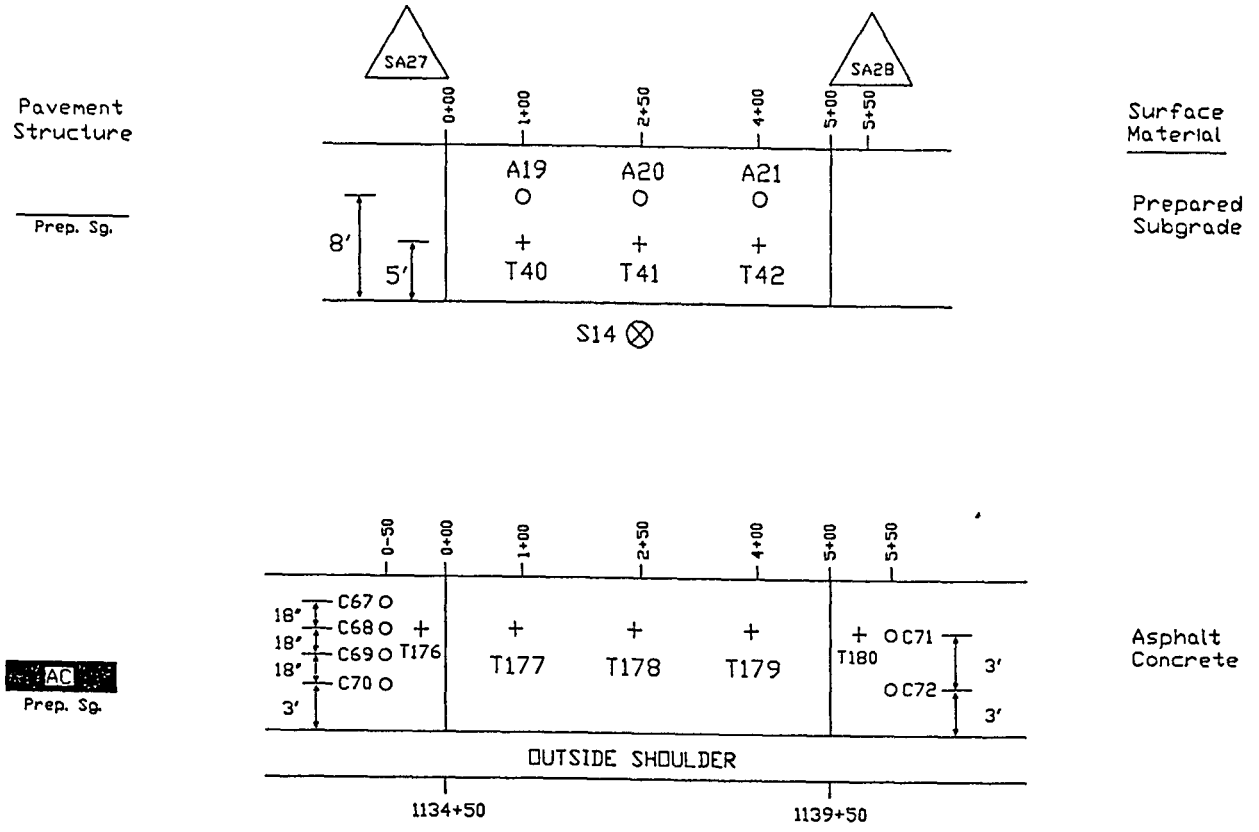
S12 - 20' shoulder probe
A16-A18 - Thinwall tube samples of subgrade
T34-T36 - Moisture-density tests on subgrade
T67-T69 - Moisture-density tests on AB
T166-T170 - Density tests on AC
C55-C60 - Cores of AC surface

Figure 18. Sampling and test plan for test section 040113, SPS-1 Arizona.



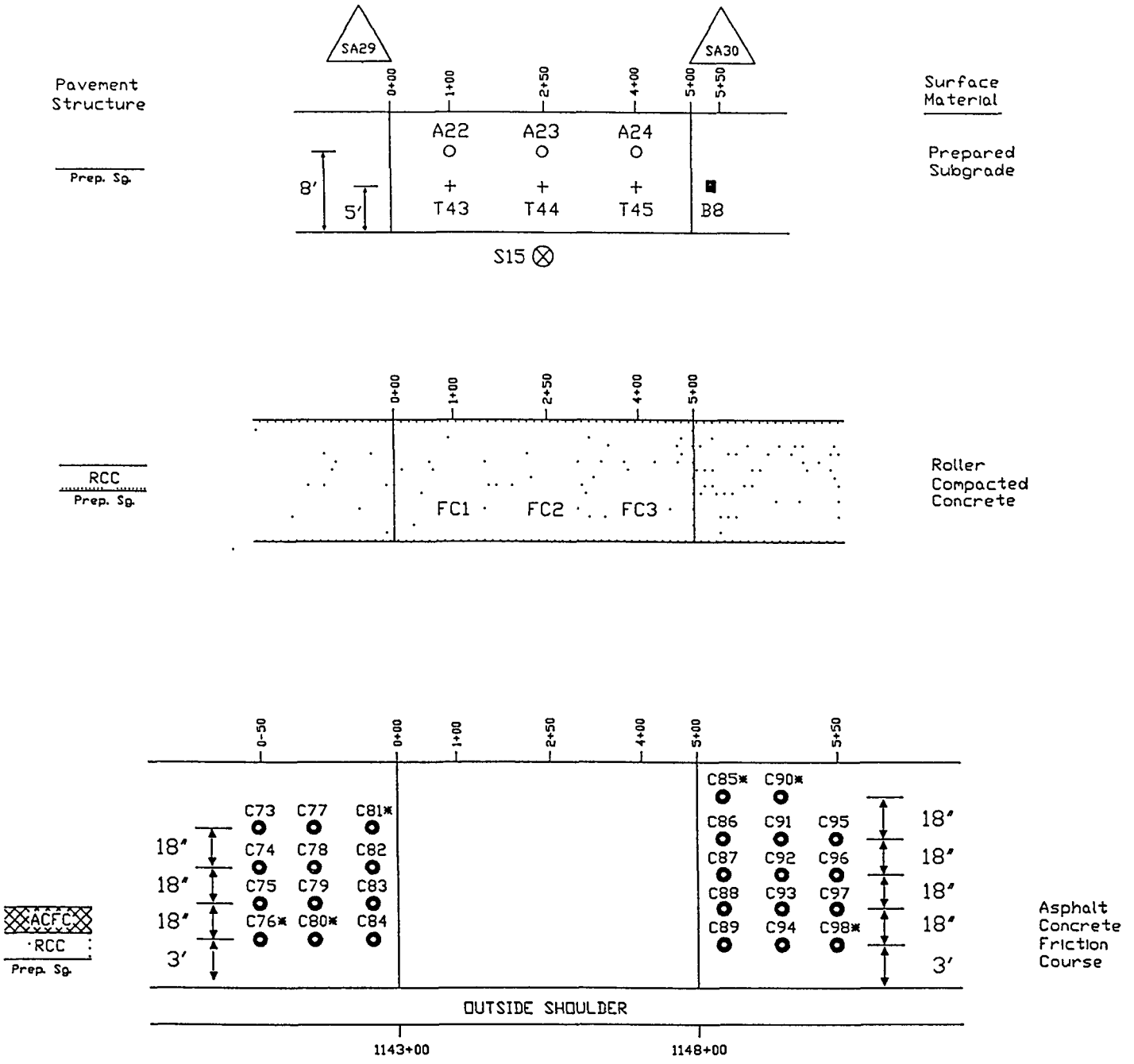
S13 - 20' shoulder probe
T37-T39 - Moisture-density tests on subgrade
B7 - Bulk sample of subgrade
T70-T72 - Moisture-density tets on AB
B12 - Bulk sample of AB
T171-T175 - Density tests on AC
BT12 - Bulk sample of AC
C61-C66 - Cores of AC surface

Figure 19. Sampling and test plan for test section 040126, SPS-1 Arizona.



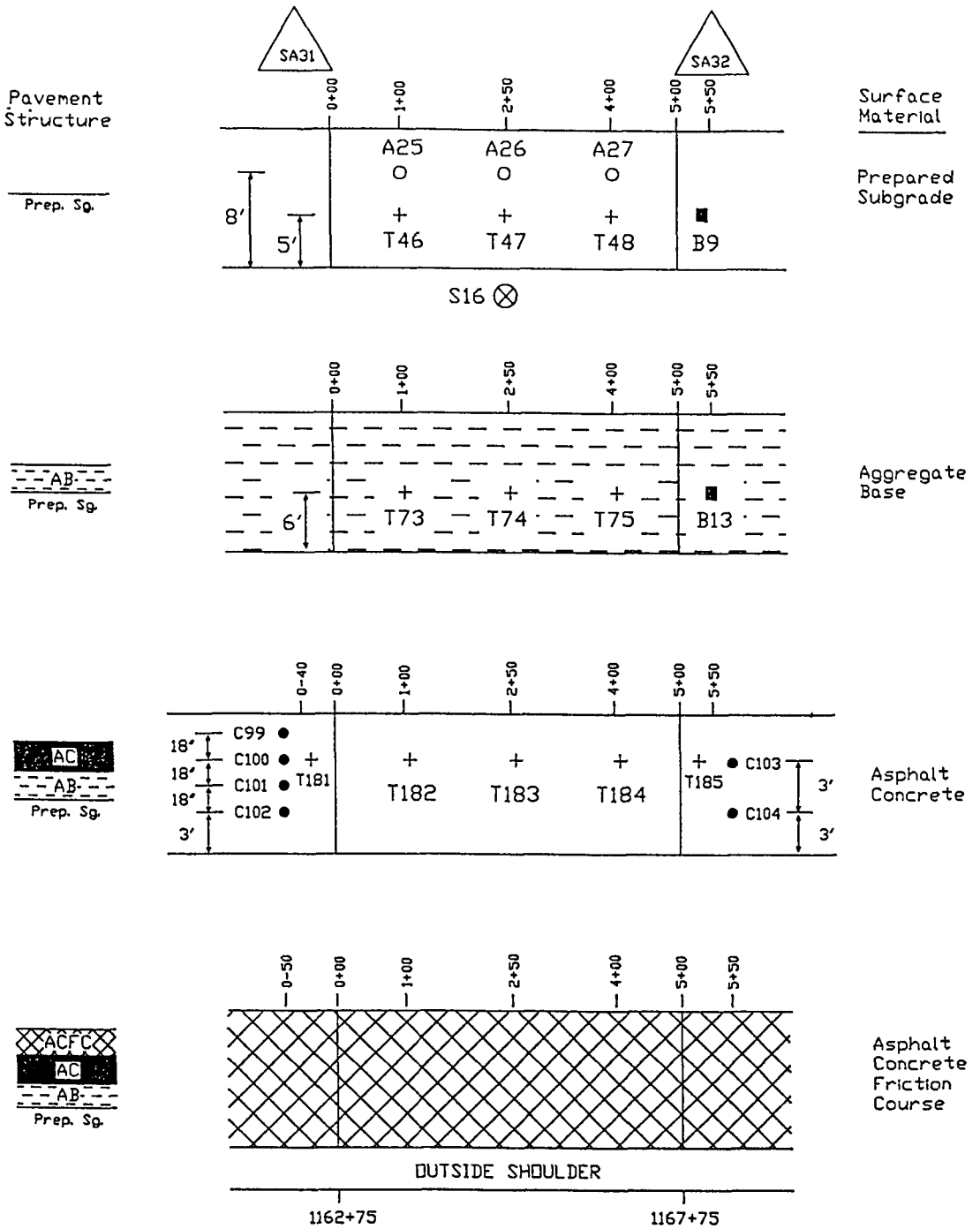
S14 - 20' shoulder probe
A19-A21 - Thinwall samples of subgrade
T40-T42 - Moisture-density tests on subgrade
T176-T180 - Density tests on AC
C67-C72 - Cores of AC surface

Figure 20. Sampling and test plan for test section 040125, SPS-1 Arizona.



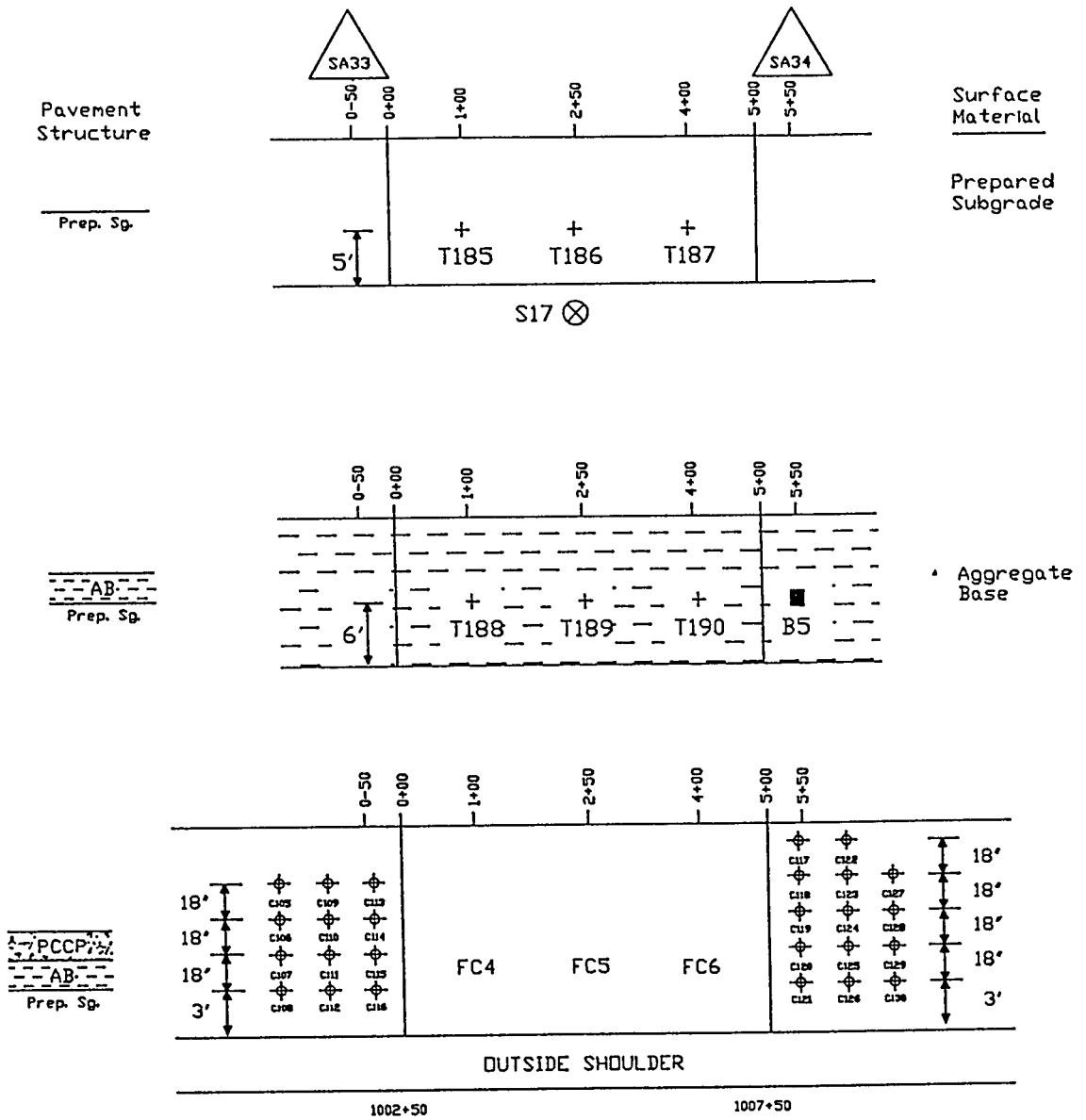
S15 - 20′ shoulder probe
A22-A24 - Thinwall tube samples of subgrade
T43-T45 - Moisture-density tests on subgrade
B8 - Bulk sample of subgrade
FC1-FC3 - Bulk samples of RCC
C73-C98 - Cores of RCC through ACFC layer
*C76, C80, C81, C90, C98 - Cores of RCC 10-13 days after placement may be made on RCC surface if not overlaid

Figure 21. Sampling and test plan for test section 040127, SPS-1 Arizona.



S16 - 20' shoulder probe
A25-A27 - Thinwall tube samples of subgrade
T46-T48 - Moisture-density tests on subgrade
B9 - Bulk sample of subgrade
T73-T75 - Moisture-density tests on AB
B13 - Bulk samle of AB
T181-T185 - Density tests on AC
C99-C104 - Cores of AC layer

Figure 22. Sampling and test plan for test section 040128, SPS-1 Arizona.



S17 - 20' shoulder probe
T185-T187 - Moisture-density tests on subgrade
T188-T190 - Moisture-density tests on AB
C105-C130 - Cores of PCCP
FC4-FC6 - Bulk samples of PCC mix

Figure 23. Sampling and test plan for test section 040160 (WIM1), SPS-1 Arizona.

APPENDIX H

SUBGRADE DEFLECTION PLOTS

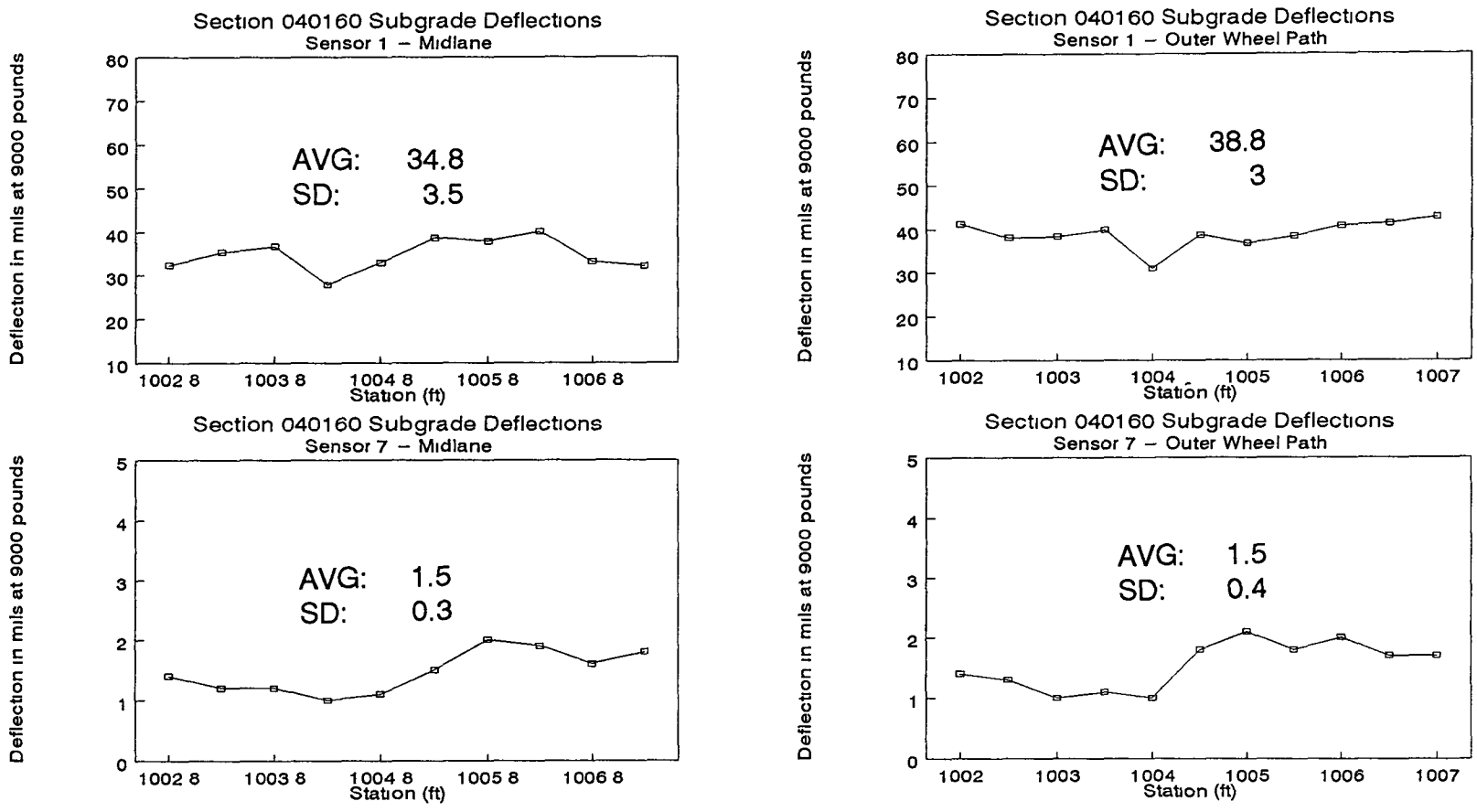


Figure H.1. Section 040160 subgrade deflections.

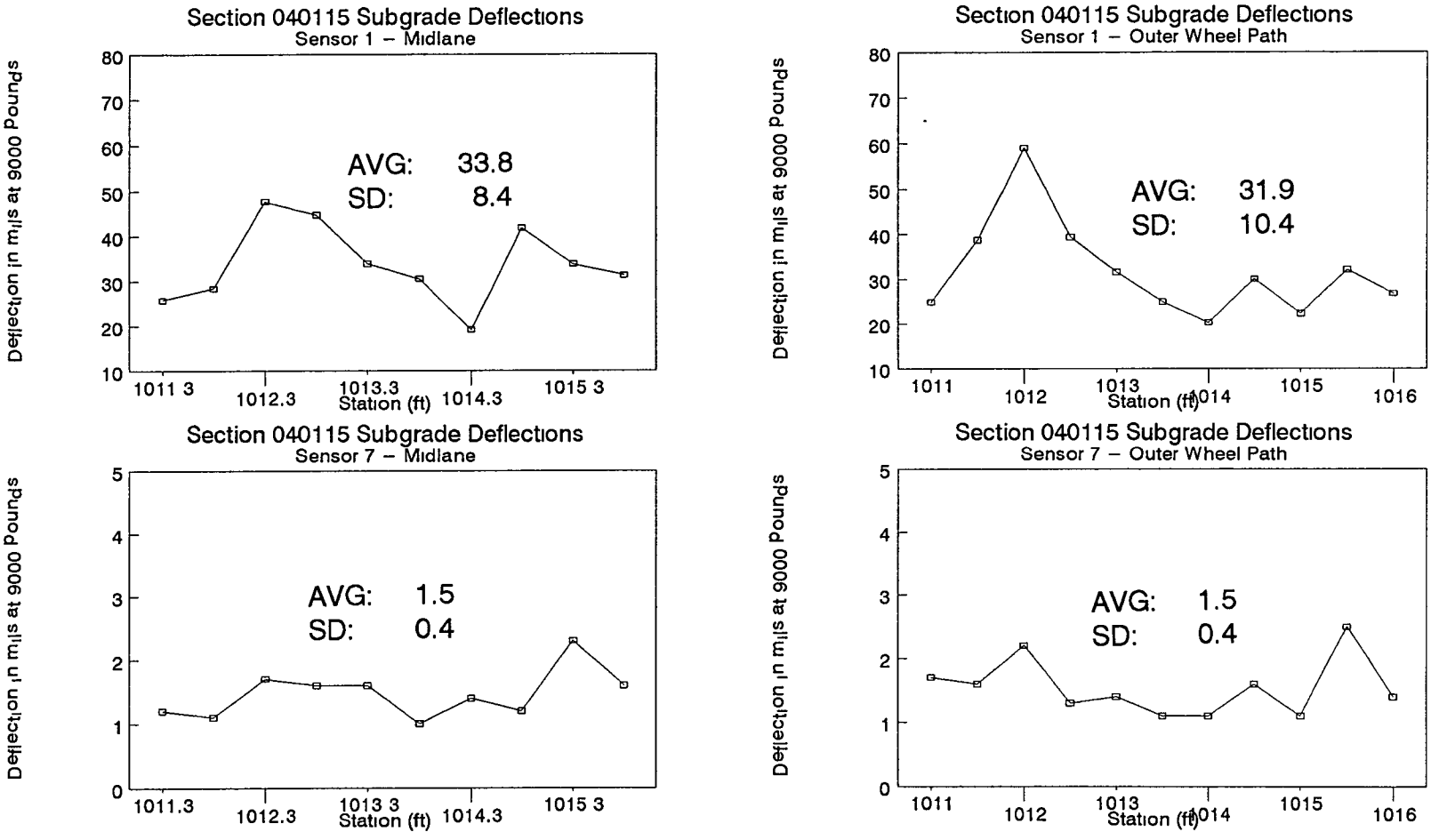


Figure H.2. Section 040115 subgrade deflections.

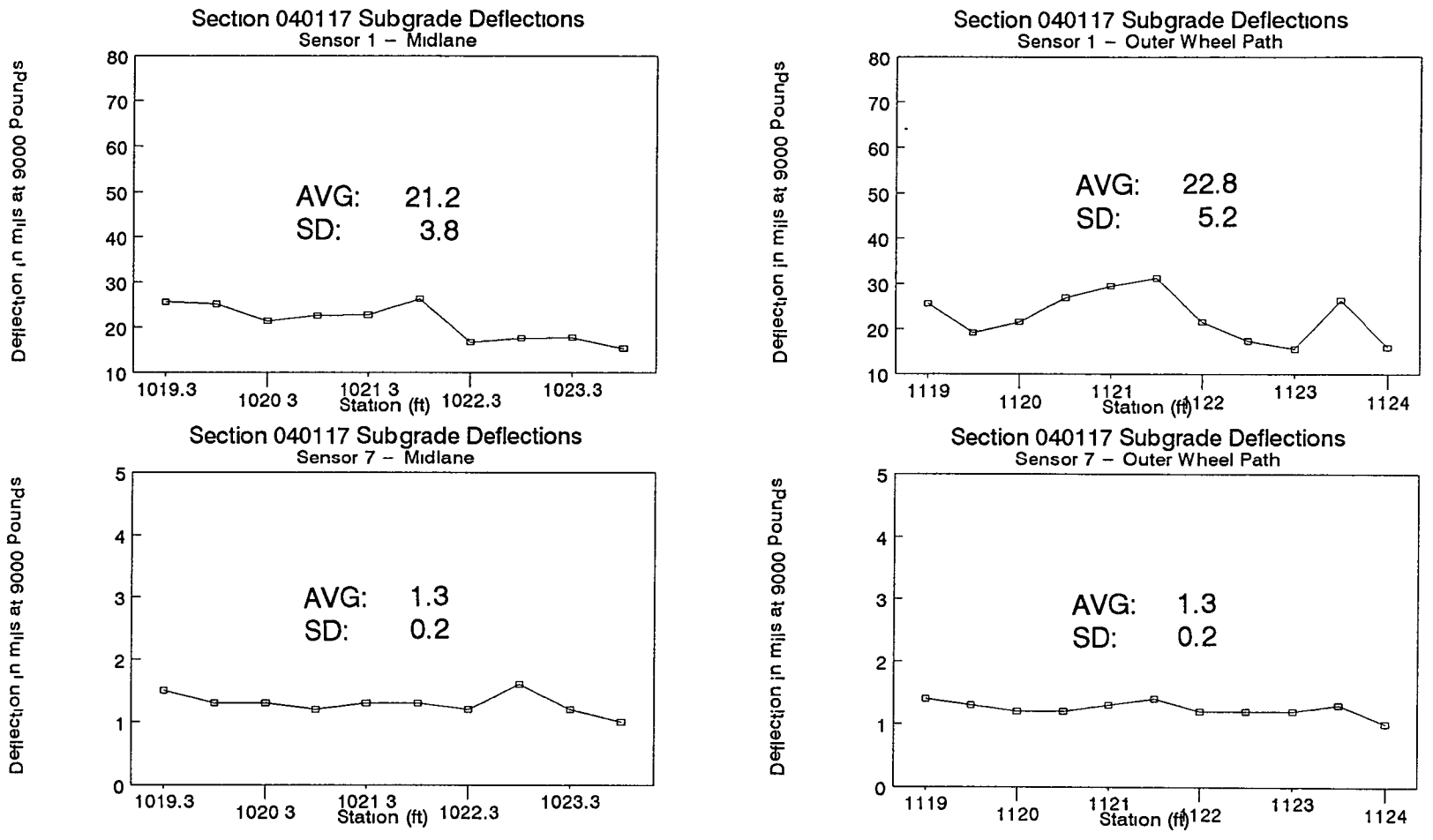


Figure H.3. Section 040117 subgrade deflections.

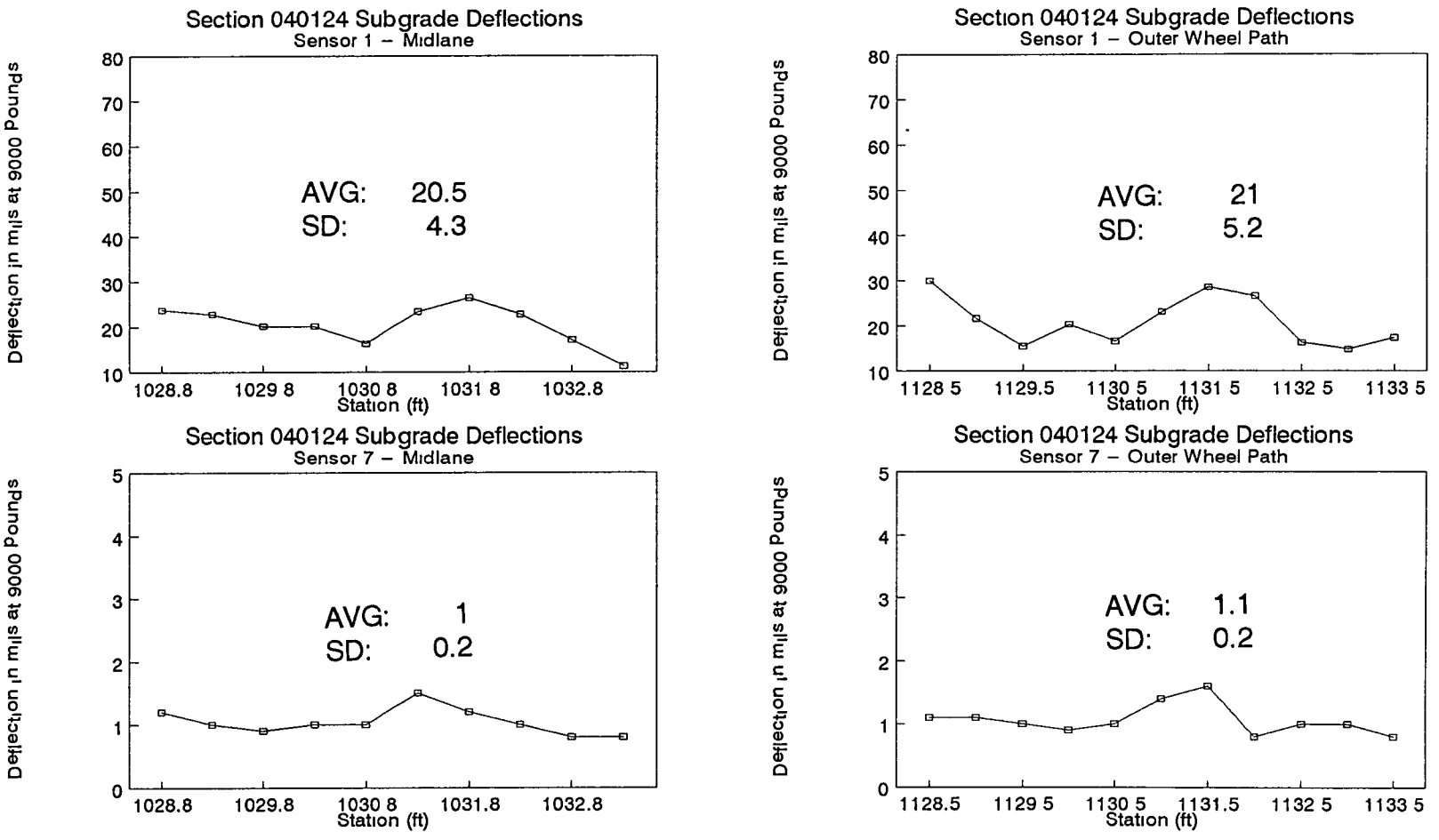


Figure H.4. Section 040124 subgrade deflections.

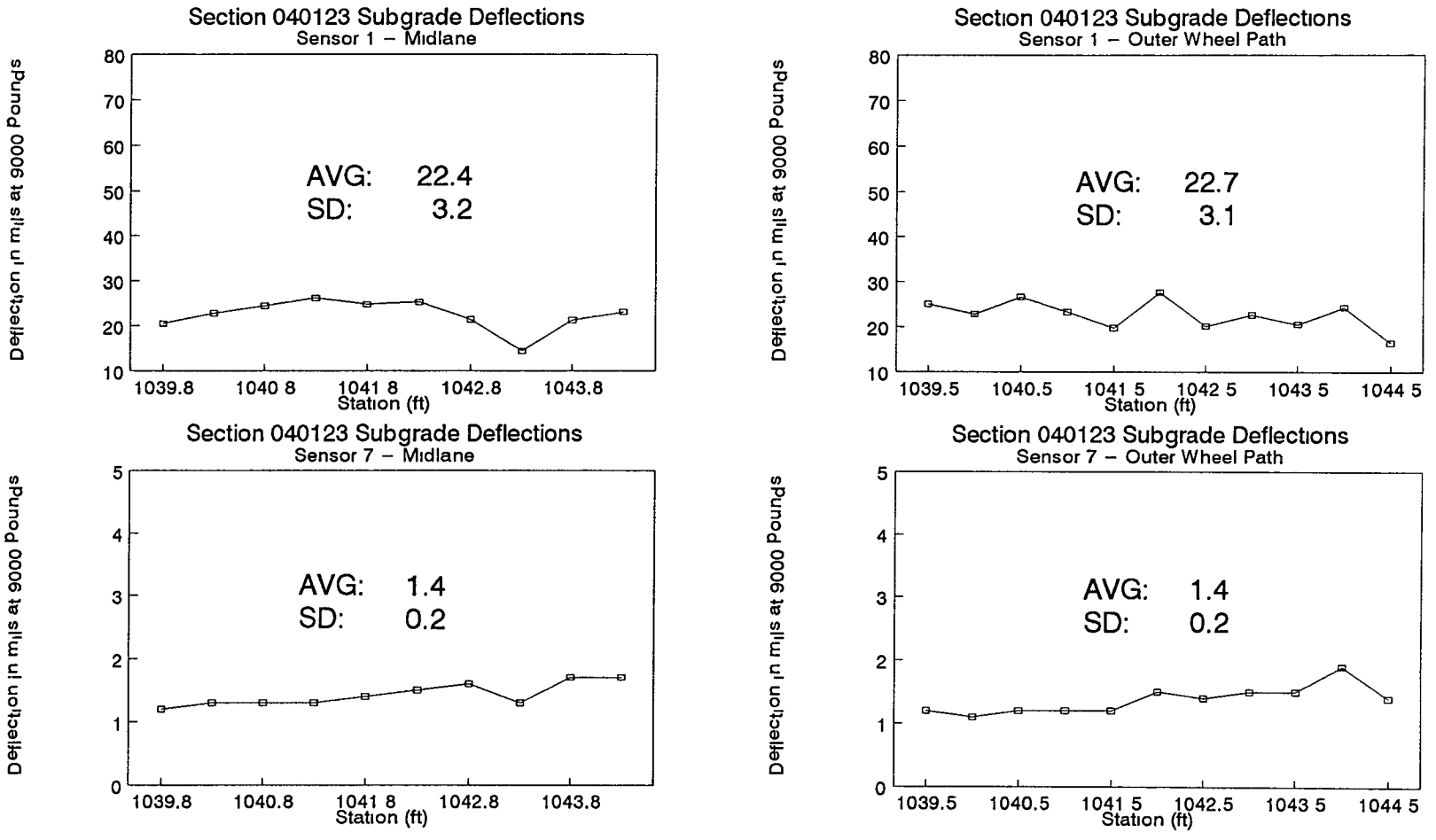


Figure H.5. Section 040123 subgrade deflections.

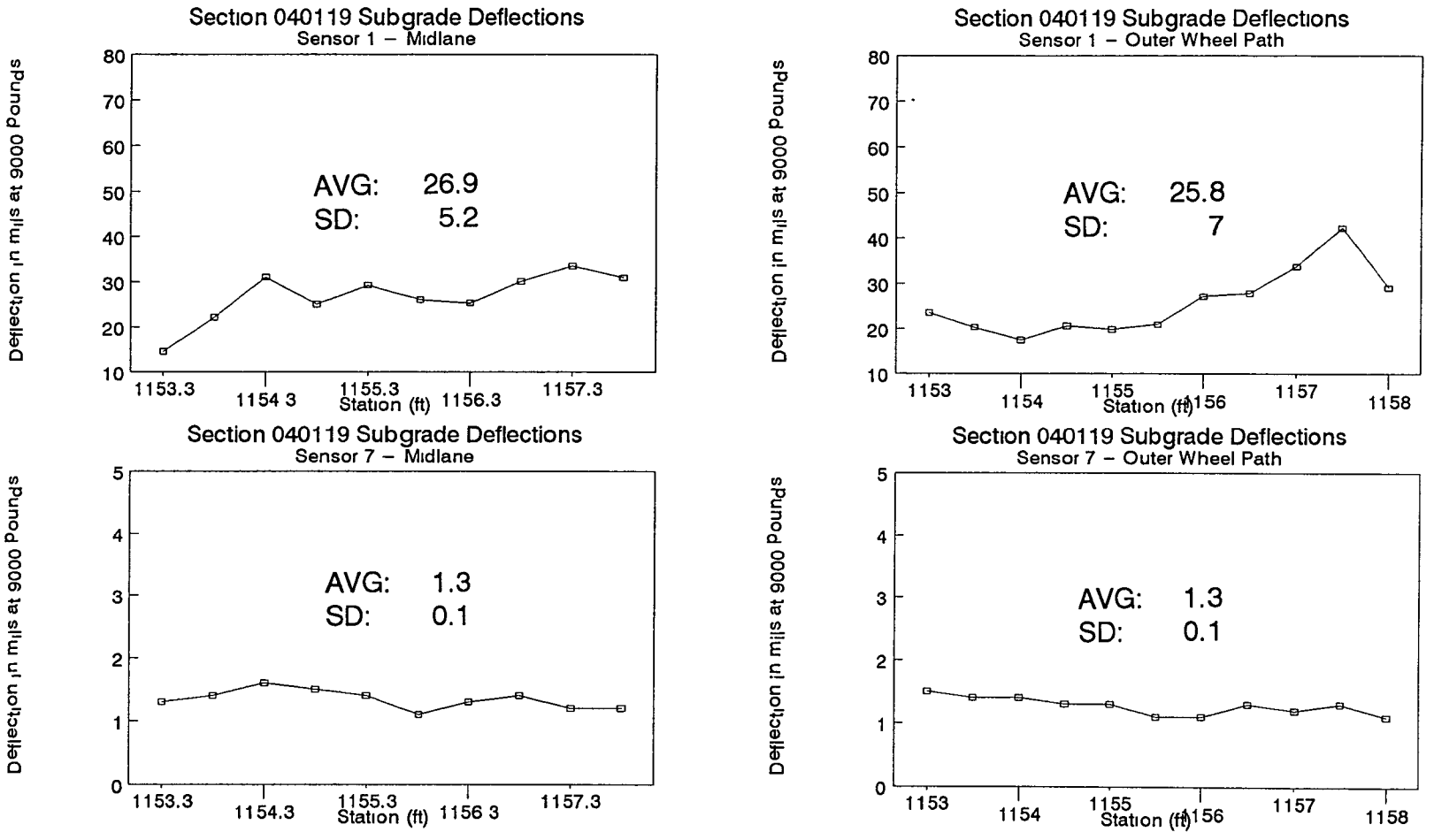


Figure H.6. Section 040119 subgrade deflections.

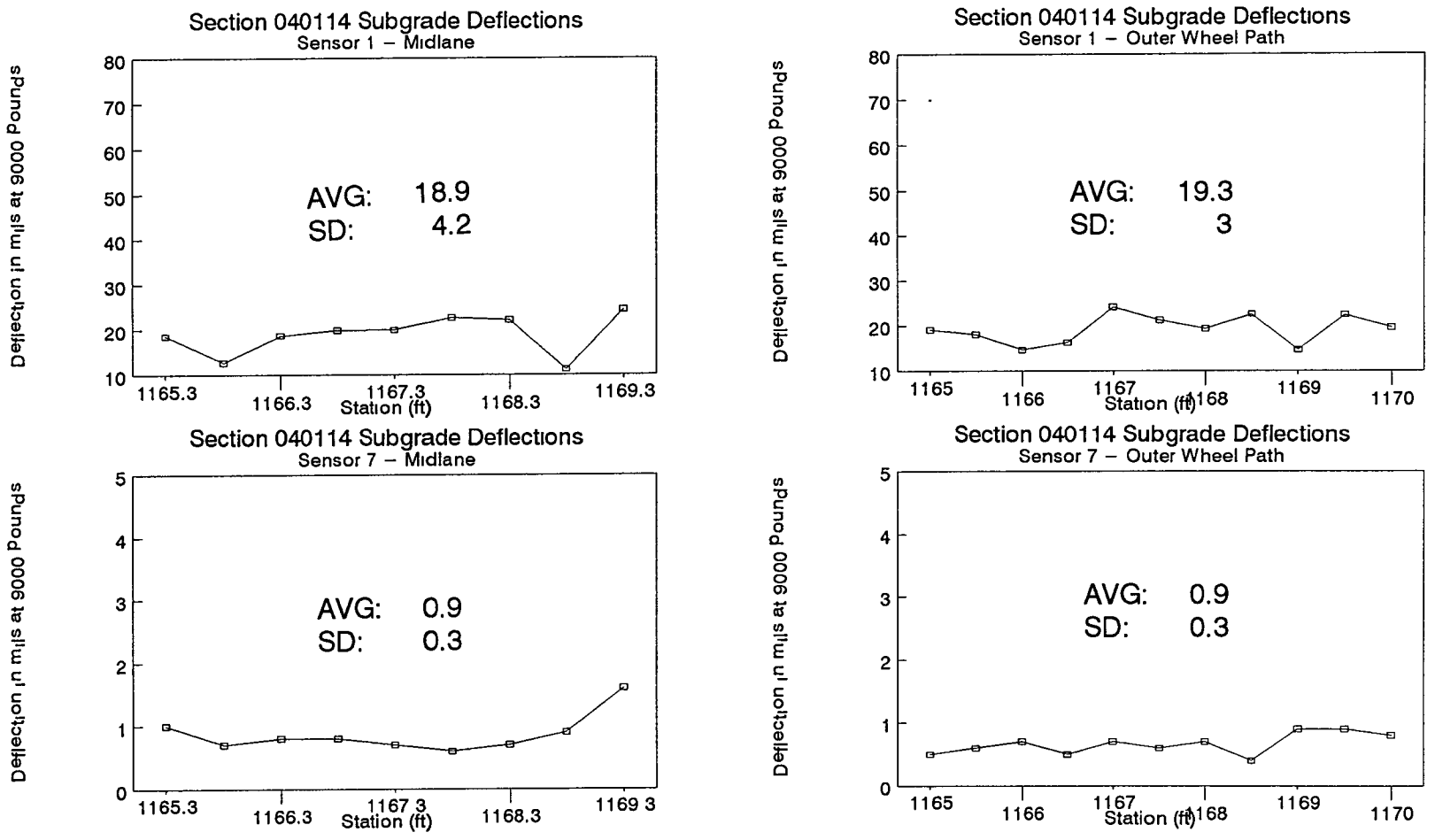


Figure H.7. Section 040114 subgrade deflections.

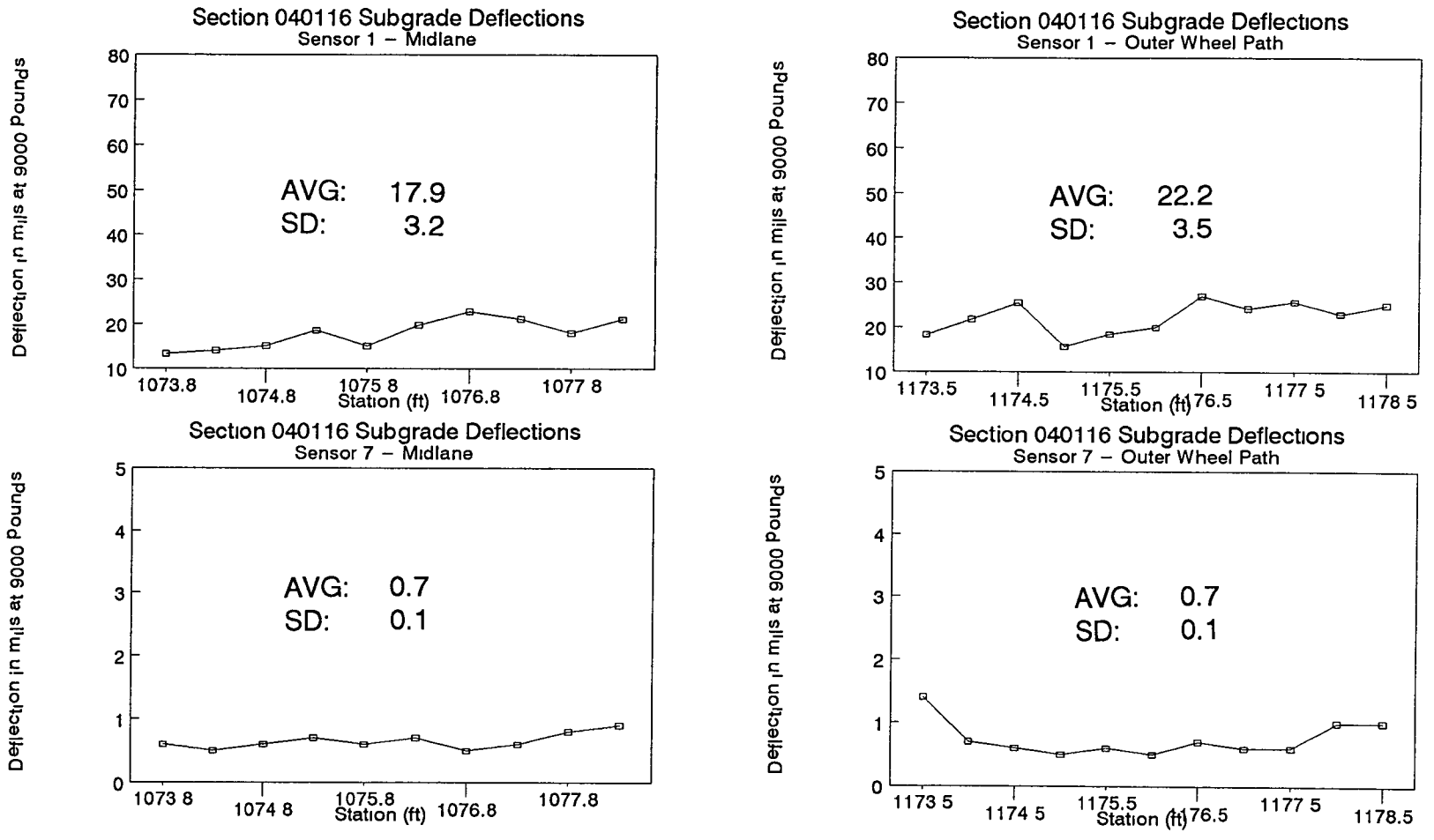


Figure H.8. Section 040116 subgrade deflections.

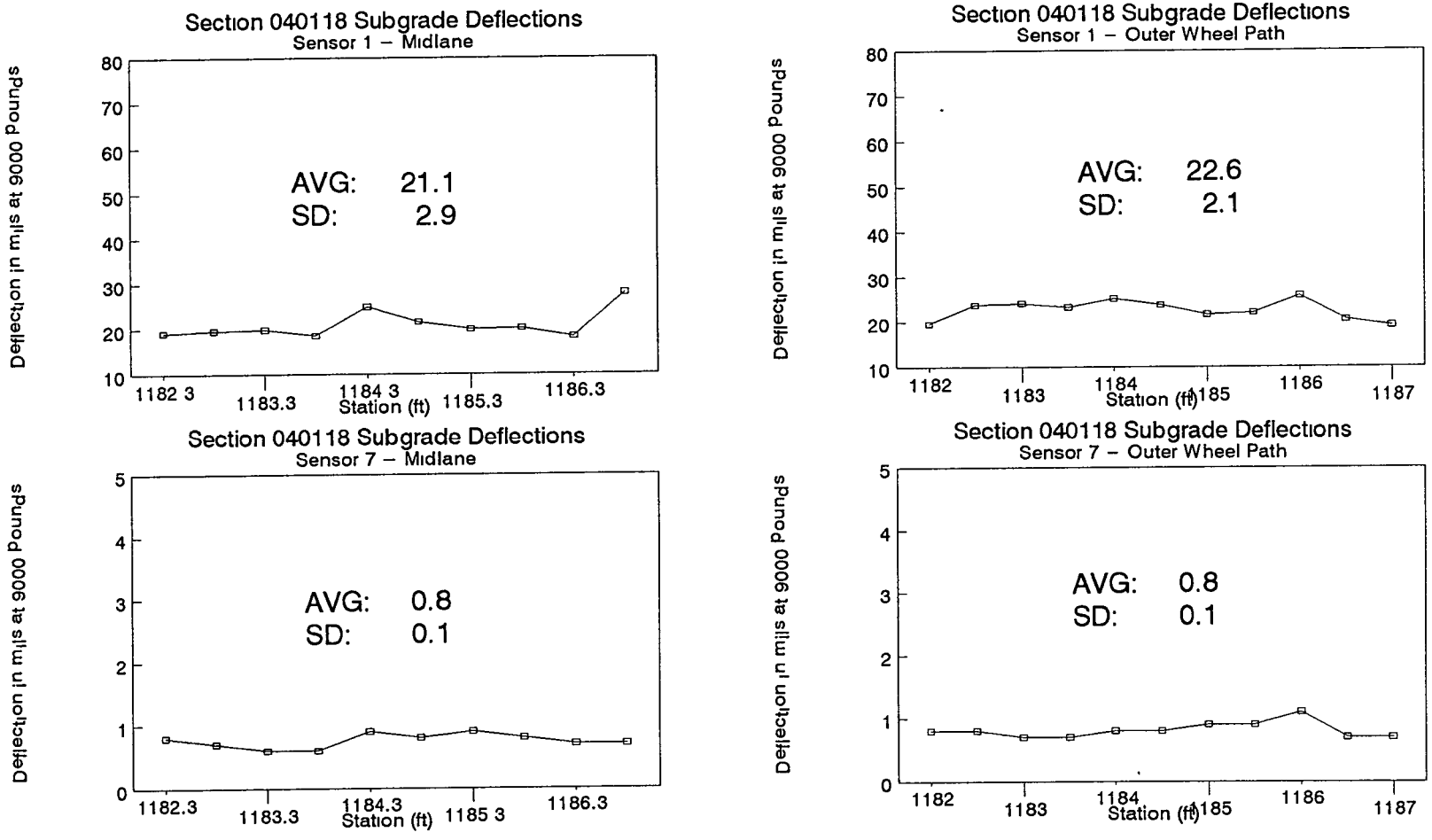


Figure H.9. Section 040118 subgrade deflections.

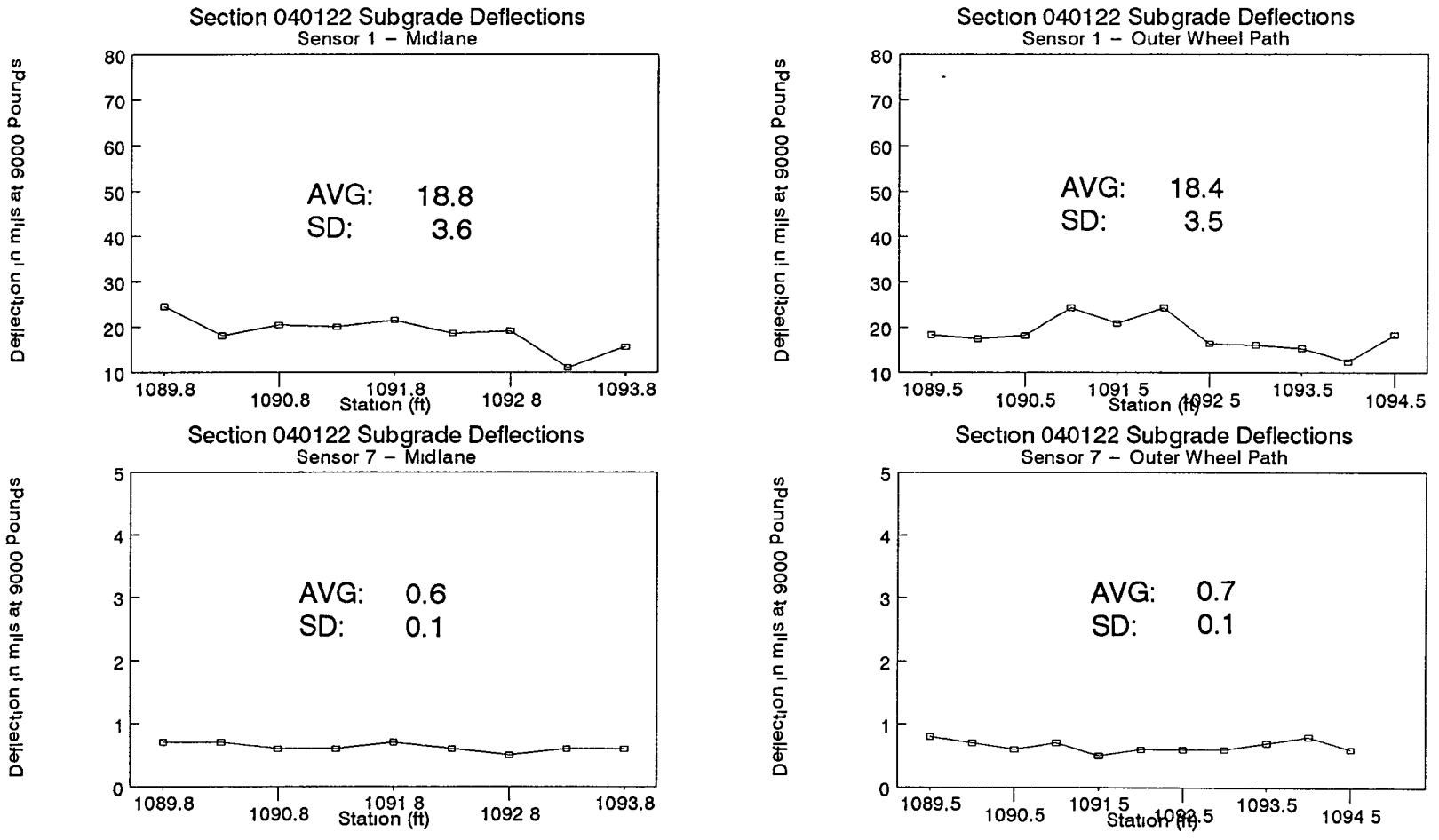


Figure H.10. Section 040122 subgrade deflections.

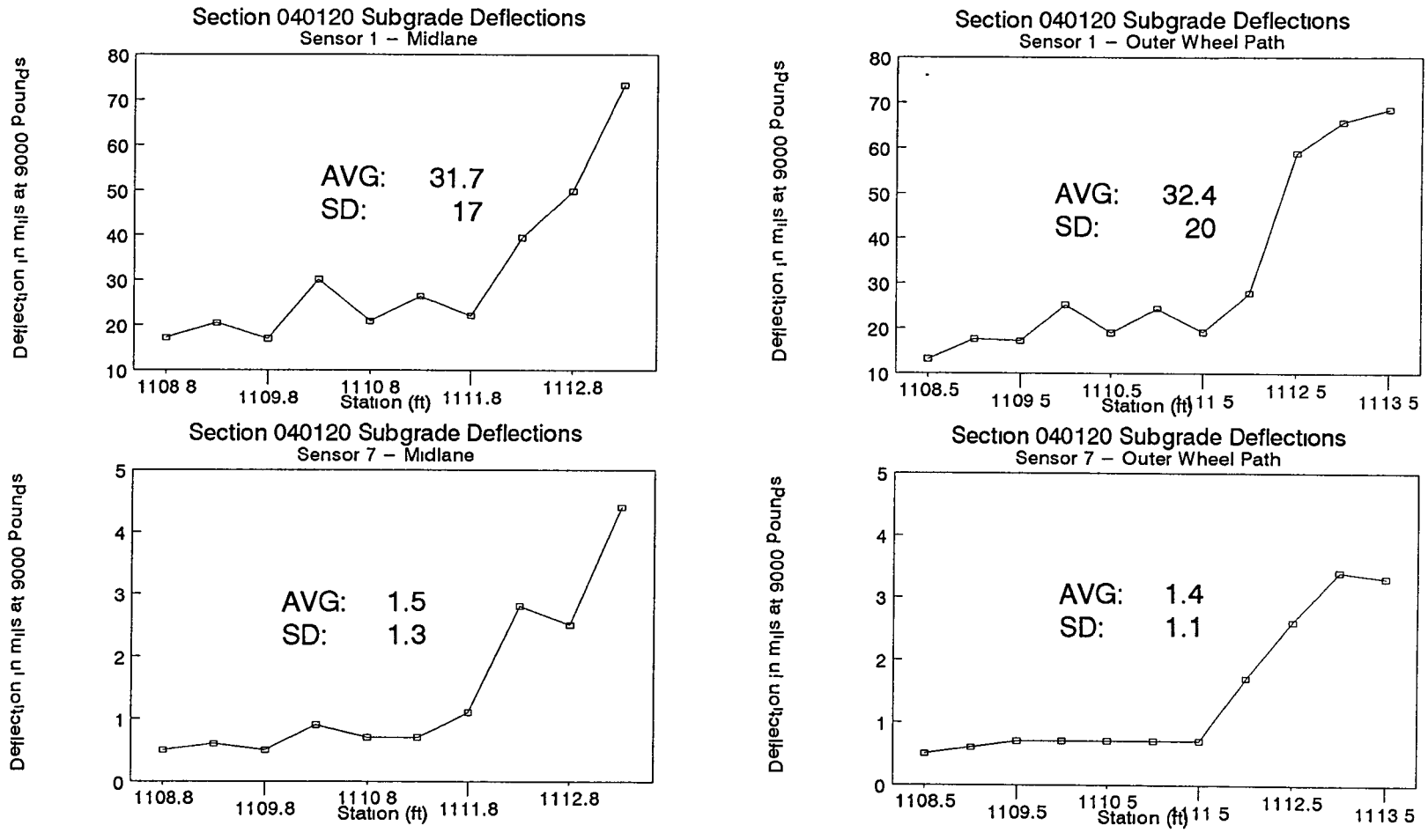


Figure H.11. Section 040120 subgrade deflections.

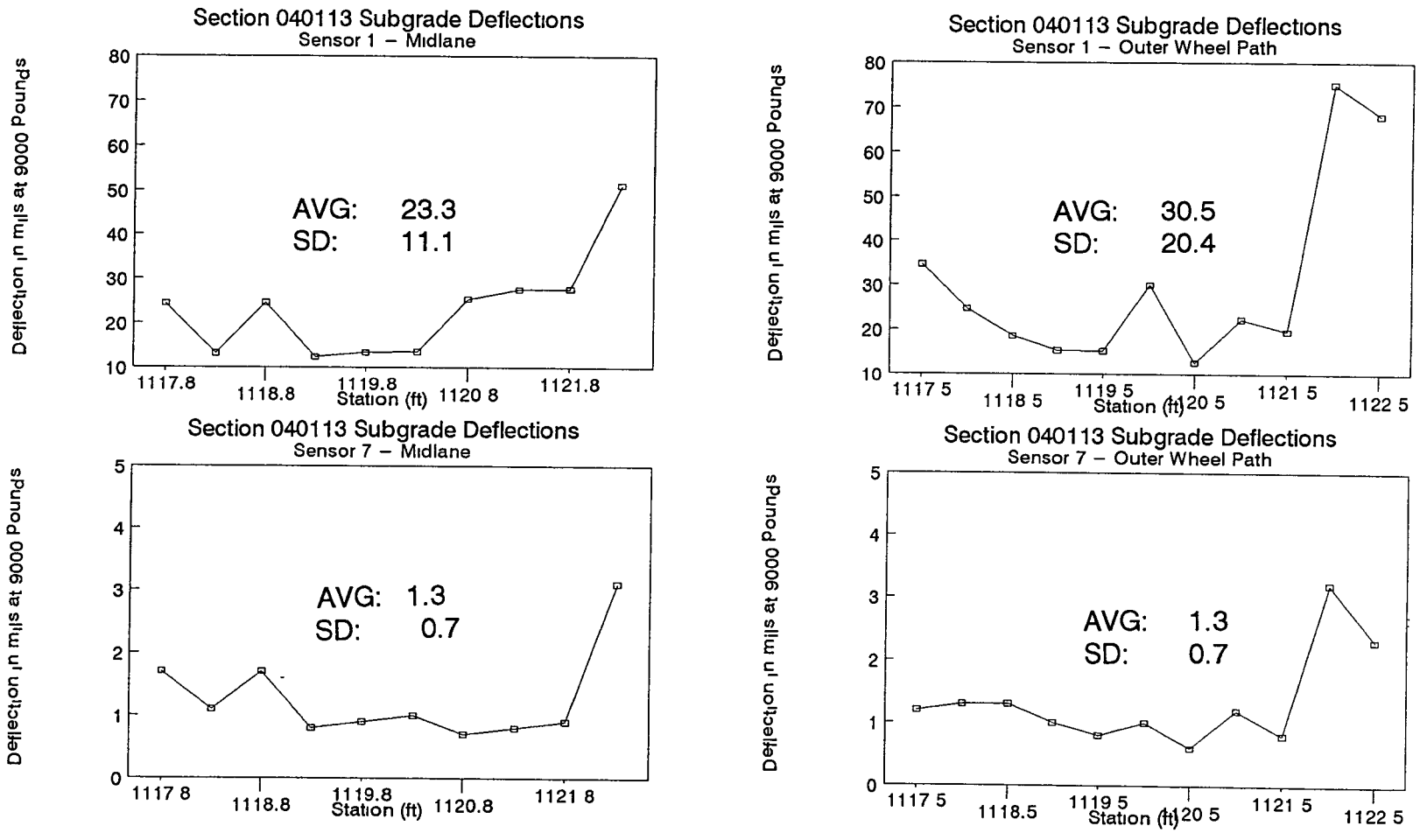


Figure H.12. Section 040113 subgrade deflections.

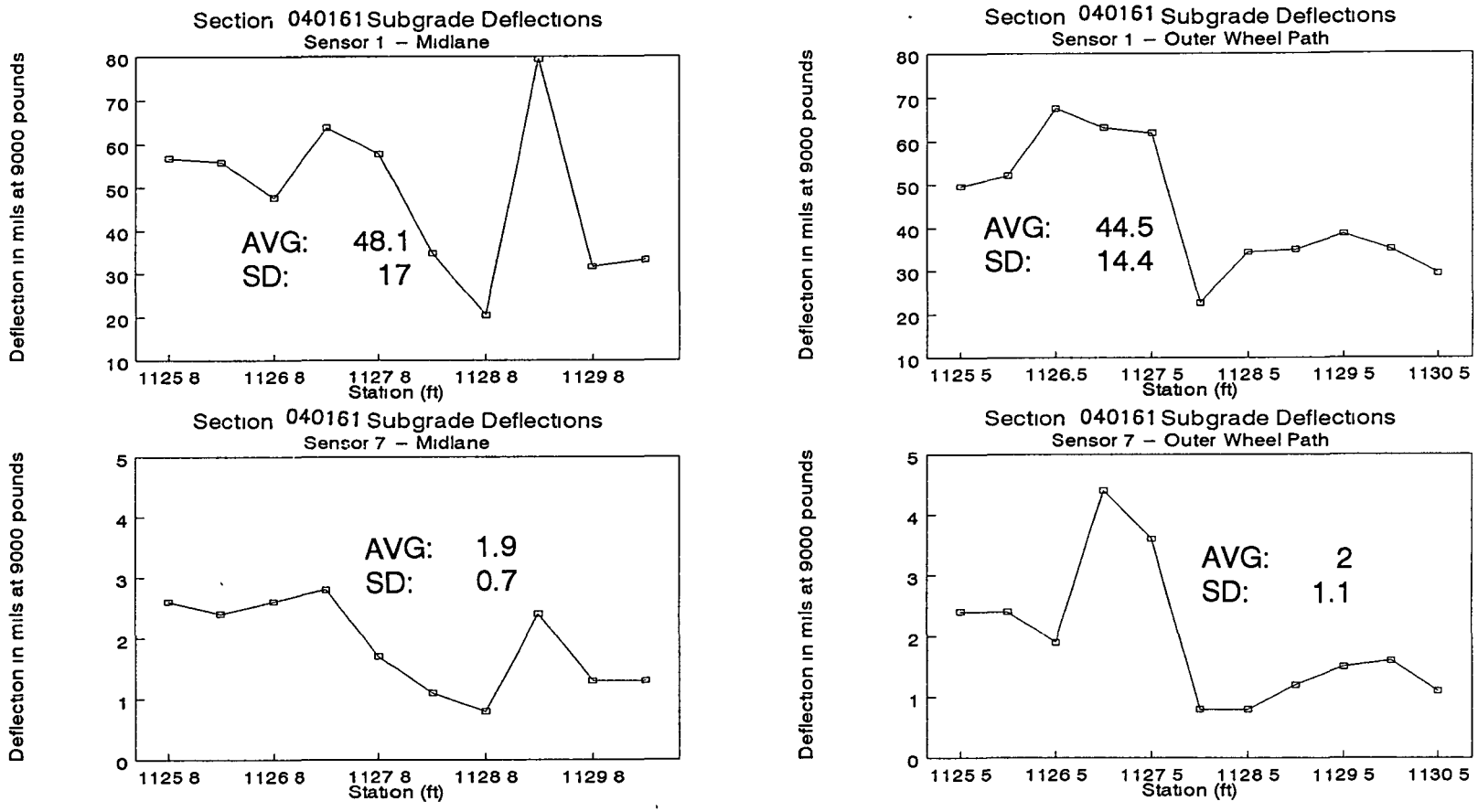


Figure H.13. Section 040161 subgrade deflections.

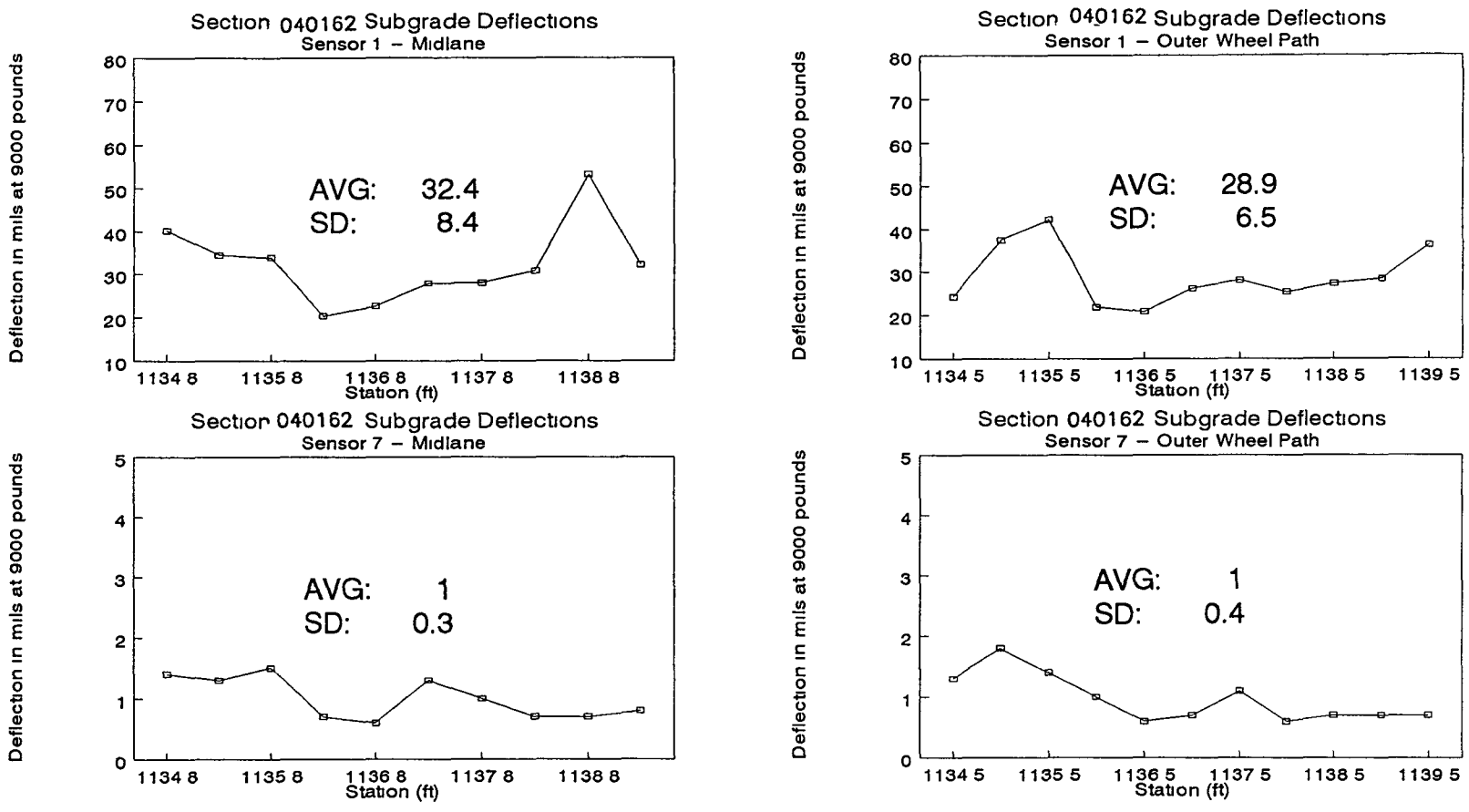


Figure H.14. Section 040162 subgrade deflections.

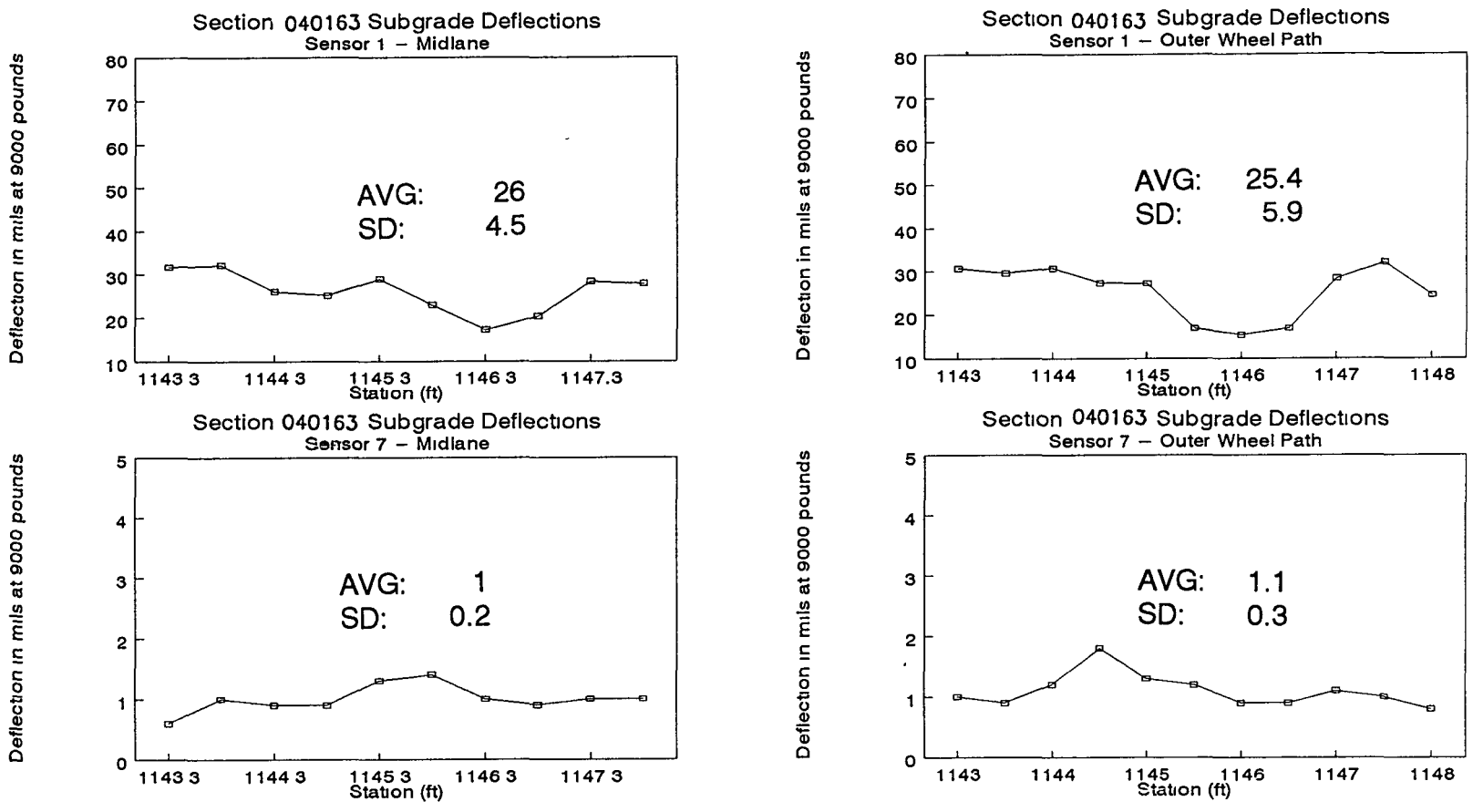


Figure H.15. Section 040163 subgrade deflections.

APPENDIX I

CONSTRUCTION DATA FORMS

SPS-1 CONSTRUCTION DATA SHEET 1 PROJECT IDENTIFICATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [0 0]

*1. DATE OF DATA COLLECTION OR UPDATE (Month/Year) [0 2/9 4]

*2. STATE HIGHWAY AGENCY (SHA) DISTRICT NUMBER [0 3.]

*3. COUNTY OR PARISH [_ 1 5.]

4. FUNCTIONAL CLASS (SEE TABLE A.2, APPENDIX A) [0 2.]

*5. ROUTE SIGNING (NUMERIC CODE) [2.]
Interstate... 1 U.S.... 2 State... 3
Other... 4

*6. ROUTE NUMBER [_ _ _ 9 3.]

7. TYPE OF PAVEMENT (01 for Granular Base, 02 for Treated Base) [_ N.]

8. NUMBER OF THROUGH LANES (ONE DIRECTION) [2.]

*9. DATE OF CONSTRUCTION COMPLETION (Month/Year) [0 8/9 3]

*10. DATE OPENED TO TRAFFIC (Month/Year) [0 8/9 3]

11. CONSTRUCTION COSTS PER LANE MILE (In $1000) [_ _ _ _ _.] -?

12. DIRECTION OF TRAVEL [3.]
East Bound... 1 West Bound... 2 North Bound... 3
South Bound... 4

PROJECT STARTING POINT LOCATION

*13. MILEPOINT [_ 5 2.6 2]

*14. ELEVATION [_ 3 5 8 0]

*15. LATITUDE [3 5° 2 4' _ _ . _ _"]

*16. LONGITUDE [1 1 4° 1 6' _ _ . _ _"]

Per Lonnie Hendrix 2/23/94

17. ADDITIONAL LOCATION INFORMATION (SIGNIFICANT LANDMARKS): [_____ -?
_____]

18. HPMS SAMPLE NUMBER (HPMS ITEM 28) [_ _ _ _ _ _ _ _ _ _ _ _] -?

19. HPMS SECTION SUBDIVISION (HPMS ITEM 29) [_.] -?

ENTERED
JAN 16 1996
By HN

PREPARER D. FRITH EMPLOYER NCC DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 3 REFERENCE PROJECT STATION TABLE	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [00]

ORDER	*1 TEST SECTION ID NO	REFERENCE PROJECT STATION NUMBER		*4 CUT-FILL[1]	
		*2 START	*3 END	TYPE	STATION
1	040160	0+00	5+00	2	+
2	040115	8+50	13+50	1	+
3	040117	16+50	21+50	2	+
4	040124	26+00	31+00	2	+
5	040123	37+00	42+00	2	+
6	040119	50+50	55+50	2	+
7	040114	62+50	67+50	2	+
8	040116	71+00	76+~~50~~ 00	2	+
9	040118	79+50	84+50	2	+
10	040122	87+00	92+00	2	+
11	040121	94+50	99+50	2	+
12	040120	106+00	111+00	2	+
13	040113	115+00	120+00	2	+
14	040126	123+00	128+00	2	+
15	040125	132+00	137+00	2	+
16	040124	140+50	145+50	2	+
17	040159	160+25	165+25	2	+
18		+	+		+
19		+	+		+
20		+	+		+

*5 INTERSECTIONS BETWEEN TEST SECTION ON THE PROJECT

ROUTE	PROJECT STATION NO.	RAMPS EXIT	RAMPS ENT	INTERSECTION STOP	INTERSECTION SIGNAL	INTERSECTION UNSIG
None	+					
	+					
	+					

Note 1. Indicate the type of subgrade section the test section is located on:
Cut.... 1 Fill..... 2 At-Grade..... 3 Cut and Fill..... 4
If cut-fill transition is located in a test section, enter test section station of the cut-fill transition location.

ENTERED
JAN 16 1996
By HV

T.L. 1-24-96

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [3.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[4.]	[4.]
*6. TOTAL WIDTH (FEET)	[4.]	[8.]
*7. PAVED WIDTH (FEET)	[4.]	[8.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[2 3.]	[2 3.]
9. SURFACE THICKNESS (INCHES)	[1 0.0]	[1 0.0]
10. SHOULDER BASE THICKNESS (INCHES)	[4.0]	[4.0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[.N]
12. SPACING OF LATERALS (FEET)		[N.]

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

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

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

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) [_ 4 . _]
(Rock, Stone, Dense Shale)

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-2 CONSTRUCTION DATA SHEET 5 LAYER THICKNESS MEASUREMENTS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS (INCHES)			
		DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	LEAN CONCRETE BASE	PCC SURFACE
0+00					
0+50					
1+00					
1+50		NO ELEVATIONS			NO ELEVATIONS
2+00					
2+50					
3+00					
LAYER NUMBER[1]					

[1] from Construction Data Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-2 CONSTRUCTION DATA SHEET 5 LAYER THICKNESS MEASUREMENTS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS (INCHES)			
		DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	LEAN CONCRETE BASE	PCC SURFACE
3+50					
4+00					
4+50					
5+00					
+__					
+__					
+__					
LAYER NUMBER[1]					

[1] from Construction Data Sheet 4

PREPARER D. FROTH EMPLOYER NCE DATE 4/27/94

SPS-2 CONSTRUCTION DATA SHEET 15 PORTLAND CEMENT CONCRETE LAYERS-JOINT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

* 2. AVERAGE CONTRACTION JOINT SPACING (Feet) [15.0]

3. (RANDOM JOINT SPACING, IF ANY: 15/13/15/17)

* 4. SKEWNESS OF JOINTS (ft/lane) [0.0]

* 5. TRANSVERSE CONTRACTION JOINT LOAD TRANSFER SYSTEM [1]
   - Round Dowels..... 1
   - Aggregate Interlock..... 2
   - Other (Specify) _____ 3

* 6. ROUND DOWEL DIAMETER (Inches) [1.25]

* 7. DOWEL SPACING (Inches) [12.]

8. DISTANCE OF NEAREST DOWEL FROM OUTSIDE LANE-SHOULDER EDGE (Inches) [15.0]

9. DOWEL LENGTH (Inches) [18.]

10. DOWEL COATING [5]
   - Paint and/or Grease..... 1
   - Plastic..... 2
   - Monel..... 3
   - Stainless Steel..... 4
   - Epoxy..... 5
   - Other (Specify) _____ 6

11. METHOD USED TO INSTALL MECHANICAL LOAD TRANSFER DEVICES [1]
   - Preplaced on Baskets..... 1
   - Mechanically Installed..... 2
   - Other (Specify) _____ 3

12. DOWEL ALIGNMENT CHECKED BEFORE PLACEMENT (Y/N) [Y]

13. DOWEL ALIGNMENT CHECKED AFTER PLACEMENT (Y/N) [N]

If Yes, describe method used _____
(e.g. Pachometer, Ground Penetrating Radar)

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-2 CONSTRUCTION DATA SHEET 16 PORTLAND CEMENT CONCRETE LAYERS-JOINT DATA CONT'D	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

* 2. METHOD USED TO FORM TRANSVERSE JOINTS [1]
Sawed..... 1 Metal Insert.....3
Plastic Insert..... 2
Other (Specify) _____ 4

* 3. TYPE OF LONGITUDINAL JOINT (BETWEEN LANES) [2]
Butt..... 1 Insert Weakened Plane..... 3
Sawed Weakened Plane..... 2
Other (Specify) _____ 4

* 4. TYPE OF SHOULDER-TRAFFIC LANE JOINT [2]
Butt..... 1 Insert Weakened Plane..... 3
Sawed Weakened Plane..... 2
Other (Specify) _____ 4

*5. AVERAGE DEPTH OF SAWCUT, FROM MEASUREMENTS (Inches)..... [3.33]

*6. TIME INTERVAL BETWEEN CONCRETE PLACEMENT AND SAWCUT (HOURS)..... [__9.]

7. TRANSVERSE JOINT SEALANT TYPE (AS BUILT) [4]
Preformed (Open Web)..... 1 Rubberized Asphalt..... 3
Asphalt..... 2 Low-Modulus Silicone..... 4
Other (Specify) _____ 5

TRANSVERSE JOINT SEALANT RESERVOIR (AS BUILT)

8. WIDTH, (Inches)..... [0.38]

9. DEPTH, (Inches)..... [1.5_]

LONGITUDINAL JOINT SEALANT RESERVOIR (AS BUILT)

10. WIDTH, (Inches)..... [0.38]

11. DEPTH, (Inches)..... [1.5_]

12. BETWEEN LANE TIE BAR DIAMETER (Inches) [0.5_]

13. BETWEEN LANE TIE BAR LENGTH (Inches) [18.]

14. BETWEEN LANE TIE BAR SPACING (Inches) [18.0]

SHOULDER-TRAFFIC LANE JOINT SEALANT RESERVOIR (AS BUILT)

15. WIDTH, (Inches)..... [0.35]

16. DEPTH, (Inches)..... [1.5_]

PREPARER D. Fenn EMPLOYER NCE DATE 4/27/94

SPS-2 CONSTRUCTION DATA SHEET 17 PORTLAND CEMENT CONCRETE LAYERS REINFORCING STEEL DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

* 2. TYPE OF REINFORCING [N]
- Deformed Bars..... 1
- Welded Wire Fabric..... 2
- Other (Specify)_____ 3

* 3. TRANSVERSE BAR DIAMETER (Inches) [_._ N]

* 4. TRANSVERSE BAR SPACING (Inches) [_ _.N]

* 5. LONGITUDINAL BAR DIAMETER (Inches) [_._ N]

* 6. DESIGN PERCENTAGE OF LONGITUDINAL STEEL (%) [_._ N]

* 7. DEPTH TO REINFORCEMENT FROM SLAB SURFACE (Inches) [_.N]

8. LONGITUDINAL BAR SPACING (Inches) [_ _.N]

9. YIELD STRENGTH OF REINFORCING (ksi) [_ _.N]

10. METHOD USED TO PLACE REINFORCEMENT [N]
- Preset on Chairs..... 1
- Mechanically..... 2
- Between Layers of Concrete..... 3
- Other (Specify)_____ 4

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-2 CONSTRUCTION DATA SHEET 18 PORTLAND CEMENT CONCRETE LAYERS - MIXTURE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

*1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

MIX DESIGN (OVEN DRIED WEIGHT - PER CUBIC YARD)

*2. Coarse Aggregate (Pounds)..... [1 6 0 1.]

*3. Fine Aggregate (Pounds)..... [1 3 4 6.]

*4. Cement (Pounds)..... [_ 6 1 1.]

*5. Water (Pounds)..... [_ 2 6 8.]

*6. TYPE CEMENT USED (See Cement Type Codes, Table A.11) [5 1]
(If Other, Specify _____)

*7. ALKALI CONTENT OF CEMENT, (PERCENT BY WEIGHT OF CEMENT) [_ _.4]

ADMIXTURES (PERCENT BY WEIGHT OF CEMENT)

		TYPE CODE	AMOUNT
*8.	ADMIXTURE #1	[0.1]	[_ _ 0.2]5
*9.	ADMIXTURE #2	[0.8]	[_ _ 0.0]9
*10.	ADMIXTURE #3	[_._]	[_ _ _._]

(See Cement Admixture Codes, Table A.12)
(If Other, Specify) _____)

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
11.	Coarse	[_ _]	[_ _ _._]
12.	Coarse	[_ _]	[_ _ _._]
13.	Coarse	[_ _]	[_ _ _._]
14.	Coarse and Fine	[_ _]	[_ _ _._]

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-2 CONSTRUCTION DATA SHEET 19 PORTLAND CEMENT CONCRETE LAYERS MIXTURE DATA (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
* 2.	[1]	[1 0 0.]
* 3.	[__]	[__ __ __.]
* 4.	[__]	[__ __ __.]

Crushed Stone.... 1 Manufactured gravel..... 2 Crushed Gravel..... 3
Crushed Slag..... 4 Lightweight..... 5 Recycled Concrete... 6
Other (Specify)_____ 7

* 5. GEOLOGIC CLASSIFICATION OF COARSE AGGREGATE [0 1.]
(SEE GEOLOGIC CLASSIFICATION CODES, TABLE A.9)

COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
* 6.	[__]	[__ __ __.]
* 7.	[__]	[__ __ __.]
* 8.	[__]	[__ __ __.]

Natural Sand... 1
Crushed, Manufactured Sand (From Crushed Gravel or Stone)...2
Recycled Concrete... 3 Other (Specify)_____ 4

9. INSOLUBLE RESIDUE, PERCENT (ASTM D3042) [__ __ 4.]

10. GRADATION OF COARSE AGGREGATE

Sieve Size	% Passing
2".....	__ __ __
1 1/2"....	__ __ __
1".....	__ __ __
7/8".....	__ __ __
3/4".....	__ __ __
5/8".....	__ __ __
1/2".....	__ __ __
3/8".....	__ __ __
No. 4.....	__ __ __

11. GRADATION OF FINE AGGREGATE

Sieve Size	% Passing
No. 8.....	__ __ __
No. 10....	__ __ __
No. 16....	__ __ __
No. 30....	__ __ __
No. 40....	__ __ __
No. 50....	__ __ __
No. 80....	__ __ __
No. 100...	__ __ __
No. 200...	__ __ __

BULK SPECIFIC GRAVITIES:

12. Coarse Aggregate (AASHTO T85 or ASTM C127) [__.__ __ __]

13. Fine Aggregate (AASHTO T84 or ASTM C128) [__.__ __ __]

PREPARER _____ EMPLOYER _____ DATE _____

SPS-2 CONSTRUCTION DATA SHEET 20 PORTLAND CEMENT CONCRETE LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 5-1 9-9 3]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 5-2 4-9 3]

*3. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

*4. CONCRETE MIX PLANT AND HAUL

	Name	Haul Distance (Mi)	Time (Min)
Plant 1	FNF PLANT	[1]	[5]
Plant 2		[ ]	[ ]
Plant 3		[ ]	[ ]

*5. PAVER TYPE [2]
Slip Form Paver.... 1 Side Form... 2
Other (Specify) _____ 3

6. PAVER MANUFACTURER AND MODEL NUMBER BIDWELL

7. SPREADER TYPE (if applicable) NONE

8. SPREADER MANUFACTURER AND MODEL NUMBER NONE

9. WIDTH PAVED IN ONE PASS (Feet) [3 6.0]

10. DOWEL PLACEMENT METHOD [2]
Dowel Bar Inserter (DBI)..... 1 Dowel Basket..... 2

11. NUMBER OF VIBRATORS [0]

12. VIBRATOR SPACING (Inches) [N]

13. DEPTH OF VIBRATORS BELOW SURFACE (Inches) [.N]

14. ADDITIONAL VIBRATION APPLIED VIBRATION PROVIDED WITH ONE HAND HELD VIBRATING WAND. VIBRATION WAS SOMEWHAT INCONSISTANT DUE TO OPERATOR "CASTING AND DRAGING" THE VIBRATOR LIKE A FISHING LURE.

PREPARER D. FRITH EMPLOYER NCE DATE 4/28/94

SPS-2 CONSTRUCTION DATA SHEET 21 PORTLAND CEMENT CONCRETE LAYERS PLACEMENT DATA (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

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

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

3. CURING [1]
   Membrane Curing Compound..... 1 Burlap-Polyethylene Blanket... 5
   Burlap Curing Blankets..... 2 Cotton Mat Curing..... 6
   Waterproof Paper Blankets..... 3 Hay..... 7
   White Polyethylene Sheeting... 4
   Other (Specify)_____ 8

4. TEXTURING [1]
   Tine..... 1 Grooved Float..... 4
   Broom..... 2 Astro Turf..... 5
   Burlap Drag..... 3 None..... 6
   Other (Specify)_____ 7

PREPARER D. FRITH EMPLOYER NCE DATE 4/28/91

SPS-2 CONSTRUCTION DATA SHEET 22 PORTLAND CEMENT CONCRETE SURFACE LAYER PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

1. DATE PROFILE MEASURED (Month-Day-Year) [0 6 - 0 1 - 9 3]

2. PROFILOGRAPH TYPE California... 1 Rainhart... 2 [1]

3. PROFILE INDEX (Inches/Mile) [__ __]

4. INTERPRETATION METHOD Manual.. 1 Mechanical.. 2 Computer.. 3 [3]

5. HEIGHT OF BLANKING BAND (Inches) [0.2 0]

6. CUTOFF HEIGHT (Inches) [0.3 0]

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) [N]

8. WAS SURFACE PROFILE CORRECTED BY DIAMOND GRINDING? (YES, NO) [Y]

IF YES COMPLETE THE FOLLOWING:

9. DATE DIAMOND GRINDING OPERATIONS BEGAN (Month-Day-Year) [__ __-__ __-__ __]

10. DATE DIAMOND GRINDING OPERATIONS COMPLETED (Month-Day-Year) [__ __-__ __-__ __]

*11. REASON FOR GRINDING [__]
Elimination of Faulting... 1 Elimination of Slab Warping... 2
Improve Skid Resistance... 3
Restoration of Transverse Drainage Slope... 4
Correction of Construction Deficiencies...5
Other (Specify)... 6 _____

12. AVERAGE DEPTH OF CUT (Inches) [__ .__ __]

13. CUTTING HEAD WIDTH (Inches) [__ __ __ .__ __]

14. AVERAGE GROOVE WIDTH (Inches) [__ .__]

15. AVERAGE SPACING BETWEEN BLADES (Inches) [__.__]

PREPARER _____ EMPLOYER _____ DATE _____

SPS-1 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [0 6-0 7-9 3]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [0 6-1 7-9 3]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [1]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 _____

*5. GROSS WEIGHT (TONS) [2 5.0]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [5]
Nominal Second Lift Placement Thickness (inches) [-]
Nominal Third Lift Placement Thickness (inches) [-]
Nominal Fourth Lift Placement Thickness (inches) [-]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2-1 7-9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 5-1 3-9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

or 1991

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 0]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [3.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6. TOTAL WIDTH (FEET)	[4.]	[8.]
*7. PAVED WIDTH (FEET)	[4.]	[8.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[28.]	[28.]
9. SURFACE THICKNESS (INCHES)	[7.0]	[7.0]
10. SHOULDER BASE THICKNESS (INCHES)	[8.0]	[8.0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[.N]
12. SPACING OF LATERALS (FEET)		[N.]

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By HW

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[5 9]				
2	[0 5]	[2 8]	[8.5]	7.7	9.5	0.3
3	[0 3]	[0 1]	[6.4]	6.0	7.0	0.2
4	[ ]	[ ]	[.]	.	.	.
5	[ ]	[ ]	[.]	.	.	.
6	[ ]	[ ]	[.]	.	.	.
7	[ ]	[ ]	[.]	.	.	.
8	[ ]	[ ]	[.]	.	.	.
9	[ ]	[ ]	[.]	.	.	.
10	[ ]	[ ]	[.]	.	.	.
11	[ ]	[ ]	[.]	.	.	.
12	[ ]	[ ]	[.]	.	.	.
13	[ ]	[ ]	[.]	.	.	.
14	[ ]	[ ]	[.]	.	.	.
15	[ ]	[ ]	[.]	.	.	.

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) [4 .]
(Rock, Stone, Dense Shale)

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

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SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

*1. LAYER NUMBER (FROM SHEET 4) AC - 3/4" [3]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.660]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.637]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [_._ _4]

*12. Aggregate Combination (Calculated) [2.646]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.669]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[_ 2 5._ _ _]
15.	Coarse	[— —]	[— — —._ _ _]
16.	Coarse	[— —]	[— — —._ _ _]
17.	Coarse and Fine - Combined	[— —]	[— — —._ _ _]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) _4.

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SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2	[_ N]	[_ 0.]

(IF OTHER, SPECIFY) _____

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMEN AT 39.2°f (CM/MIN) [_ _ _.]

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

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SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.4 4 1]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.3 5 7] NUMBER OF TESTS [1.]

5. MINIMUM [.] MAXIMUM [.]

6. STD. DEV. [.]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6] NUMBER OF SAMPLES [1.]

8. MINIMUM [.] MAXIMUM [.]

9. STD. DEV. [.]

PERCENT AIR VOIDS

*10. MEAN [5.6] NUMBER OF SAMPLES [1.]

11. MINIMUM [.] MAXIMUM [.]

12. STD. DEV. [.]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 5.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347.]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [1 3.]
(AASHTO T245 OR ASTM D1559)

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*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.4 4 1]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ _] NUMBER OF TESTS [_ _.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.7 5 _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [_._ _ _] NUMBER OF SAMPLES [_ _.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _._]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _._]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _._]

*16. NUMBER OF BLOWS [_ _]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ _ _.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ _.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ _.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-15-93]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-30-93]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers
Plant 1	[2]	FNF-ONSITE	[1]	[5]	[2] [3] [—]
Plant 2	[—]	——	[—]	[—]	[—] [—] [—]
Plant 3	[—]	——	[—]	[—]	[—] [—] [—]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet) [14.0]

7. ATB PLACEMENT LIFTS
   - Layer Number [2]
   - Nominal First Lift Placement Thickness (Inches) [5.2]
   - Nominal Second Lift Placement Thickness (Inches) [5.1]
   - Nominal Third Lift Placement Thickness (Inches) [—.—]
   - Nominal Fourth Lift Placement Thickness (Inches) [—.—]

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8. PATB PLACEMENT LIFTS
   - Layer Number [N]
   - Nominal First Lift Placement Thickness (Inches) [.N]
   - Nominal Second Lift Placement Thickness (Inches) [.N]

9. AC BINDER COURSE LIFT
   - Layer Number [3]
   - Nominal First Lift Placement Thickness (Inches) [3.5]
   - Nominal Second Lift Placement Thickness (Inches) [2.6]

10. AC SURFACE COURSE LIFT
   - Layer Number [3]
   - Nominal First Lift Placement Thickness (Inches) 4.1 [~~2.9~~] DF
   - Nominal Second Lift Placement Thickness (Inches) [2.9]

11. SURFACE FRICTION COURSE (If Placed)
   - Layer Number [N]
   - Nominal Placement Thickness (Inches) [.N]

12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
   - Binder Course [+ N]
   - Surface Course [+ N]
   - Surface Friction Course [+ N]

13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
   - Between lanes.. 1 Within lane.. 2
   - (specify offset from O/S feet) [6.0]

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

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [15]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-27-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-30-93]
*3. LAYER NUMBER [3] AC

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By LW

*4. MIXING TEMPERATURE (°F) [280.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 240.
Minimum..... 221.
Standard Deviation... 6.0
Number of Tests ..... 42.
Maximum..... 263.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M	M	M	
24	Coverages	4.	4.	4.	
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F	E&F	
26	Coverages	12.	12	12.	
	FINAL				
27	Roller Code (A-Q)	A	A	A	
28	Coverages	2.	2.	2.	
29	Air Temperature (°F)	90	90	90.	
30	Compacted Thickness (In)	30	20	20	
31	Curing Period (Days)	1.	1	7.	

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

*1. LAYER NUMBER (FROM SHEET 4) BTB [2]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[1 1.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[8 9.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.6 7 7]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.6 4 8]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [—.— — 4]

*12. Aggregate Combination (Calculated) [2.6 6 3]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.7 0 0]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[— 2 5.— — —]
15.	Coarse	[— —]	[— — —.— — —]
16.	Coarse	[— —]	[— — —.— — —]
17.	Coarse and Fine - Combined	[— —]	[— — —.— — —]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) — —.

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PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

BTB

*1. LAYER NUMBER (FROM SHEET 4) [2]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ _]	[_ _.]
9.	MODIFIER #2	[_ _]	[_ _.]

(IF OTHER, SPECIFY) _____

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

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By JV

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

*1. LAYER NUMBER (FROM SHEET 4) [2]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

MIX DESIGN

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.4 6 5]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.4 0 5] NUMBER OF TESTS [_ 1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.9 _ _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [4.2 1 4] NUMBER OF SAMPLES [_ 1.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

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By HW

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 4.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ 4.4]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4302._]

*16. NUMBER OF BLOWS [50]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ 1 2.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

*1. LAYER NUMBER (FROM SHEET 4) [2]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [N]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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By _____

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [15]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-15-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-21-93]
*3. LAYER NUMBER [2] BTB

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By

*4. MIXING TEMPERATURE (°F) [270.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 244.
Minimum..... 221.
Standard Deviation... 15.5
Number of Tests ..... 24.
Maximum..... 263.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M	M		
24	Coverages	4.	4.		
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F		
26	Coverages	12.	12		
	FINAL				
27	Roller Code (A-Q)	A	A		
28	Coverages	2.	2.		
29	Air Temperature (°F)	90	90		
30	Compacted Thickness (In)	40	40		
31	Curing Period (Days)	5.	6		

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	A	N	A	N
Number of Measurements	2 0		2 0	
Average (pcf)	1 4 1.9	.	1 4 7.5	.
Maximum (pcf)	1 4 5.6	.	1 5 1.3	.
Minimum (pcf)	1 3 7.8	.	1 4 4.2	.
Standard Deviation (pcf)	1.9	.	2.1	.
Layer Number	2		3	

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY 3 1 1 7
MOISTURE 6 1 6

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) . N
Cutoff Height (Inches) . N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

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By HV

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [15]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0			8.4	7.0	
	36			8.6	6.4	
	72			8.8	6.0	
	108			8.5	6.1	
	144			9.0	6.2	
0+50	0			8.0	6.8	
	36			7.7	6.6	
	72			8.4	6.6	
	108			8.4	6.5	
	144			8.4	6.6	
1+00	0			8.2	6.7	
	36			8.2	6.7	
	72			8.6	6.4	
	108			8.6	6.5	
	144			8.4	6.5	
1+50	0			8.3	6.7	
	36			8.3	6.5	
	72			9.0	6.4	
	108			8.5	6.6	
	144			8.6	6.5	
2+00	0			8.4	6.6	
	36			8.6	6.4	
	72			8.9	6.2	
	108			8.5	6.4	
	144			8.8	6.4	
2+50	0			8.3	6.4	
	36			8.5	6.4	
	72			9.0	6.2	
	108			8.6	6.5	
	144			8.5	6.5	
3+00	0			8.3	6.6	
	36			9.1	6.5	
	72			8.9	6.4	
	108			8.6	6.4	
	144			8.0	6.6	
LAYER NUMBER[1]		—	—	02	03	—

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[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0			8.3	6.6	
	36			8.6	6.4	
	72			9.0	6.2	
	108			8.8	6.2	
	144			8.4	6.6	
4+00	0			8.4	6.6	
	36			8.9	6.4	
	72			8.9	6.2	
	108			9.0	6.1	
	144			9.5	6.4	
4+50	0			8.4	6.7	
	36			8.4	6.2	
	72			8.5	6.1	
	108			7.7	6.2	
	144			6.2	6.4	
5+00	0			8.2	6.5	
	36			8.3	6.4	
	72			8.5	6.2	
	108			8.3	6.2	
	144			8.0	6.6	
+						
+						
+						
LAYER NUMBER[1]		—	—	02	03	—

[1] from Sheet 4

ENTERED JAN 16 1996 HC

PREPARER D. FEITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2-1 7-9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 5-2 7-9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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JAN 16 1996
By HW

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 5]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [3.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6. TOTAL WIDTH (FEET)	[4.]	[8.]
*7. PAVED WIDTH (FEET)	[4.]	[8.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[2 8.]	[2 8.]
9. SURFACE THICKNESS (INCHES)	[7. 0]	[7. 0]
10. SHOULDER BASE THICKNESS (INCHES)	[4. 0]	[4. 0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[.N]
12. SPACING OF LATERALS (FEET)		[N.]

ENTERED
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By LV

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[5 9]	[redacted]	[redacted]	[redacted]	[redacted]
2	[0 ~~6~~ 5] (7)	[2 3]	[4.2]	3.5	5.3	0.4
3	[0 5]	[2 8]	[3.9]	3.1	4.4	0.3
4	[0 3]	[0 1]	[7.1]	6.7	7.8	0.3
5	[ ]	[ ]	[.]	.	.	.
6	[ ]	[ ]	[.]	.	.	.
7	[ ]	[ ]	[.]	.	.	.
8	[ ]	[ ]	[.]	.	.	.
9	[ ]	[ ]	[.]	.	.	.
10	[ ]	[ ]	[.]	.	.	.
11	[ ]	[ ]	[.]	.	.	.
12	[ ]	[ ]	[.]	.	.	.
13	[ ]	[ ]	[.]	.	.	.
14	[ ]	[ ]	[.]	.	.	.
15	[ ]	[ ]	[.]	.	.	.

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) [4 .]
(Rock, Stone, Dense Shale)

ENTERED JAN 20 1996
By LV

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1. LAYER NUMBER (FROM SHEET 4) AC - 3/4" [4]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[ ]	[.]
*4.	Other (Specify)... 6 _____	[ ]	[.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[ ]	[.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.6 6 0]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.6 3 7]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [. 4]

*12. Aggregate Combination (Calculated) [2.6 4 6]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.6 6 9]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[2 5.]
15.	Coarse	[ ]	[.]
16.	Coarse	[ ]	[.]
17.	Coarse and Fine - Combined	[ ]	[.]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) 4.

ENTERED
JAN 20 1996
By

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2	[_ N]	[_ 0.]

(IF OTHER, SPECIFY) _____

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

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By LV

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.441]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.357] NUMBER OF TESTS [1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6 _ _] NUMBER OF SAMPLES [1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [5.6 _ _] NUMBER OF SAMPLES [1.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [15.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347.]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [13.]
(AASHTO T245 OR ASTM D1559)

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*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (AASHTO T209 OR ASTM D2041) [_._ _ N]

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ N] NUMBER OF TESTS [_ N.]

5. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

6. STD. DEV. [_._ _ N]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)

*7. MEAN [4.7 2 _] NUMBER OF SAMPLES [_ 3.]

8. MINIMUM [4.5 7 _] MAXIMUM [4.9 4 _]

9. STD. DEV. [0.1 9 _]

PERCENT AIR VOIDS

*10. MEAN [_._ _ N] NUMBER OF SAMPLES [_ N.]

11. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

12. STD. DEV. [_._ _ N]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _.N]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _.N]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _.N]

*16. NUMBER OF BLOWS [_ N]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559) [_ _ _ N.]

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM 1561) [_._ _ _ N.]

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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By _____

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 7-2 0-9 3]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 7-3 0-9 3]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers		
Plant 1	[2]	FNF-ONSITE	[_ _ 1]	[_ 5]	[3]	[4]	[_]
Plant 2	[_]	_____	[_ _ _]	[_ _]	[_]	[_]	[_]
Plant 3	[_]	_____	[_ _ _]	[_ _]	[_]	[_]	[_]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet) [1 4.0]

7. ATB PLACEMENT LIFTS
   - Layer Number [_ 3]
   - Nominal First Lift Placement Thickness (Inches) [5.3]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]
   - Nominal Third Lift Placement Thickness (Inches) [_.N]
   - Nominal Fourth Lift Placement Thickness (Inches) [_.N]

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JAN 30 1996
By HV

8. PATB PLACEMENT LIFTS
   - Layer Number [_ N]
   - Nominal First Lift Placement Thickness (Inches) [_.N]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]
9. AC BINDER COURSE LIFT
   - Layer Number [_ 4]
   - Nominal First Lift Placement Thickness (Inches) [3.5]
   - Nominal Second Lift Placement Thickness (Inches) [2.6]
10. AC SURFACE COURSE LIFT
   - Layer Number [_ 4]
   - Nominal First Lift Placement Thickness (Inches) [3.1]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]
11. SURFACE FRICTION COURSE (If Placed)
   - Layer Number [_ N]
   - Nominal Placement Thickness (Inches) [_.N]
12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
   - Binder Course [_ + _ N]
   - Surface Course [_ + _ N]
   - Surface Friction Course [_ + _ N]
13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
   - Between lanes.. 1 Within lane.. 2
   - (specify offset from O/S feet) [_ 6.0]

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

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 7 - 2 7 - 9 3]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 7 - 3 0 - 9 3]
*3. LAYER NUMBER [4] AC

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JAN 20 1996
By HV

*4. MIXING TEMPERATURE (°F) [2 8 0.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 2 3 9.
Minimum..... 2 2 9.
Standard Deviation... 7.3
Number of Tests ..... 6 2.
Maximum..... 2 5 9.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M	M	M	
24	Coverages	4.	4.	4.	
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F	E&F	
26	Coverages	12.	12	12.	
	FINAL				
27	Roller Code (A-Q)	A	A	A	
28	Coverages	2.	2	2.	
29	Air Temperature (°F)	100.	100.	100.	
30	Compacted Thickness (In)	30	2.0	2.0	
31	Curing Period (Days)	1.	1.	7.	

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1. LAYER NUMBER (FROM SHEET 4) BTB [3]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[1 1.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[8 9.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.6 7 7]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.6 4 8]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [—.— — 4]

*12. Aggregate Combination (Calculated) [2.6 6 3]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.7 0 0]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[— 2 5.— — —]
15.	Coarse	[— —]	[— — —.— — —]
16.	Coarse	[— —]	[— — —.— — —]
17.	Coarse and Fine - Combined	[— —]	[— — —.— — —]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) — —.

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By MV

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1. LAYER NUMBER (FROM SHEET 4) BTB [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ _]	[_ _.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ _]	[_ _.]

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT AT 39.2°f (CM/MIN) [_ _ _.]

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

ENTERED
JAN 20 1996
By HW

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

MIX DESIGN

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (AASHTO T209 OR ASTM D2041) [2.4 6 5]

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.4 0 5] NUMBER OF TESTS [1.]

5. MINIMUM [.] MAXIMUM [.]

6. STD. DEV. [.]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)

*7. MEAN [4.9] NUMBER OF SAMPLES [1.]

8. MINIMUM [.] MAXIMUM [.]

9. STD. DEV. [.]

PERCENT AIR VOIDS

*10. MEAN [4.2 1 4] NUMBER OF SAMPLES [1.]

11. MINIMUM [.] MAXIMUM [.]

12. STD. DEV. [.]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 4.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.4]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4302.]

*16. NUMBER OF BLOWS [50]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559) [1 2.]

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*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM 1561) [N.]

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [N]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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JAN 20 1996
By LN

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [17]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-20-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-21-93]
*3. LAYER NUMBER [3] BTB

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*4. MIXING TEMPERATURE (°F) [270.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 23 SBy
Minimum..... 220.
Standard Deviation... 9.2
Number of Tests ..... 26.
Maximum..... 263.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M			
24	Coverages	4.			
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F			
26	Coverages	12.			
	FINAL				
27	Roller Code (A-Q)	A			
28	Coverages	2.			
29	Air Temperature (°F)	100.			
30	Compacted Thickness (In)	4.0			
31	Curing Period (Days)	6.			

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	A	N	A	N
Number of Measurements	20		20	
Average (pcf)	140.6		147.9	
Maximum (pcf)	143.8		151.9	
Minimum (pcf)	137.6		145.6	
Standard Deviation (pcf)	1.7		1.7	
Layer Number	3		4	

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY 3117
MOISTURE 616

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) N
Cutoff Height (Inches) N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

ENTERED
JAN 20 1995
By HW

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [17]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0	4.6	4.0		7.2	
	36	4.7	4.1		6.8	
	72	4.4	4.1		6.8	
	108	4.3	4.3		7.0	
	144	4.6	4.4		7.1	
0+50	0	4.3	4.0		7.0	
	36	4.3	4.3		6.7	
	72	4.2	4.2		6.7	
	108	4.3	4.2		6.8	
	144	5.0	4.0		7.3	
1+00	0	4.3	4.1		7.1	
	36	4.1	4.2		6.8	
	72	4.0	4.2		6.8	
	108	4.2	4.1		7.1	
	144	4.2	4.1		7.3	
1+50	0	4.1	3.6		7.3	
	36	3.6	4.1		7.0	
	72	3.5	4.1		6.8	
	108	3.8	3.6		7.2	
	144	4.6	3.1		7.8	
2+00	0	4.0	3.8		7.4	
	36	3.8	4.2		7.0	
	72	3.5	4.2		7.0	
	108	3.7	3.7		7.3	
	144	3.8	4.0		7.4	
2+50	0	4.6	4.2		7.0	
	36	4.3	4.1		6.8	
	72	3.8	4.1		7.0	
	108	4.1	3.8		7.0	
	144	4.0	4.0		7.6	
3+00	0	4.6	4.0		7.1	
	36	4.6	4.0		7.0	
	72	4.7	3.6		7.0	
	108	4.7	3.4		7.3	
	144	4.7	3.2		7.7	
LAYER NUMBER[1]		02	—	03	04	—

[1] from Sheet 4

ENTERED JAN 20 1996

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

By

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [17]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0	4.1	4.1		7.0	
	36	4.1	4.1		6.7	
	72	4.2	4.0		6.7	
	108	4.7	3.5		7.2	
	144	5.3	3.2		7.7	
4+00	0	3.8	4.2		7.1	
	36	4.1	4.1		7.0	
	72	3.7	4.3		7.0	
	108	3.7	4.2		7.2	
	144	4.1	4.0		7.7	
4+50	0	4.4	3.8		7.0	
	36	4.5	3.8		7.0	
	72	4.4	3.8		6.8	
	108	4.6	3.6		7.1	
	144	5.3	3.1		7.6	
5+00	0	4.0	4.3		6.8	
	36	4.0	4.2		6.7	
	72	4.2	4.2		6.8	
	108	4.0	4.0		7.3	
	144	4.3	3.8		7.7	
__+__						
__+__						
__+__						
LAYER NUMBER[1]		02	—	03	04	—

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[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [17]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [06-07-93]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [06-17-93]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [1]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 _____

*5. GROSS WEIGHT (TONS) [25.0]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [5]
Nominal Second Lift Placement Thickness (inches) [--]
Nominal Third Lift Placement Thickness (inches) [--]
Nominal Fourth Lift Placement Thickness (inches) [--]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2-1 7-9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 5-2 7-9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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By LW

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 7]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [1.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [6.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6. TOTAL WIDTH (FEET)	[4.]	[8.]
*7. PAVED WIDTH (FEET)	[4.]	[8.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[28.]	[28.]
9. SURFACE THICKNESS (INCHES)	[7.0]	[7.0]
10. SHOULDER BASE THICKNESS (INCHES)	[12.0]	[12.0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[4.0]
12. SPACING OF LATERALS (FEET)		[225.]

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By LLV

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[5 9]	[redacted]	[redacted]	[redacted]	[redacted]
2	[0 ~~6~~ 5]	[3 1]	[4.1]	3.6	4.7	0.2
3	[0 5]	[2 8]	[11.5]	12.2	10.8	0.3
4	[0 3]	[0 1]	[6.8]	6.4	7.4	0.3
5	[ ]	[ ]	[.]	.	.	.
6	[ ]	[ ]	[.]	.	.	.
7	[ ]	[ ]	[.]	.	.	.
8	[ ]	[ ]	[.]	.	.	.
9	[ ]	[ ]	[.]	.	.	.
10	[ ]	[ ]	[.]	.	.	.
11	[ ]	[ ]	[.]	.	.	.
12	[ ]	[ ]	[.]	.	.	.
13	[ ]	[ ]	[.]	.	.	.
14	[ ]	[ ]	[.]	.	.	.
15	[ ]	[ ]	[.]	.	.	.

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*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) (Rock, Stone, Dense Shale) [U .]

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. LAYER NUMBER (FROM SHEET 4) AC – 3/4" [4]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[ ]	[.]
*4.	Other (Specify)... 6 _____	[ ]	[.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[ ]	[.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.6 6 0]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.6 3 7]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [. 4]

*12. Aggregate Combination (Calculated) [2.6 4 6]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.6 6 9]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[2 5.]
15.	Coarse	[ ]	[.]
16.	Coarse	[ ]	[.]
17.	Coarse and Fine - Combined	[ ]	[.]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) 4.

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PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ N]	[_ 0.]

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties"

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SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [3 4]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.441]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.357] NUMBER OF TESTS [_ 1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6 _ _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [5.6 _ _] NUMBER OF SAMPLES [_ 1.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [15.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ 4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347._]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ 13.]
(AASHTO T245 OR ASTM D1559)

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*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [_._ _ N]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ N] NUMBER OF TESTS [_ N.]

5. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

6. STD. DEV. [_._ _ N]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.9 1 _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

9. STD. DEV. [_._ _ N]

PERCENT AIR VOIDS

*10. MEAN [_._ _ N] NUMBER OF SAMPLES [_ N.]

11. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

12. STD. DEV. [_._ _ N]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _.N]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _.N]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _.N]

*16. NUMBER OF BLOWS [_ N]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ _ N.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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By HN

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 6-2 9-9 3]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 7-3 0-9 3]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers
Plant 1	[2]	FNF-ONSITE	[_ _ 1]	[_ 5]	[2] [3] [4]
Plant 2	[_]		[_ _ _]	[_ _]	[_] [_] [_]
Plant 3	[_]		[_ _ _]	[_ _]	[_] [_] [_]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet) [1 3.5]

7. ATB PLACEMENT LIFTS
   - Layer Number [_ 3]
   - Nominal First Lift Placement Thickness (Inches) [5.2]
   - Nominal Second Lift Placement Thickness (Inches) [5.2]
   - Nominal Third Lift Placement Thickness (Inches) [5.2]
   - Nominal Fourth Lift Placement Thickness (Inches) [_.N]

8. PATB PLACEMENT LIFTS
   - Layer Number [_ 2]
   - Nominal First Lift Placement Thickness (Inches) [4.9]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]

9. AC BINDER COURSE LIFT
   - Layer Number [_ 4]
   - Nominal First Lift Placement Thickness (Inches) [3.4]
   - Nominal Second Lift Placement Thickness (Inches) [2.8]

10. AC SURFACE COURSE LIFT
    - Layer Number [_ 4]
    - Nominal First Lift Placement Thickness (Inches) [3.0]
    - Nominal Second Lift Placement Thickness (Inches) [_.N]

11. SURFACE FRICTION COURSE (If Placed)
    - Layer Number [_ N]
    - Nominal Placement Thickness (Inches) [_.N]

12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    - Binder Course [_ + _ N]
    - Surface Course [_ + _ N]
    - Surface Friction Course [_ + _ N]

13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
    - Between lanes.. 1 Within lane.. 2
    - (specify offset from O/S feet) [_ 6.0]

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By

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

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [24]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-27-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-30-93]
*3. LAYER NUMBER [4] AC

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*4. MIXING TEMPERATURE (°F) [280.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 241.
Minimum..... 218.
Standard Deviation... 9.5
Number of Tests ..... 78.
Maximum..... 265.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	.u	.u
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				
23	Roller Code (A-Q)	M	M	M	
24	Coverages	4.	4.	4.	
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F	E&F	
26	Coverages	12.	12.	12	
	FINAL				
27	Roller Code (A-Q)	A	A	A	
28	Coverages	2.	2.	2	
29	Air Temperature (°F)	90.	100	100.	
30	Compacted Thickness (In)	30	20	20	
31	Curing Period (Days)	1	1	7	

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. LAYER NUMBER (FROM SHEET 4) BTB [3]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[1 1.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[8 9.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.6 7 7]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.6 4 8]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [—.— — 4]

*12. Aggregate Combination (Calculated) [2.6 6 3]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.7 0 0]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[— 2 5.— — —]
15.	Coarse	[— —]	[— — —.— — —]
16.	Coarse	[— —]	[— — —.— — —]
17.	Coarse and Fine - Combined	[— —]	[— — —.— — —]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) — —.

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JAN 20 1996
By HV

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

BTB

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT (AASHTO T228) [1.0 4 4]

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) (AASHTO T202) [_ _ 2 9 6 6.]

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) (AASHTO T202) [_ 4 0 3._ _]

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) (100 g., 5 sec.) [_ _ 5 6.]

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ _]	[_ _.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ _]	[_ _.]

10. DUCTILITY AT 77°F (CM) (AASHTO T51) [_ _ _.]

11. DUCTILITY AT 39.2°F (CM) (AASHTO T51) [_ _ _.]

ENTERED
JAN 20 1996
By JV

12. TEST RATE FOR DUCTILITY MEASUREMENT AT 39.2°f (CM/MIN) [_ _ _.]

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) (200 g., 60 sec.) [_ _ _.]

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FENTH EMPLOYER NCE DATE 2/22/94

December 1991

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

MIX DESIGN

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (AASHTO T209 OR ASTM D2041) [2.465]

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.405] NUMBER OF TESTS [1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)

*7. MEAN [4.9 _ _] NUMBER OF SAMPLES [1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

ENTERED
JAN 20 1996
By HW

*10. MEAN [4.214] NUMBER OF SAMPLES [1.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [14.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.4]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4302.]

*16. NUMBER OF BLOWS [50]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559) [_ _ 12.]

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM 1561) [_ _ _ N.]

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 A] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [3 4]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [N]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

ENTERED
JAN 20 1996
By LW

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 7-1 5-9 3]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 7-2 1-9 3]
*3. LAYER NUMBER [3] BTB

ENTERED
JAN 30 1996
By lw

*4. MIXING TEMPERATURE (°F) [2 7 0.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 2 4 9.
Minimum..... 2 2 5.
Standard Deviation... 1 2.8
Number of Tests ..... 7 7.
Maximum..... 2 8 0.

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 2.3				
7	B	Steel-Whl Tandem	.				
8	C	Steel-Whl Tandem	.				
9	D	Steel-Whl Tandem	.				
10	E	Pneumatic-Tired	2 5.0	9 0.			
11	F	Pneumatic-Tired	1 8.0	1 0 0.			
12	G	Pneumatic-Tired	.	.			
13	H	Pneumatic-Tired	.	.			
14	I	Single-Drum Vibr.	.		.	.	.
15	J	Single-Drum Vibr.	.		.	.	.
16	K	Single-Drum Vibr.	.		.	.	.
17	L	Single-Drum Vibr.	.		.	.	.
18	M	Double-Drum Vibr.	1 2.3		2 4 0 0.	u	u
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				
23	Roller Code (A-Q)	M	M	M	
24	Coverages	4.	4.	4.	.
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F	E&F	
26	Coverages	1 2.	1 2.	1 2.	.
	FINAL				
27	Roller Code (A-Q)	A	A	A	
28	Coverages	2.	2.	2.	.
29	Air Temperature (°F)	9 0.	9 0	1 0 0.	.
30	Compacted Thickness (In)	4 0	4 0	4 0	.
31	Curing Period (Days)	4	0 2	6	.

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. LAYER NUMBER (FROM SHEET 4) PBTB [2]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[__]	[__ __ __.]
*4.	Other (Specify)... 6 _____	[__]	[__ __ __.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[2]	[1 0 0.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[__]	[__ __ __.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[__]	[__ __ __.]

*8. TYPE OF MINERAL FILLER [N]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [__.__ __ U]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [__.__ __ U]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [__.__ __ N]

*12. Aggregate Combination (Calculated) [__.__ __ U]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [__.__ __ U]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[__ __]	[__ __ __.__ __ __]
15.	Coarse	[__ __]	[__ __ __.__ __ __]
16.	Coarse	[__ __]	[__ __ __.__ __ __]
17.	Coarse and Fine - Combined	[__ __]	[__ __ __.__ __ __]

ENTERED
JAN 20 1996
By UV

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) __ __.

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [24]

*1. LAYER NUMBER (FROM SHEET 4) PBTB [2]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [05]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [09]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.044]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [__ 2966.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 403._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [__ 56.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[__ __]	[__ __.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[__ __]	[__ __.]

10. DUCTILITY AT 77°F (CM) [__ __ __.]
(AASHTO T51)

ENTERED
JAN 20 1996
By HN

11. DUCTILITY AT 39.2°F (CM) [__ __ __.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [__ __ __.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [__ __ __.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [__ __ __.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. LAYER NUMBER (FROM SHEET 4) [2]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (AASHTO T209 OR ASTM D2041) [_._ _ N]

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ N] NUMBER OF TESTS [_ N.]

5. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

6. STD. DEV. [_._ _ N]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)

*7. MEAN [2.7 1 _] NUMBER OF SAMPLES [_ 4.]

8. MINIMUM [2.4 5 _] MAXIMUM [2.8 9 _]

9. STD. DEV. [0.2 2 _]

ENTERED
JAN 20 1996
By LW

PERCENT AIR VOIDS

*10. MEAN [_._ _ N] NUMBER OF SAMPLES [_ N.]

11. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

12. STD. DEV. [_._ _ N]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _.N]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _.N]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _.N]

*16. NUMBER OF BLOWS [_ N]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559) [_ _ _ N.]

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM 1561) [_ _ _ N.]

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. LAYER NUMBER (FROM SHEET 4) [2]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [__ __]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [__]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [__ __.__]

ENTERED
JAN 20 1996
By HV

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

PBTB

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 6-2 9-9 3]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 6-2 9-9 3]
*3. LAYER NUMBER [2]

*4. MIXING TEMPERATURE (°F) [2 3 0.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 1 9 0.
Minimum..... 1 7 3.
Standard Deviation... 1 0.2

Number of Tests ..... 1 1.
Maximum..... 2 0 2.

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 2.3				
7	B	Steel-Whl Tandem	__ __.__				
8	C	Steel-Whl Tandem	__ __.__				
9	D	Steel-Whl Tandem	__ __.__				
10	E	Pneumatic-Tired	__ __.__	__ __ __ __.			
11	F	Pneumatic-Tired	__ __.__	__ __ __ __.			
12	G	Pneumatic-Tired	__ __.__	__ __ __ __.			
13	H	Pneumatic-Tired	__ __.__	.			
14	I	Single-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
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				
23	Roller Code (A-Q)	A	__	__	__
24	Coverages	__ 1.	__ __.	__ __.	__ __.
	INTERMEDIATE				
25	Roller Code (A-Q)	A	__	__	__
26	Coverages	__ 1.	__ __.	__ __.	__ __.
	FINAL				
27	Roller Code (A-Q)	A	__	__	__
28	Coverages	__ 1.	__ __.	__ __.	__ __.
29	Air Temperature (°F)	__ 9 5.	__ __ __	__ __ __.	__ __ __.
30	Compacted Thickness (In)	4 0	__ __	__.__	__.__
31	Curing Period (Days)	1 7.__	__ __ __	__ __ __	__ __.__

PREPARER D. FEITH EMPLOYER NCE DATE 4/25/94

JAN 20 1996
By

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	A	N	A	N
Number of Measurements	2 0	_ _	2 0	_ _
Average (pcf)	1 4 1.3	_ _ _._	1 4 9.4	_ _ _._
Maximum (pcf)	1 4 3.5	_ _ _._	1 5 3.0	_ _ _._
Minimum (pcf)	1 3 9.4	_ _ _._	1 4 5.1	_ _ _._
Standard Deviation (pcf)	_ _ 1.1	_ _ _._	_ _ 2.1	_ _ _._
Layer Number	_ 3	_ _	_ 4	_ _

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY _ 3 1 1 7
MOISTURE 6 1 6

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) _ N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) _._ N
Cutoff Height (Inches) _._ N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

ENTERED
JAN 29 1996
BY LN

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS ENTERED	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [24]

LAYER THICKNESS MEASUREMENTS (Inches) JAN 20 1996 SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	~~PERMEABLE~~ ASPHALT TREATED BASE	~~DENSE~~ GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0		4.1	11.5	6.7	
	36		4.7	11.4	6.8	
	72		4.3	11.3	6.8	
	108		4.4	10.8	7.3	
	144		4.4	11.0	7.3	
0+50	0		4.4	11.0	6.8	
	36		4.4	11.3	6.8	
	72		4.1	11.4	7.0	
	108		4.2	11.3	7.0	
	144		4.2	11.2	7.3	
1+00	0		4.1	11.3	6.7	
	36		4.2	11.5	6.5	
	72		4.0	11.6	6.6	
	108		4.1	11.2	7.0	
	144		4.3	11.2	7.1	
1+50	0		4.1	11.3	6.8	
	36		4.0	11.4	6.7	
	72		3.8	11.4	6.8	
	108		3.8	11.3	7.2	
	144		4.2	11.2	7.3	
2+00	0		3.6	11.6	6.8	
	36		4.3	11.6	6.5	
	72		4.0	11.9	6.6	
	108		4.0	11.5	7.0	
	144		4.0	11.5	7.1	
2+50	0		4.3	11.3	6.7	
	36		4.6	11.4	6.6	
	72		4.1	11.6	6.7	
	108		4.1	11.5	7.1	
	144		3.8	11.4	7.4	
3+00	0		4.3	11.5	6.6	
	36		4.4	11.9	6.4	
	72		4.0	12.0	6.5	
	108		4.1	11.6	7.0	
	144		4.7	11.8	7.0	
LAYER NUMBER[1]		—	02	03	04	—

[1] from Sheet 4

PREPARER D. Feint EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [24]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0		4.3	11.4	6.7	
	36		4.1	11.6	6.5	
	72		3.7	11.6	6.7	
	108		3.7	11.6	6.8	
	144		4.2	11.5	7.2	
4+00	0		3.8	11.6	6.8	
	36		4.1	11.6	6.6	
	72		3.7	11.9	6.6	
	108		4.1	11.6	7.0	
	144		4.1	11.9	7.2	
4+50	0		4.2	11.8	6.7	
	36		4.0	12.2	6.4	
	72		4.1	12.0	6.5	
	108		4.1	11.8	6.6	
	144		4.1	11.5	7.2	
5+00	0		4.3	11.6	6.8	
	36		4.5	11.8	6.7	
	72		4.2	12.1	6.5	
	108		4.3	11.8	6.7	
	144		4.2	11.5	7.1	
+						
+						
+						
LAYER NUMBER[1]		—	02	03	04	—

ENTERED
JAN 20 1995
BY

[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2-1 7-9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 5-2 7-9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC - TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

ENTERED
JAN 20 1996
By UW

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 4]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [1.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [6.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6. TOTAL WIDTH (FEET)	[4.]	[8.]
*7. PAVED WIDTH (FEET)	[4.]	[8.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[28.]	[28.]
9. SURFACE THICKNESS (INCHES)	[7.0]	[7.0]
10. SHOULDER BASE THICKNESS (INCHES)	[8.0]	[8.0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[4.0]
12. SPACING OF LATERALS (FEET)		[225.]

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By HV

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[5 7]	[redacted]	[redacted]	[redacted]	[redacted]
2	[0 ~~6~~ 5]	[3 1]	[3.8]	4.6	3.0	0.4
3	[0 5]	[2 8]	[7.8]	8.4	7.1	0.3
4	[0 3]	[0 1]	[6.7]	6.4	7.2	0.2
5	[ ]	[ ]	[.]	.	.	.
6	[ ]	[ ]	[.]	.	.	.
7	[ ]	[ ]	[.]	.	.	.
8	[ ]	[ ]	[.]	.	.	.
9	[ ]	[ ]	[.]	.	.	.
10	[ ]	[ ]	[.]	.	.	.
11	[ ]	[ ]	[.]	.	.	.
12	[ ]	[ ]	[.]	.	.	.
13	[ ]	[ ]	[.]	.	.	.
14	[ ]	[ ]	[.]	.	.	.
15	[ ]	[ ]	[.]	.	.	.

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*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) [U .]
(Rock, Stone, Dense Shale)

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

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SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. LAYER NUMBER (FROM SHEET 4) AC – 3/4" [4]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[ ]	[.]
*4.	Other (Specify)... 6 _____	[ ]	[.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[ ]	[.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.6 6 0]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.6 3 7]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [. 4]

*12. Aggregate Combination (Calculated) [2.6 4 6]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.6 6 9]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[2 5.]
15.	Coarse	[ ]	[.]
16.	Coarse	[ ]	[.]
17.	Coarse and Fine - Combined	[ ]	[.]

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18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) 4.

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SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2	[_ N]	[_ 0.]
	(IF OTHER, SPECIFY) _____		

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

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PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.4 4 1]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.3 5 7] NUMBER OF TESTS [_ 1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6 _ _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [5.6 _ _] ENTERED NUMBER OF SAMPLES [_ 1.]

11. MINIMUM [_._ _ _] JAN 20 1996 MAXIMUM [_._ _ _]

12. By LW STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 5.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ 4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347._]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ 1 3.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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By LV

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 6-2 9-9 3]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 7-3 0-9 3]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers		
Plant 1	[2]	FNF-ONSITE	[_ _ 1]	[_ 5]	[2]	[3]	[4]
Plant 2	[_]		[_ _ _]	[_ _]	[_]	[_]	[_]
Plant 3	[_]		[_ _ _]	[_ _]	[_]	[_]	[_]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet ENTERED [1 4.0]

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7. ATB PLACEMENT LIFTS
   - Layer Number [_ 3]
   - Nominal First Lift Placement Thickness (Inches) [5.3]
   - Nominal Second Lift Placement Thickness (Inches) [5.3]
   - Nominal Third Lift Placement Thickness (Inches) [_.N]
   - Nominal Fourth Lift Placement Thickness (Inches) [_.N]
8. PATB PLACEMENT LIFTS
   - Layer Number [_ 2]
   - Nominal First Lift Placement Thickness (Inches) [4.9]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]
9. AC BINDER COURSE LIFT
   - Layer Number [_ 4]
   - Nominal First Lift Placement Thickness (Inches) [3.5]
   - Nominal Second Lift Placement Thickness (Inches) [2.7]
10. AC SURFACE COURSE LIFT
    - Layer Number [_ 4]
    - Nominal First Lift Placement Thickness (Inches) [3.0]
    - Nominal Second Lift Placement Thickness (Inches) [_.N]
11. SURFACE FRICTION COURSE (If Placed)
    - Layer Number [_ N]
    - Nominal Placement Thickness (Inches) [_.N]
12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    - Binder Course [_ + _ N]
    - Surface Course [_ + _ N]
    - Surface Friction Course [_ + _ N]
13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
    - Between lanes.. 1 Within lane.. 2
    - (specify offset from O/S feet) [_ 6.0]

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

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [23]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-27-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-30-93]
*3. LAYER NUMBER [4] AC

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By

*4. MIXING TEMPERATURE (°F) [280.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 241 Number of Tests ..... 111.
Minimum..... 217. Maximum..... 265.
Standard Deviation... 8.9

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M	M	M	
24	Coverages	4.	4.	4.	
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F	E&F	
26	Coverages	12.	12.	12.	
	FINAL				
27	Roller Code (A-Q)	A	A	A	
28	Coverages	2.	2.	2	
29	Air Temperature (°F)	90	100.	100.	
30	Compacted Thickness (In)	30	20	20	
31	Curing Period (Days)	1	1	1	

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. LAYER NUMBER (FROM SHEET 4) BTB [3]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[ ]	[.]
*4.	Other (Specify)... 6 _____	[ ]	[.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[1 1.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[8 9.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[ ]	[.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.6 7 7]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.6 4 8]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [. 4]

*12. Aggregate Combination (Calculated) [2.6 6 3]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.7 0 0]

ENTERED
JAN 20 1996
By LW

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[2 5.]
15.	Coarse	[ ]	[.]
16.	Coarse	[ ]	[.]
17.	Coarse and Fine - Combined	[ ]	[.]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) .

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

BTB

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ _]	[_ _.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ _]	[_ _.]

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

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JAN 20 1996
By LN

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

MIX DESIGN

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (AASHTO T209 OR ASTM D2041) [2.4 6 5]

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.4 0 5] NUMBER OF TESTS [1.]

5. MINIMUM [.] MAXIMUM [.]

6. STD. DEV. [.]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)

*7. MEAN [4.9] NUMBER OF SAMPLES [1.]

8. MINIMUM [.] MAXIMUM [.]

9. STD. DEV. [.]

PERCENT AIR VOIDS

*10. MEAN [4.2 1 4] NUMBER OF SAMPLES [1.]

11. MINIMUM [.] MAXIMUM [.]

12. STD. DEV. [.]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 4.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.4]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4302.]

*16. NUMBER OF BLOWS [50]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559) [1 2.]

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By HN

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM 1561) [N.]

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [N]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

ENTERED
JAN 20 1996
By LW

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [23]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-15-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-21-93]
*3. LAYER NUMBER [3] BTB

*4. MIXING TEMPERATURE (°F) [270.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 241.
Minimum..... 220.
Standard Deviation... 16.1
Number of Tests ..... 35.
Maximum..... 277.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M	M		
24	Coverages	4.	4.		
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F		
26	Coverages	12.	12.		
	FINAL				
27	Roller Code (A-Q)	A	A		
28	Coverages	2.	2.		
29	Air Temperature (°F)	90	90		
30	Compacted Thickness (In)	4.0	4.0		
31	Curing Period (Days)	5	6		

ENTERED JAN 29 1996 By

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. LAYER NUMBER (FROM SHEET 4) PBTB [2]

		TYPE	PERCENT
	COMPOSITION OF COARSE AGGREGATE		
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel.., 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[__]	[__ __ __.]
*4.	Other (Specify)... 6 _____	[__]	[__ __ __.]
	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[2]	[1 0 0.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[__]	[__ __ __.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[__]	[__ __ __.]

*8. TYPE OF MINERAL FILLER [N]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [__.__ __ U]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [__.__ __ U]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [__.__ __ N]

*12. Aggregate Combination (Calculated) [__.__ __ U]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [__.__ __ U]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[__ __]	[__ __ __.__ __ __]
15.	Coarse	[__ __]	[__ __ __.__ __ __]
16.	Coarse	[__ __]	[__ __ __.__ __ __]
17.	Coarse and Fine - Combined	[__ __]	[__ __ __.__ __ __]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) __ __.

ENTERED
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By JN

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. LAYER NUMBER (FROM SHEET 4) PBTB [2]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ _]	[_ _.]
9.	MODIFIER #2	[_ _]	[_ _.]
	(IF OTHER, SPECIFY) _____		

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

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By LW

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. LAYER NUMBER (FROM SHEET 4) [2]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [_._ _ N]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ N] NUMBER OF TESTS [_ N.]

5. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

6. STD. DEV. [_._ _ N]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [2.7 1 _] NUMBER OF SAMPLES [_ 4.]

8. MINIMUM [2.4 5 _] MAXIMUM [2.8 9 _]

9. STD. DEV. [0.2 2 _]

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JAN 20 1996
By

PERCENT AIR VOIDS

*10. MEAN [_._ _ N] NUMBER OF SAMPLES [_ N.]

11. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

12. STD. DEV. [_._ _ N]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _.N]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _.N]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _.N]

*16. NUMBER OF BLOWS [_ N]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ _ N.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. LAYER NUMBER (FROM SHEET 4) [2]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [__ __]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [__]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [__ __.__]

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By HN

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

PBTB

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 6-2 9-9 3]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 6-2 9-9 3]
*3. LAYER NUMBER [2]

*4. MIXING TEMPERATURE (°F) [2 3 0.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 1 8 6.
Minimum..... 1 5 4.
Standard Deviation... 1 5.5
Number of Tests ..... 1 3.
Maximum..... 2 0 5.

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 2.3				
7	B	Steel-Whl Tandem	__.__				
8	C	Steel-Whl Tandem	__.__				
9	D	Steel-Whl Tandem	__.__				
10	E	Pneumatic-Tired	__.__	____.			
11	F	Pneumatic-Tired	__.__	____.			
12	G	Pneumatic-Tired	__.__	____.			
13	H	Pneumatic-Tired	__.__	.			
14	I	Single-Drum Vibr.	__.__		____.	___	__.__
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				
23	Roller Code (A-Q)	A	__	__	__
24	Coverages	__ 1.	__ __.	__ __.	__ __.
	INTERMEDIATE				
25	Roller Code (A-Q)	A	__	__	__
26	Coverages	__ 1.	__ __.	__ __.	__ __.
	FINAL				
27	Roller Code (A-Q)	A	__	__	__
28	Coverages	__ 1.	__ __.	__ __.	__ __.
29	Air Temperature (°F)	__ 9 5	__ __ __	__ __ __.	__ __ __.
30	Compacted Thickness (In)	4.0	__ __	__ __	__.__
31	Curing Period (Days)	1 7.__	__ __ __	__ __.__	__ __.__

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BY LN

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [23]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	A	N	A	N
Number of Measurements	20		20	
Average (pcf)	142.0		147.7	
Maximum (pcf)	143.8		151.5	
Minimum (pcf)	140.1		144.3	
Standard Deviation (pcf)	1.0		1.7	
Layer Number	3		4	

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY 3117
MOISTURE 616

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) N
Cutoff Height (Inches) N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

ENTERED
JAN 20 1996
By HW

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [23]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0		4.0	7.8	6.7	
	36		4.3	7.7	6.6	
	72		4.1	8.0	6.5	
	108		3.8	7.9	6.8	
	144		3.7	7.8	7.2	
0+50	0		3.8	7.8	6.8	
	36		4.2	7.8	6.5	
	72		3.8	8.0	6.5	
	108		3.8	7.6	6.8	
	144		3.7	7.8	7.0	
1+00	0		4.3	7.8	7.0	
	36		4.6	7.8	6.6	
	72		4.3	8.3	6.4	
	108		3.8	8.4	6.6	
	144		4.2	7.7	6.7	
1+50	0		4.2	7.6	6.7	
	36		4.1	8.0	6.5	
	72		3.8	8.0	6.5	
	108		3.7	7.6	6.8	
	144		3.8	7.7	6.7	
2+00	0		4.1	7.8	6.6	
	36		4.2	7.8	6.5	
	72		4.0	8.0	6.5	
	108		3.8	7.6	6.7	
	144		3.7	7.6	6.8	
2+50	0		4.2	7.3	6.8	
	36		4.6	7.6	6.4	
	72		3.8	7.8	6.6	
	108		4.3	7.3	6.5	
	144		3.8	7.1	7.0	
3+00	0		3.5	7.8	7.0	
	36		3.2	7.9	6.7	
	72		3.0	7.9	6.7	
	108		3.4	7.4	6.8	
	144		3.4	7.3	6.8	
LAYER NUMBER[1]			02	03	04	

[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

JUN 2 0 1996

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [23]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0		3.7	8.0	6.7	
	36		4.0	8.0	6.5	
	72		3.5	8.0	6.7	
	108		3.5	7.6	6.7	
	144		3.4	7.7	6.7	
4+00	0		4.0	7.8	7.1	
	36		4.1	8.0	6.4	
	72		4.0	8.0	6.5	
	108		4.0	7.6	6.6	
	144		4.0	7.7	6.7	
4+50	0		3.2	8.2	6.8	
	36		3.4	8.3	6.5	
	72		3.1	8.3	6.4	
	108		3.2	7.7	6.7	
	144		3.2	7.8	6.7	
5+00	0		3.0	8.3	6.6	
	36		3.0	8.3	6.5	
	72		3.1	8.0	6.6	
	108		3.2	7.7	6.7	
	144		3.2	7.7	6.8	
+						
+						
+						
LAYER NUMBER[1]		—	02	03	04	—

ENTERED
JAN 2 0 1996
BY

[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2-1 7-9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 5-2 7-9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

ENTERED
JAN 2 0 1996
By HN

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 3]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [1.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [6.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6. TOTAL WIDTH (FEET)	[4.]	[8.]
*7. PAVED WIDTH (FEET)	[4.]	[8.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[3 1.]	[3 1.]
9. SURFACE THICKNESS (INCHES)	[7. 0]	[7. 0]
10. SHOULDER BASE THICKNESS (INCHES)	[4. 0]	[4. 0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[4. 0]
12. SPACING OF LATERALS (FEET)		[2 2 5.]

ENTERED
JAN 20 1996
By LN

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[5 9]				
2	[0 ~~6~~ 5]	[2 3]	[4.4]	3.1	6.0	0.7
3	[0 5]	[3 1]	[4.5]	2.6	5.5	0.5
4	[0 3]	[0 1]	[6.2]	5.3	7.1	0.3
5	[ ]	[ ]	[.]	.	.	.
6	[ ]	[ ]	[.]	.	.	.
7	[ ]	[ ]	[.]	.	.	.
8	[ ]	[ ]	[.]	.	.	.
9	[ ]	[ ]	[.]	.	.	.
10	[ ]	[ ]	[.]	.	.	.
11	[ ]	[ ]	[.]	.	.	.
12	[ ]	[ ]	[.]	.	.	.
13	[ ]	[ ]	[.]	.	.	.
14	[ ]	[ ]	[.]	.	.	.
15	[ ]	[ ]	[.]	.	.	.

ENTERED
JAN 20 1996
By LV

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) (Rock, Stone, Dense Shale) [4 .]

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FERTH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

*1. LAYER NUMBER (FROM SHEET 4) AC – 3/4" [4]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9.	Coarse Aggregate (AASHTO T85 or ASTM C127)	[2.660]
*10.	Fine Aggregate (AASHTO T84 or ASTM C128)	[2.637]
*11.	Mineral Filler (AASHTO T100 or ASTM D854)	[.4]
*12.	Aggregate Combination (Calculated)	[2.646]
13.	Effective Specific Gravity of Aggregate Combination (Calculated)	[2.669]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[25.]
15.	Coarse	[— —]	[— —.]
16.	Coarse	[— —]	[— —.]
17.	Coarse and Fine - Combined	[— —]	[— —.]

18. POLISH VALUE OF COARSE AGGREGATES SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) [4.]

ENTERED
JAN 20 1996
By HN

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2	[_ N]	[_ 0.]
	(IF OTHER, SPECIFY) _____		

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

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JAN 20 1996
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12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.441]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.357] NUMBER OF TESTS [1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6 _ _] NUMBER OF SAMPLES [1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [5.6 _ _] NUMBER OF SAMPLES [1.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [15.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347._]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ 13.]
(AASHTO T245 OR ASTM D1559)

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*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_._ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [_._ _ N]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ N] NUMBER OF TESTS [_ N.]

5. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

6. STD. DEV. [_._ _ N]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.7 7 _] NUMBER OF SAMPLES [_ 2.]

8. MINIMUM [4.4 8 _] MAXIMUM [5.0 5 _]

9. STD. DEV. [N._ _ _]

PERCENT AIR VOIDS

*10. MEAN [_._ _ N] NUMBER OF SAMPLES [_ N.]

11. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

12. STD. DEV. [_._ _ N]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _.N]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _.N]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _.N]

*16. NUMBER OF BLOWS [_ N]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ _ N.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 6-2 9-9 3]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 7-3 0-9 3]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers
Plant 1	[2]	FNF-ONSITE	[_ _ 1]	[_ 5]	[3] [4] [_]
Plant 2	[_]	_____	[_ _ _]	[_ _]	[_] [_] [_]
Plant 3	[_]	_____	[_ _ _]	[_ _]	[_] [_] [_]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet) [1 4.0]

7. ATB PLACEMENT LIFTS
   - Layer Number [_ N]
   - Nominal First Lift Placement Thickness (Inches) [_.N]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]
   - Nominal Third Lift Placement Thickness (Inches) [_.N]
   - Nominal Fourth Lift Placement Thickness (Inches) [_.N]

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8. PATB PLACEMENT LIFTS
   - Layer Number [_ 3]
   - Nominal First Lift Placement Thickness (Inches) [5.0]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]

9. AC BINDER COURSE LIFT
   - Layer Number [_ 4]
   - Nominal First Lift Placement Thickness (Inches) [3.4]
   - Nominal Second Lift Placement Thickness (Inches) [2.8]

10. AC SURFACE COURSE LIFT
    - Layer Number [_ 4]
    - Nominal First Lift Placement Thickness (Inches) [2.9]
    - Nominal Second Lift Placement Thickness (Inches) [_.N]

11. SURFACE FRICTION COURSE (If Placed)
    - Layer Number [_ N]
    - Nominal Placement Thickness (Inches) [_.N]

12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    - Binder Course [_ + _ N]
    - Surface Course [_ + _ N]
    - Surface Friction Course [_ + _ N]

13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
    - Between lanes.. 1 Within lane.. 2
    - (specify offset from O/S feet) [_ 6.0]

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

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [19]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-27-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-30-93]
*3. LAYER NUMBER [4] AC

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*4. MIXING TEMPERATURE (°F) [280.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 238.
Minimum..... 216.
Standard Deviation... 11.2
Number of Tests ..... 62.
Maximum..... 269.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M	M	M	
24	Coverages	4.	4.	4.	
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F	E&F	
26	Coverages	12.	12	12	
	FINAL				
27	Roller Code (A-Q)	A	A	A	
28	Coverages	2.	2	2	
29	Air Temperature (°F)	90	100.	100.	
30	Compacted Thickness (In)	30	20	20	
31	Curing Period (Days)	1.	1	7	

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

*1. LAYER NUMBER (FROM SHEET 4) PBTB [3]

		TYPE	PERCENT
	COMPOSITION OF COARSE AGGREGATE		
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[__]	[__ __ __.]
*4.	Other (Specify)... 6 _____	[__]	[__ __ __.]
	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[2]	[1 0 0.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[__]	[__ __ __.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[__]	[__ __ __.]

*8. TYPE OF MINERAL FILLER [N]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) ENTERED [__.__ __ U]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) JAN 2 0 1996 [__.__ __ U]

*11. Mineral Filler (AASHTO T100 or ASTM D854) By LV [__.__ __ N]

*12. Aggregate Combination (Calculated) [__.__ __ U]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [__.__ __ U]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[__ __]	[__ __ __.__ __ __]
15.	Coarse	[__ __]	[__ __ __.__ __ __]
16.	Coarse	[__ __]	[__ __ __.__ __ __]
17.	Coarse and Fine - Combined	[__ __]	[__ __ __.__ __ __]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) __ __.

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [19]

*1. LAYER NUMBER (FROM SHEET 4) PBTB [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [05]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [09]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.044]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [__2966.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_403.__]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [__56.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[__]	[__.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[__]	[__.]

10. DUCTILITY AT 77°F (CM) [___.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [___.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [___.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [___.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [___.]

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NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

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SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [_._ _ N]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ N] NUMBER OF TESTS [_ N.]

5. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

6. STD. DEV. [_._ _ N]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [2.7 1 _] NUMBER OF SAMPLES [_ 4.]

8. MINIMUM [2.4 5 _] MAXIMUM [2.8 9 _]

9. STD. DEV. [0.2 2 _]

PERCENT AIR VOIDS

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*10. MEAN [_._ _ N] NUMBER OF SAMPLES [_ N.]

11. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

12. STD. DEV. [_._ _ N]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _.N]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _.N]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _.N]

*16. NUMBER OF BLOWS [_ N]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ _ N.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [__ __]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [__]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [__ __.__]

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BY LLV

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

December 1991

PBTB

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [19]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [06-29-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [06-29-93]
*3. LAYER NUMBER [3]

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*4. MIXING TEMPERATURE (°F) [230.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 195.
Minimum..... 166.
Standard Deviation... 16.2
~~Number of Tests~~ ..... 14.
Maximum..... 215.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired					
11	F	Pneumatic-Tired					
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
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				
23	Roller Code (A-Q)	A			
24	Coverages	1.			
	INTERMEDIATE				
25	Roller Code (A-Q)	A			
26	Coverages	1.			
	FINAL				
27	Roller Code (A-Q)	A			
28	Coverages	1.			
29	Air Temperature (°F)	80.			
30	Compacted Thickness (In)	4.0			
31	Curing Period (Days)	30			

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	N	N	A	N
Number of Measurements			2 0	
Average (pcf)			1 4 9.1	
Maximum (pcf)			1 5 2.7	
Minimum (pcf)			1 4 4.6	
Standard Deviation (pcf)			2.6	
Layer Number			4	

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY 3 1 1 7
MOISTURE 6 1 6

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) N
Cutoff Height (Inches) N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

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PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [19]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0	3.7	4.3		6.2	
	36	3.5	4.4		6.1	
	72	3.4	4.3		5.9	
	108	3.6	4.4		5.8	
	144	3.1	4.4		6.6	
0+50	0	3.6	4.3		6.1	
	36	3.8	4.2		5.6	
	72	3.8	4.2		5.5	
	108	3.7	4.3		5.8	
	144	3.6	4.1		6.6	
1+00	0	4.3	4.2		6.1	
	36	4.1	4.3		5.8	
	72	4.2	4.6		5.3	
	108	4.0	4.8		5.9	
	144	4.0	4.4		6.6	
1+50	0	4.6	3.0		6.4	
	36	4.4	3.0		6.1	
	72	4.4	2.6		6.0	
	108	4.0	3.5		6.4	
	144	3.7	3.8		6.8	
2+00	0	3.8	4.9		6.2	
	36	3.8	4.9		6.2	
	72	3.8	5.0		5.9	
	108	4.1	5.2		6.0	
	144	3.7	5.5		6.2	
2+50	0	4.2	4.9		6.2	
	36	4.2	4.9		6.2	
	72	4.3	4.8		6.0	
	108	4.0	4.9		6.1	
	144	4.1	4.9		6.2	
3+00	0	5.4	4.8		6.1	
	36	4.9	4.9		6.1	
	72	4.8	4.7		6.2	
	108	4.0	4.9		6.2	
	144	4.0	5.0		6.4	
LAYER NUMBER[1]		02	03	ENT	ROAD	

[1] from Sheet 4

JAN 20 1996

PREPARER D. FRITH EMPLOYER NCDOT DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0	5.6	4.4		6.5	
	36	5.4	4.7		6.2	
	72	5.3	4.4		6.1	
	108	5.0	4.4		6.0	
	144	4.7	4.4		6.5	
4+00	0	5.4	4.7		6.5	
	36	5.6	4.8		6.2	
	72	5.3	4.9		6.0	
	108	5.5	4.4		5.8	
	144	4.8	4.3		6.4	
4+50	0	6.0	4.7		6.4	
	36	5.8	4.8		6.2	
	72	5.8	4.7		6.0	
	108	5.0	4.6		5.8	
	144	4.9	4.7		6.5	
5+00	0	5.4	4.2		7.1	
	36	5.4	4.0		6.8	
	72	5.4	4.4		6.2	
	108	4.4	4.9		6.0	
	144	3.4	4.8		6.8	
+						
+						
+						
LAYER NUMBER[1]		02	03		04	

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[1] from Sheet 4

PREPARER D. FEITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [0 6-0 7-9 3]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [_ _-_ _-9 3] ?

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [1]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 _____

*5. GROSS WEIGHT (TONS) [2 5.0]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [_ 5]
Nominal Second Lift Placement Thickness (inches) [_ _]
Nominal Third Lift Placement Thickness (inches) [_ _]
Nominal Fourth Lift Placement Thickness (inches) [_ _]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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By LW

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2-1 7-9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 5-2 7-9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 9]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 4]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [3.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6. TOTAL WIDTH (FEET)	[4.]	[8.]
*7. PAVED WIDTH (FEET)	[4.]	[8.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[2 3.]	[2 3.]
9. SURFACE THICKNESS (INCHES)	[7.0]	[7.0]
10. SHOULDER BASE THICKNESS (INCHES)	[1 2.0]	[1 2.0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[.N]
12. SPACING OF LATERALS (FEET)		[N.]

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PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 4]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[5 9]				
2	[0 5]	[2 3]	[12.0]	9.5	14.9	0.9
3	[0 3]	[0 1]	[7.1]	6.4	9.8	0.8
4	[ ]	[ ]	[.]	.	.	.
5	[ ]	[ ]	[.]	.	.	.
6	[ ]	[ ]	[.]	.	.	.
7	[ ]	[ ]	[.]	.	.	.
8	[ ]	[ ]	[.]	.	.	.
9	[ ]	[ ]	[.]	.	.	.
10	[ ]	[ ]	[.]	.	.	.
11	[ ]	[ ]	[.]	.	.	.
12	[ ]	[ ]	[.]	.	.	.
13	[ ]	[ ]	[.]	.	.	.
14	[ ]	[ ]	[.]	.	.	.
15	[ ]	[ ]	[.]	.	.	.

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) [4 .]
(Rock, Stone, Dense Shale)

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By HN

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 4]

*1. LAYER NUMBER (FROM SHEET 4) AC – 3/4" [3]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[ ]	[.]
*4.	Other (Specify)... 6 _____	[ ]	[.]
	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[ ]	[.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.660]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.637]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [. 4]

*12. Aggregate Combination (Calculated) [2.646]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.669]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[2 5.]
15.	Coarse	[ ]	[.]
16.	Coarse	[ ]	[.]
17.	Coarse and Fine - Combined	[ ]	[.]

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18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) 4.

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SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 4]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2	[_ N]	[_ 0.]
	(IF OTHER, SPECIFY) _____		

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

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11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 4]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.441]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.357] NUMBER OF TESTS [1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6 _ _] NUMBER OF SAMPLES [1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

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PERCENT AIR VOIDS

*10. MEAN [5.6 _ _] NUMBER OF SAMPLES [1.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [15.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347._]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ 13.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 4]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [_._ _ N]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ N] NUMBER OF TESTS [_ N.]

5. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

6. STD. DEV. [_._ _ N]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.2 5 _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

9. STD. DEV. [_._ _ N]

PERCENT AIR VOIDS

*10. MEAN [_._ _ N] NUMBER OF SAMPLES [_ N.]

11. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

12. STD. DEV. [_._ _ N]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _.N]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _.N]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _.N]

*16. NUMBER OF BLOWS [_ N]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ _ N.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 4]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 4]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-27-93]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-30-93]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers		
Plant 1	[2]	FNF-ONSITE	[__ 1]	[__ 5]	[3]	[__]	[__]
Plant 2	[__]	_____	[__ __]	[__ __]	[__]	[__]	[__]
Plant 3	[__]	_____	[__ __]	[__ __]	[__]	[__]	[__]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

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6. SINGLE PASS LAYDOWN WIDTH (Feet) [14.0]

7. ATB PLACEMENT LIFTS
   - Layer Number [__ N]
   - Nominal First Lift Placement Thickness (Inches) [__.N]
   - Nominal Second Lift Placement Thickness (Inches) [__.N]
   - Nominal Third Lift Placement Thickness (Inches) [__.N]
   - Nominal Fourth Lift Placement Thickness (Inches) [__.N]

8. PATB PLACEMENT LIFTS
   - Layer Number [__ N]
   - Nominal First Lift Placement Thickness (Inches) [__.N]
   - Nominal Second Lift Placement Thickness (Inches) [__.N]

9. AC BINDER COURSE LIFT
   - Layer Number [__ 3]
   - Nominal First Lift Placement Thickness (Inches) [3.9]
   - Nominal Second Lift Placement Thickness (Inches) [2.8]

10. AC SURFACE COURSE LIFT
    - Layer Number [__ 3]
    - Nominal First Lift Placement Thickness (Inches) [3.0]
    - Nominal Second Lift Placement Thickness (Inches) [__.N]

11. SURFACE FRICTION COURSE (If Placed)
    - Layer Number [__ N]
    - Nominal Placement Thickness (Inches) [__.N]

12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    - Binder Course [__ + __ N]
    - Surface Course [__ + __ N]
    - Surface Friction Course [__ + __ N]

13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
    - Between lanes.. 1 Within lane.. 2
    - (specify offset from O/S feet) [__ 6.0]

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

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [14]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-27-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-30-93]
*3. LAYER NUMBER [3] AC

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*4. MIXING TEMPERATURE (°F) [280.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 239.
Minimum..... 209.
Standard Deviation... 11.6

Number of Tests ..... 66.
Maximum..... 257.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	.u	.u
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				
23	Roller Code (A-Q)	M	M	M	
24	Coverages	4.	4.	4.	
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F	E&F	
26	Coverages	12.	12.	12	
	FINAL				
27	Roller Code (A-Q)	A	A	A	
28	Coverages	2.	2	2	
29	Air Temperature (°F)	90.	100.	100	
30	Compacted Thickness (In)	30	20	20	
31	Curing Period (Days)	1.	1	7.	

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 4]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	N	N	A	N
Number of Measurements			20	
Average (pcf)			148.5	
Maximum (pcf)			152.2	
Minimum (pcf)			144.1	
Standard Deviation (pcf)			2.3	
Layer Number			3	

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY 3117
MOISTURE 616

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) N
Cutoff Height (Inches) N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

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By

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [14]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0	11.2	—	—	7.1	—
	36	11.3	—	—	6.8	—
	72	11.2	—	—	6.8	—
	108	11.0	—	—	6.6	—
	144	11.0	—	—	6.4	—
0+50	0	12.7	—	—	7.3	—
	36	12.7	—	—	7.1	—
	72	12.5	—	—	7.1	—
	108	11.6	—	—	6.7	—
	144	11.6	—	—	6.5	—
1+00	0	12.1	—	—	7.2	—
	36	12.1	—	—	6.8	—
	72	12.0	—	—	6.8	—
	108	11.6	—	—	6.7	—
	144	11.9	—	—	6.8	—
1+50	0	12.1	—	—	7.0	—
	36	12.8	—	—	6.5	—
	72	12.5	—	—	6.6	—
	108	12.0	—	—	6.5	—
	144	11.6	—	—	6.6	—
2+00	0	12.6	—	—	7.0	—
	36	12.8	—	—	6.7	—
	72	12.7	—	—	7.0	—
	108	12.5	—	—	7.1	—
	144	12.7	—	—	7.0	—
2+50	0	11.8	—	—	7.3	—
	36	12.0	—	—	7.2	—
	72	12.4	—	—	7.0	—
	108	12.5	—	—	6.7	—
	144	12.5	—	—	6.7	—
3+00	0	12.2	—	—	7.2	—
	36	12.8	—	—	6.7	—
	72	13.1	—	—	6.4	—
	108	14.9	—	—	6.5	—
	144	12.0	—	—	6.8	—
LAYER NUMBER[1]		02	—	—	03	—

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[1] from Sheet 4

PREPARER D. Frith EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 4]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0	12.0			7.1	
	36	12.1			6.7	
	72	12.1			6.8	
	108	11.9			6.7	
	144	11.8			6.8	
4+00	0	12.0			7.7	
	36	12.2			7.6	
	72	13.3			7.1	
	108	12.1			7.1	
	144	12.0			7.2	
4+50	0	9.7			9.8	
	36	9.7			9.6	
	72	10.0			9.7	
	108	9.5			9.5	
	144	9.6			9.4	
5+00	0	11.8			7.2	
	36	12.7			6.7	
	72	12.5			6.8	
	108	12.2			6.7	
	144	12.1			6.8	
+						
+						
+						
LAYER NUMBER[1]		02	—	—	03	—

Low DGAB causing higher AC thicknesses

ENTERED JAN 20 1996 BY [illegible]

[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 4]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [0 6-0 7-9 3]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [0 6-1 7-9 3]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [1]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 _____

*5. GROSS WEIGHT (TONS) [2 5.0]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [_ 7]
Nominal Second Lift Placement Thickness (inches) [_ 7]
Nominal Third Lift Placement Thickness (inches) [_ -]
Nominal Fourth Lift Placement Thickness (inches) [_ -]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

ENTERED
JAN 20 1996
By _____

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 4]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2-1 7-9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 6-0 1-9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

ENTERED
JAN 20 1996
By HN

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 6]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [3.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6. TOTAL WIDTH (FEET)	[4.]	[8.]
*7. PAVED WIDTH (FEET)	[4.]	[8]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[28.]	[28.]
9. SURFACE THICKNESS (INCHES)	[4.0]	[4.0]
10. SHOULDER BASE THICKNESS (INCHES)	[12.0]	[12.0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[.N]
12. SPACING OF LATERALS (FEET)		[N.]

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By HN

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

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

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[5 9]				
2	[0 5]	[2 8]	[_ 1 1.8]	_ 1 1.2	_ 1 3.3	_ _0.4
3	[0 3]	[0 1]	[_ _3.7]	_ _3.4	_ _4.8	_ _0.2
4	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
5	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
6	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
7	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
8	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
9	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
10	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
11	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
12	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
13	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
14	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
15	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._

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By HV

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) (Rock, Stone, Dense Shale) [_ 4 . _]

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 6]

*1. LAYER NUMBER (FROM SHEET 4) AC – 3/4" [3]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.660]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.637]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [—.—4]

*12. Aggregate Combination (Calculated) [2.646]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.669]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[2 5.— — —]
15.	Coarse	[— —]	[— — —.— — —]
16.	Coarse	[— —]	[— — —.— — —]
17.	Coarse and Fine Combined	[— —]	[— — —.— — —]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) 4.

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By HN

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 6]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ N]	[_ 0.]

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

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By HN

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [9 1] * TEST SECTION NO. [1 6]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.4 4 1]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.3 5 7] NUMBER OF TESTS [1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6 _ _] NUMBER OF SAMPLES [1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [5.6 _ _] NUMBER OF SAMPLES [1.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 5.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347._]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [1 3.]
(AASHTO T245 OR ASTM D1559)

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*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 6]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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By HV

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 6]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 7-2 0-9 3]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 8-0 5-9 3]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers
Plant 1	[2]	FNF-ONSITE	[1]	[5]	[2] [3] [ ]
Plant 2	[ ]		[ ]	[ ]	[ ] [ ] [ ]
Plant 3	[ ]		[ ]	[ ]	[ ] [ ] [ ]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet) [1 4.0]

7. ATB PLACEMENT LIFTS
   - Layer Number [2]
   - Nominal First Lift Placement Thickness (Inches) [5.3]
   - Nominal Second Lift Placement Thickness (Inches) [4.9]
   - Nominal Third Lift Placement Thickness (Inches) [5.1]
   - Nominal Fourth Lift Placement Thickness (Inches) [.N]

8. PATB PLACEMENT LIFTS
   - Layer Number [N]
   - Nominal First Lift Placement Thickness (Inches) [.N]
   - Nominal Second Lift Placement Thickness (Inches) [.N]

9. AC BINDER COURSE LIFT
   - Layer Number [N]
   - Nominal First Lift Placement Thickness (Inches) [.N]
   - Nominal Second Lift Placement Thickness (Inches) [.N]

10. AC SURFACE COURSE LIFT
    - Layer Number [3]
    - Nominal First Lift Placement Thickness (Inches) [2.8]
    - Nominal Second Lift Placement Thickness (Inches) [2.8]

11. SURFACE FRICTION COURSE (If Placed)
    - Layer Number [N]
    - Nominal Placement Thickness (Inches) [.N]

12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    - Binder Course [+ N]
    - Surface Course [+ N]
    - Surface Friction Course [+ N]

13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
    Between lanes.. 1 Within lane.. 2
    (specify offset from O/S feet) [6.0]

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By HW

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

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [16]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-28-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [08-05-93]
*3. LAYER NUMBER [3] AC

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UW

*4. MIXING TEMPERATURE (°F) [280.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 240.
Minimum..... 205.
Standard Deviation... 10.1
Number of Tests ..... 48.
Maximum..... 270.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M	M		
24	Coverages	4.	4.		
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F		
26	Coverages	12.	12.		
	FINAL				
27	Roller Code (A-Q)	A	A		
28	Coverages	2.	2.		
29	Air Temperature (°F)	100	100		
30	Compacted Thickness (In)	20	20		
31	Curing Period (Days)	1.	2		

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 6]

*1. LAYER NUMBER (FROM SHEET 4) BTB [2]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[1 1.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[8 9.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9.	Coarse Aggregate (AASHTO T85 or ASTM C127)	[2.6 7 7]
*10.	Fine Aggregate (AASHTO T84 or ASTM C128)	[2.6 4 8]
*11.	Mineral Filler (AASHTO T100 or ASTM D854)	[—.— — U]
*12.	Aggregate Combination (Calculated)	[2.6 6 3]
13.	Effective Specific Gravity of Aggregate Combination (Calculated)	[2.7 0 0]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[— 2 5.— — —]
15.	Coarse	[— —]	[— — —.— — —]
16.	Coarse	[— —]	[— — —.— — —]
17.	Coarse and Fine - Combined	[— —]	[— — —.— — —]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) — —.

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JAN 22 1996
BY MW

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 6]

BTB

*1. LAYER NUMBER (FROM SHEET 4) [2]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ _]	[_ _.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ _]	[_ _.]

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT AT 39.2°f (CM/MIN) [_ _ _.]

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

ENTERED
JAN 22 1996
By HW

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 6]

*1. LAYER NUMBER (FROM SHEET 4) [2]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

MIX DESIGN

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (AASHTO T209 OR ASTM D2041) [2.4 6 5]

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.4 0 5] NUMBER OF TESTS [1.]

5. MINIMUM [.] MAXIMUM [.]

6. STD. DEV. [.]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)

*7. MEAN [4.9] NUMBER OF SAMPLES [1.]

8. MINIMUM [.] MAXIMUM [.]

9. STD. DEV. [.]

PERCENT AIR VOIDS

*10. MEAN [4.2 1 4] NUMBER OF SAMPLES [1.]

11. MINIMUM [.] MAXIMUM [.]

12. STD. DEV. [.]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 4.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.4]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4302.]

*16. NUMBER OF BLOWS [50]

ENTERED
JAN 22 1996
JN

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559) [1 2.]

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM 1561) [N.]

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 6]

*1. LAYER NUMBER (FROM SHEET 4) [2]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [N]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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By LLV

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [16]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-20-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-23-93]
*3. LAYER NUMBER [2] BTB

RECEIVED JAN 22 1996 By LU

*4. MIXING TEMPERATURE (°F) [270.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 245.
Minimum..... 221.
Standard Deviation... 10.1
Number of Tests ..... 81.
Maximum..... 269.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M	M	M	
24	Coverages	4.	4.	4.	
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F	E&F	
26	Coverages	12.	12.	12.	
	FINAL				
27	Roller Code (A-Q)	A	A	A	
28	Coverages	2	2.	2.	
29	Air Temperature (°F)	90	90	90.	
30	Compacted Thickness (In)	4.0	4.0	4.0	
31	Curing Period (Days)	1	1	5	

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 6]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	A	N	A	N
Number of Measurements	2 0	_ _	2 0	_ _
Average (pcf)	1 4 3.6	_ _ _._	1 4 6.7	_ _ _._
Maximum (pcf)	1 4 5.3	_ _ _._	1 4 8.7	_ _ _._
Minimum (pcf)	1 4 1.5	_ _ _._	1 4 4.8	_ _ _._
Standard Deviation (pcf)	_ _ 1.2	_ _ _._	_ _ 1.2	_ _ _._
Layer Number	_ 2	_ _	_ 3	_ _

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY _ 3 1 1 7
MOISTURE 6 1 6

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) _ N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) _._ N
Cutoff Height (Inches) _._ N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

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By LW

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [16]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0			12.1	3.7	
	36			11.8	3.6	
	72			12.1	3.7	
	108			13.3	3.6	
	144			13.1	3.8	
0+50	0			11.4	3.7	
	36			11.8	4.2	
	72			11.5	3.8	
	108			12.0	3.8	
	144			12.4	3.8	
1+00	0			11.5	4.8	
	36			11.8	3.7	
	72			11.4	3.7	
	108			12.2	3.7	
	144			12.6	3.7	
1+50	0			11.9	3.5	
	36			12.4	3.4	
	72			12.1	3.4	
	108			11.9	3.5	
	144			12.1	3.7	
2+00	0			11.5	3.6	
	36			11.6	3.4	
	72			11.4	3.5	
	108			11.8	3.7	
	144			12.1	3.8	
2+50	0			11.2	3.6	
	36			11.5	3.5	
	72			11.6	3.4	
	108			11.9	3.5	
	144			12.1	3.7	
3+00	0			11.5	3.7	
	36			11.4	3.8	
	72			11.5	3.6	
	108			11.9	3.8	
	144	ENTERED		11.9	3.8	
LAYER NUMBER[1]		JAN 22 1996		02	03	—

[1] from Sheet 4

By HW

PREPARER D. Fritz EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [16]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0			11.2	3.7	
	36			11.3	3.7	
	72			11.4	3.8	
	108			11.3	4.1	
	144			11.4	4.1	
4+00	0			11.3	3.5	
	36			11.6	3.5	
	72			11.6	3.5	
	108			11.6	3.7	
	144			11.8	3.8	
4+50	0			11.3	3.7	
	36			11.8	3.7	
	72			11.8	4.0	
	108			11.5	4.1	
	144			11.6	4.1	
5+00	0			11.6	3.7	
	36			11.8	3.7	
	72			11.8	3.8	
	108			11.8	4.0	
	144			12.0	4.1	
+						
+						
+						
LAYER NUMBER[1]		—	—	02	03	

[1] from Sheet 4

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PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 6]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2 - 1 7 - 9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 6 - 0 1 - 9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) (For Fill Sections Only) [8]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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By HV

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 6]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [3.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6. TOTAL WIDTH (FEET)	[4.]	[8.]
*7. PAVED WIDTH (FEET)	[4.]	[8.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[28.]	[28.]
9. SURFACE THICKNESS (INCHES)	[4. 0]	[4. 0]
10. SHOULDER BASE THICKNESS (INCHES)	[8. 0]	[8. 0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[. N]
12. SPACING OF LATERALS (FEET)		[N.]

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By HV

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[6 0]				
2	[0 ~~6~~5]	[2 3]	[4.3]	3.6	5.0	0.3
3	[0 5]	[2 8]	[7.7]	7.2	8.2	0.2
4	[0 3]	[0 1]	[3.7]	3.2	4.8	0.2
5	[ ]	[ ]	[.]	.	.	.
6	[ ]	[ ]	[.]	.	.	.
7	[ ]	[ ]	[.]	.	.	.
8	[ ]	[ ]	[.]	.	.	.
9	[ ]	[ ]	[.]	.	.	.
10	[ ]	[ ]	[.]	.	.	.
11	[ ]	[ ]	[.]	.	.	.
12	[ ]	[ ]	[.]	.	.	.
13	[ ]	[ ]	[.]	.	.	.
14	[ ]	[ ]	[.]	.	.	.
15	[ ]	[ ]	[.]	ENTERED		.

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) (Rock, Stone, Dense Shale) [4 .]

JAN 23 1996
By LV

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FERTH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

*1. LAYER NUMBER (FROM SHEET 4) AC - 3/4" [4]

		TYPE	PERCENT
	COMPOSITION OF COARSE AGGREGATE		
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]
	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9.	Coarse Aggregate (AASHTO T85 or ASTM C127)	[2.6 6 0]
*10.	Fine Aggregate (AASHTO T84 or ASTM C128)	[2.6 3 7]
*11.	Mineral Filler (AASHTO T100 or ASTM D854)	[_._ _ 4]
*12.	Aggregate Combination (Calculated)	[2.6 4 6]
13.	Effective Specific Gravity of Aggregate Combination (Calculated)	[2.6 6 9]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

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	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[_ 2 5._ _ _]
15.	Coarse	[— —]	[— — —._ _ _]
16.	Coarse	[— —]	[— — —._ _ _]
17.	Coarse and Fine - Combined	[— —]	[— — —._ _ _]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) _4.

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ N]	[_ 0.]

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

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11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.4 4 1]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.3 5 7] NUMBER OF TESTS [1.]

5. MINIMUM [.] MAXIMUM [.]

6. STD. DEV. [.]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6] NUMBER OF SAMPLES [1.]

8. MINIMUM [.] MAXIMUM [.]

9. STD. DEV. [.]

PERCENT AIR VOIDS

*10. MEAN [5.6] ENTERED NUMBER OF SAMPLES [1.]

11. MINIMUM [.] JAN 23 1996 MAXIMUM [.]

12. By HV STD. DEV. [.]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 5.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347.]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [1 3.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 7-2 1-9 3]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 8-0 5-9 3]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers		
Plant 1	[2]	FNF-ONSITE	[1]	[5]	[3]	[4]	[ ]
Plant 2	[ ]		[ ]	[ ]	[ ]	[ ]	[ ]
Plant 3	[ ]		[ ]	[ ]	[ ]	[ ]	[ ]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet) [1 4.0]

7. ATB PLACEMENT LIFTS
   - Layer Number [3]
   - Nominal First Lift Placement Thickness (Inches) [5.1]
   - Nominal Second Lift Placement Thickness (Inches) [5.0]
   - Nominal Third Lift Placement Thickness (Inches) [.N]
   - Nominal Fourth Lift Placement Thickness (Inches) [.N]

8. PATB PLACEMENT LIFTS
   - Layer Number [N]
   - Nominal First Lift Placement Thickness (Inches) [.N]
   - Nominal Second Lift Placement Thickness (Inches) [.N]

9. AC BINDER COURSE LIFT
   - Layer Number [N]
   - Nominal First Lift Placement Thickness (Inches) [.N]
   - Nominal Second Lift Placement Thickness (Inches) [.N]

10. AC SURFACE COURSE LIFT
    - Layer Number [4]
    - Nominal First Lift Placement Thickness (Inches) [2.7]
    - Nominal Second Lift Placement Thickness (Inches) [2.8]

11. SURFACE FRICTION COURSE (If Placed)
    - Layer Number [N]
    - Nominal Placement Thickness (Inches) [.N]

12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    - Binder Course [+ N]
    - Surface Course [+ N]
    - Surface Friction Course [+ N]

13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
    - Between lanes.. 1 Within lane.. 2
    - (specify offset from O/S feet) [6.0]

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BY JN

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

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [18]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-28-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [08-05-93]
*3. LAYER NUMBER [4] AC

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JAN 23 1996
W

*4. MIXING TEMPERATURE (°F) [280.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 248.
Minimum..... 211.
Standard Deviation... 9.5
Number of Tests ..... 47.
Maximum..... 261.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M	M		
24	Coverages	4.	4.		
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F		
26	Coverages	12.	12.		
	FINAL				
27	Roller Code (A-Q)	A	A		
28	Coverages	2.	2.		
29	Air Temperature (°F)	100	100.		
30	Compacted Thickness (In)	20	20		
31	Curing Period (Days)	1.	2		

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

*1. LAYER NUMBER (FROM SHEET 4) BTB [3]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[1 1.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[8 9.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.6 7 7]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.6 4 8]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [_._ _ 4]

*12. Aggregate Combination (Calculated) [2.6 6 3]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.7 0 0]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[_ 2 5._ _ _]
15.	Coarse	[_ _]	[_ _ _._ _ _]
16.	Coarse	[_ _]	[_ _ _._ _ _]
17.	Coarse and Fine - Combined	[_ _]	[_ _ _._ _ _]

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18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) _ _.

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

BTB

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ _]	[_ _.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ _]	[_ _.]

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

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12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

MIX DESIGN

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (AASHTO T209 OR ASTM D2041) [2.4 6 5]

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.4 0 5] NUMBER OF TESTS [_ 1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)

*7. MEAN [4.9 _ _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [4.2 1 4] ENTERED NUMBER OF SAMPLES [_ 1.]

11. MINIMUM [_._ _ _] JAN 23 1996 MAXIMUM [_._ _ _]

12. By _____ STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 4.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ 4.4]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4302._]

*16. NUMBER OF BLOWS [50]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559) [_ _ 1 2.]

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM 1561) [_ _ _ N.]

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [7 8]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [N]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [18]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-21-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-23-93]
*3. LAYER NUMBER [3] BTB

*4. MIXING TEMPERATURE (°F) [270.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 238.
Minimum..... 213.
Standard Deviation... 13.8
Number of Tests ..... 48.
Maximum..... 269.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M	M		
24	Coverages	4.	4.		
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F		
26	Coverages	12.	12.		
	FINAL				
27	Roller Code (A-Q)	A	A		
28	Coverages	2.	2.		
29	Air Temperature (°F)	90.	90.		
30	Compacted Thickness (In)	4.0	4.0		
31	Curing Period (Days)	1.	5.		

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PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	A	N	A	N
Number of Measurements	2 0	_ _	2 0	_ _
Average (pcf)	1 4 6.9	_ _ _._	1 4 7.5	_ _ _._
Maximum (pcf)	1 5 3.4	_ _ _._	1 4 9.8	_ _ _._
Minimum (pcf)	1 4 1.3	_ _ _._	1 4 5.3	_ _ _._
Standard Deviation (pcf)	_ _ 4.0	_ _ _._	_ _ 1.4	_ _ _._
Layer Number	_ 3	_ _	_ 4	_ _

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY _ 3 1 1 7
MOISTURE 6 1 6

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) _ N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) _._ N
Cutoff Height (Inches) _._ N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

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JAN 23 1996
By HW

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [18]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0	4.3		7.8	3.8	
	36	4.3		6.0	3.5	
	72	4.3		7.8	3.7	
	108	4.3		7.8	3.5	
	144	3.8		6.2	4.8	
0+50	0	4.4		7.3	3.7	
	36	4.3		7.4	3.7	
	72	4.1		7.3	3.7	
	108	4.0		7.2	4.1	
	144	3.6		7.7	4.1	
1+00	0	4.8		7.7	3.8	
	36	4.8		7.6	3.7	
	72	4.2		7.9	3.7	
	108	4.3		6.2	3.2	
	144	4.6		7.7	3.7	
1+50	0	4.6		7.9	3.5	
	36	4.6		7.8	3.5	
	72	4.6		7.7	3.7	
	108	4.1		6.2	3.7	
	144	4.3		7.9	3.7	
2+00	0	4.4		7.7	3.8	
	36	4.1		7.6	3.7	
	72	3.7		6.0	3.1	
	108	3.8		7.6	3.8	
	144	3.6		7.9	4.6	
2+50	0	4.4		7.6	3.7	
	36	4.1		7.6	3.6	
	72	4.1		7.4	3.6	
	108	4.3		7.7	3.6	
	144	4.1		7.7	3.7	
3+00	0	4.4		7.8	3.6	
	36	4.3		7.8	3.6	
	72	4.7		7.3	3.8	
	108	4.6		7.6	3.6	
	144	4.7		7.4	3.5	
LAYER NUMBER[1]		02		03	04	

[1] from Sheet 4

ENTERED JAN 23 1996

PREPARER D. FRITH By EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [18]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0	5.0		7.4	3.7	
	36	4.7		7.7	3.6	
	72	4.6		7.7	3.7	
	108	4.3		7.7	4.0	
	144	4.6		7.8	4.1	
4+00	0	4.1		7.7	3.8	
	36	3.8		7.8	3.7	
	72	4.1		7.8	3.7	
	108	4.3		7.6	4.0	
	144	4.7		7.6	4.0	
4+50	0	3.8		8.0	3.7	
	36	4.1		7.8	3.8	
	72	4.3		7.7	3.8	
	108	4.0		7.8	3.8	
	144	4.1		7.9	4.0	
5+00	0	3.6		7.9	3.6	
	36	4.0		7.6	3.6	
	72	4.1		7.7	3.4	
	108	4.7		7.4	3.5	
	144	4.4		7.6	3.6	
+						
+						
+						
LAYER NUMBER[1]		02	—	03	04	—

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[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [18]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [06-07-93]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [06-21-93]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [1]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 _____

*5. GROSS WEIGHT (TONS) [25.0]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [5]
Nominal Second Lift Placement Thickness (inches) [--]
Nominal Third Lift Placement Thickness (inches) [--]
Nominal Fourth Lift Placement Thickness (inches) [--]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2-1 7-9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 6-2 1-9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 8]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [1.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [6.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA

		INSIDE SHOULDER	OUTSIDE SHOULDER
*5.	SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6.	TOTAL WIDTH (FEET)	[4.]	[8.]
*7.	PAVED WIDTH (FEET)	[4.]	[8.]
8.	SHOULDER BASE TYPE (CODES-TABLE A.6)	[28.]	[28.]
9.	SURFACE THICKNESS (INCHES)	[4.0]	[4.0]
10.	SHOULDER BASE THICKNESS (INCHES)	[4.0]	[4.0]
11.	DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[4.0]
12.	SPACING OF LATERALS (FEET)		[225.]

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JAN 23 1996
BY _____

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[5 9]	[redacted]	[redacted]	[redacted]	[redacted]
2	[0 ~~6~~ 5]	[3 1]	[4.6]	4.3	5.4	0.4
3	[0 5]	[2 8]	[4.3]	3.8	4.6	0.3
4	[0 3]	[0 1]	[4.0]	3.0	4.7	0.3
5	[ ]	[ ]	[.]	.	.	.
6	[ ]	[ ]	[.]	.	.	.
7	[ ]	[ ]	[.]	.	.	.
8	[ ]	[ ]	[.]	.	.	.
9	[ ]	[ ]	[.]	.	.	.
10	[ ]	[ ]	[.]	.	.	.
11	[ ]	[ ]	[.]	.	.	.
12	[ ]	[ ]	[.]	.	.	.
13	[ ]	[ ]	[.]	.	.	.
14	[ ]	[ ]	[.]	.	.	.
15	[ ]	[ ]	[.]	.	.	.

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*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) (Rock, Stone, Dense Shale) [4 .]

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

ATB - L - P
AC G - U

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM SHEET 4) AC – 3/4" [5]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.660]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.637]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [—.—4]

*12. Aggregate Combination (Calculated) [2.646]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.669]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[2 5.— — —]
15.	Coarse	[— —]	[— — —.— — —]
16.	Coarse	[— —]	[— — —.— — —]
17.	Coarse and Fine - Combined	[— —]	[— — —.— — —]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) 4.

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM SHEET 4) [5]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ N]	[_ 0.]

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT AT 39.2°f (CM/MIN) [_ _ _.]

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM SHEET 4) [5]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.4 4 1]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.3 5 7] NUMBER OF TESTS [_ 1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6 _ _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [5.6 _ _] NUMBER OF SAMPLES [_ 1.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 5.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ 4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347._]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ 1 3.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER-VALUE (GRAMS/25 MM OF WIDTH) [_._ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM SHEET 4) [5]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [_._ _ N]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ N] NUMBER OF TESTS [_ N.]

5. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

6. STD. DEV. [_._ _ N]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.3 4 _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

9. STD. DEV. [_._ _ N]

PERCENT AIR VOIDS

*10. MEAN [_._ _ N] NUMBER OF SAMPLES [_ N.]

11. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

12. STD. DEV. [_._ _ N]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _ N]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _ N]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _ N]

*16. NUMBER OF BLOWS [_ N]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ _ N.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM SHEET 4) [5]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 7-1 4-9 3]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 8-0 5-9 3]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers
Plant 1	[2]	FNF-ONSITE	[_ _ 1]	[_ 5]	[3] [4] [5]
Plant 2	[_]	_____	[_ _ _]	[_ _]	[_] [_] [_]
Plant 3	[_]	_____	[_ _ _]	[_ _]	[_] [_] [_]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet) [1 4.0]

7. ATB PLACEMENT LIFTS
   - Layer Number [_ 4]
   - Nominal First Lift Placement Thickness (Inches) [5.0]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]
   - Nominal Third Lift Placement Thickness (Inches) [_.N]
   - Nominal Fourth Lift Placement Thickness (Inches) [_.N]

8. PATB PLACEMENT LIFTS
   - Layer Number [_ 3]
   - Nominal First Lift Placement Thickness (Inches) [5.1]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]

9. AC BINDER COURSE LIFT
   - Layer Number [_ N]
   - Nominal First Lift Placement Thickness (Inches) [_.N]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]

10. AC SURFACE COURSE LIFT
    - Layer Number [_ 5]
    - Nominal First Lift Placement Thickness (Inches) [2.8]
    - Nominal Second Lift Placement Thickness (Inches) [2.8]

11. SURFACE FRICTION COURSE (If Placed)
    - Layer Number [_ N]
    - Nominal Placement Thickness (Inches) [_.N]

12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    - Binder Course [_ + _ N]
    - Surface Course [_ + _ N]
    - Surface Friction Course [_ + _ N]

13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
    - Between lanes.. 1 Within lane.. 2
    - (specify offset from O/S feet) [_ 6.0]

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

PREPARER D. Frith EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [22]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-28-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [08-05-93]
*3. LAYER NUMBER [5] AC

*4. MIXING TEMPERATURE (°F) [280.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 241.
Minimum..... 224.
Standard Deviation... 6.1
Number of Tests ..... 40.
Maximum..... 259.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M			
24	Coverages	4.			
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F			
26	Coverages	12.			
	FINAL				
27	Roller Code (A-Q)	A			
28	Coverages	2.			
29	Air Temperature (°F)	90.	100		
30	Compacted Thickness (In)	20	20		
31	Curing Period (Days)	1.	2		

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM SHEET 4) BTB [4]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[1 1.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[8 9.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.6 7 7]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.6 4 8]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [—.— — 4]

*12. Aggregate Combination (Calculated) [2.6 6 3]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.7 0 0]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[— 2 5.— — —]
15.	Coarse	[— —]	[— — —.— — —]
16.	Coarse	[— —]	[— — —.— — —]
17.	Coarse and Fine - Combined	[— —]	[— — —.— — —]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) — —.

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By LV

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

BTB

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ _]	[_ _.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ _]	[_ _.]

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

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12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

MIX DESIGN

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.4 6 5]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.4 0 5] NUMBER OF TESTS [1.]

5. MINIMUM [.] MAXIMUM [.]

6. STD. DEV. [.]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.9] NUMBER OF SAMPLES [1.]

8. MINIMUM [.] MAXIMUM [.]

9. STD. DEV. [.]

PERCENT AIR VOIDS

*10. MEAN [4.2 1 4] NUMBER OF SAMPLES [1.]

11. MINIMUM [.] MAXIMUM [.]

12. STD. DEV. [.]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 4.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.4]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4302.]

*16. NUMBER OF BLOWS [50]

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BY LN

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [1 2.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [N]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

ENTERED
JAN 23 1996
By LN

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [22]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-23-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-23-93]
*3. LAYER NUMBER [4] BTB

*4. MIXING TEMPERATURE (°F) [270.]

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By LW

5. LAYDOWN TEMPERATURES (°F)
Mean..... 237.
Minimum..... 212
Standard Deviation... 10.1
Number of Tests ..... 17.
Maximum..... 254.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	u	u
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				
23	Roller Code (A-Q)	M			
24	Coverages	4.			
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F			
26	Coverages	12.			
	FINAL				
27	Roller Code (A-Q)	A			
28	Coverages	2.			
29	Air Temperature (°F)	90.			
30	Compacted Thickness (In)	4.0			
31	Curing Period (Days)	9.			

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM SHEET 4) PBTB [3]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[__]	[__ __ __.]
*4.	Other (Specify)... 6 _____	[__]	[__ __ __.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[2]	[1 0 0.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[__]	[__ __ __.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[__]	[__ __ __.]

*8. TYPE OF MINERAL FILLER [N]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [__.__ __ U]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [__.__ __ U]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [__.__ __ N]

*12. Aggregate Combination (Calculated) [__.__ __ U]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [__.__ __ U]

ENTERED
JAN 23 1996
By _____

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[__ __]	[__ __ __.__ __ __]
15.	Coarse	[__ __]	[__ __ __.__ __ __]
16.	Coarse	[__ __]	[__ __ __.__ __ __]
17.	Coarse and Fine - Combined	[__ __]	[__ __ __.__ __ __]

18. POLISH VALUE OF COARSE AGGREGATES __ __.
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [22]

*1. LAYER NUMBER (FROM SHEET 4) PBTB [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [05]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [09]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.044]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [__2966.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_403.__]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [__56.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[__]	[__.]
9.	MODIFIER #2	[__]	[__.]

(IF OTHER, SPECIFY) _____

ENTERED
JAN 23 1996
By LW

10. DUCTILITY AT 77°F (CM) [___.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [___.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [___.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [___.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [___.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (AASHTO T209 OR ASTM D2041) [_._ _ N]

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ N] NUMBER OF TESTS [_ N.]

5. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

6. STD. DEV. [_._ _ N]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)

*7. MEAN [2.7 1 _] NUMBER OF SAMPLES [_ 4.]

8. MINIMUM [2.4 5 _] MAXIMUM [2.8 9 _]

9. STD. DEV. [0.2 2 _]

PERCENT AIR VOIDS

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By

*10. MEAN [_._ _ N] NUMBER OF SAMPLES [_ N.]

11. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

12. STD. DEV. [_._ _ N]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _.N]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _.N]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _.N]

*16. NUMBER OF BLOWS [_ N]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559) [_ _ _ N.]

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM 1561) [_ _ _ N.]

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [__ __]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [__]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [__ __.__]

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By: LW

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

PBTB

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [22]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-14-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-14-93]
*3. LAYER NUMBER [3]

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By 4W

*4. MIXING TEMPERATURE (°F) [240.]

5. LAYDOWN TEMPERATURES (°F)
   Mean..... 199.
   Minimum..... 231.
   Standard Deviation... 26.0
   Number of Tests ..... 24.
   Maximum..... 158.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired					
11	F	Pneumatic-Tired					
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
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				
23	Roller Code (A-Q)	A			
24	Coverages	1.			
	INTERMEDIATE				
25	Roller Code (A-Q)	A			
26	Coverages	1.			
	FINAL				
27	Roller Code (A-Q)	A			
28	Coverages	1.			
29	Air Temperature (°F)	85.			
30	Compacted Thickness (In)	4 0			
31	Curing Period (Days)	8.			

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	A	N	A	N
Number of Measurements	20		20	
Average (pcf)	149.9		146.6	
Maximum (pcf)	152.9		149.7	
Minimum (pcf)	148.2		143.7	
Standard Deviation (pcf)	1.5		1.8	
Layer Number	4		5	

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY 3117
MOISTURE 616

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) N
Cutoff Height (Inches) N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

ENTERED
JAN 23 1996
BY

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [27]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0				4.0	
	36				3.8	
	72				4.4	
	108				4.0	
	144				4.0	
0+50	0				3.8	
	36				3.7	
	72				3.7	
	108				3.5	
	144				3.5	
1+00	0				3.8	
	36				3.8	
	72				3.8	
	108				4.1	
	144				4.1	
1+50	0				3.7	
	36				3.7	
	72				3.8	
	108				3.8	
	144				3.7	
2+00	0				4.0	
	36				4.4	
	72				4.0	
	108				3.4	
	144				4.0	
2+50	0				3.8	
	36				3.8	
	72				4.3	
	108				3.8	
	144				3.7	
3+00	0				4.2	
	36				4.1	
	72				4.1	
	108				4.0	
	144				3.7	
LAYER NUMBER[1]			02	03	04	

ENTERED JAN 23 1996

[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0				4.3	
	36				4.1	
	72				4.2	
	108				4.7	
	144				4.6	
4+00	0				4.7	
	36				4.3	
	72				4.3	
	108				4.0	
	144				3.7	
4+50	0		4.4	4.2	4.2	
	36		4.3	4.2	4.1	
	72		4.3	4.6	3.8	
	108		4.8	4.1	3.0	
	144		4.6	4.2	3.6	
5+00	0		4.4	4.3	4.2	
	36		4.3	4.6	4.1	
	72		4.3	4.6	3.8	
	108		4.9	4.1	3.8	
	144		5.4	3.8	4.0	
+						
+						
+						
LAYER NUMBER[1]			02	03	04	

[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

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SPS-1 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [_ _-_ _-9 3] ?

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [_ _-_ _-9 3]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [1]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 _____

*5. GROSS WEIGHT (TONS) [2 5.0]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [_ 6]
Nominal Second Lift Placement Thickness (inches) [_ _]
Nominal Third Lift Placement Thickness (inches) [_ _]
Nominal Fourth Lift Placement Thickness (inches) [_ _]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) SECTION IS IMMEDIATELY INFRONT OF HOT PLANT- SUBBASE PLACED DUE TO TURNING TRUCKS.

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2-1 7-9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 6-0 1-9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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BY LN

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 2]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [1.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [6.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

	SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5.	SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6.	TOTAL WIDTH (FEET)	[4.]	[8.]
*7.	PAVED WIDTH (FEET)	[4.]	[8.]
8.	SHOULDER BASE TYPE (CODES-TABLE A.6)	[3 1.]	[3 1.]
9.	SURFACE THICKNESS (INCHES)	[4. 0]	[4. 0]
10.	SHOULDER BASE THICKNESS (INCHES)	[4. 0]	[4. 0]
11.	DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[4. 0]
12.	SPACING OF LATERALS (FEET)		[2 2 5.]

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By JLV

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[6 1]				
2	[0 6 15 ™]	[2 3]	[12.2]	11.4	13.2	0.4
3	[0 5]	[3 1]	[4.2]	3.4	4.8	0.3
4	[0 3]	[0 1]	[4.2]	3.7	4.7	0.3
5	[ ]	[ ]	[.]	.	.	.
6	[ ]	[ ]	[.]	.	.	.
7	[ ]	[ ]	[.]	.	.	.
8	[ ]	[ ]	[.]	.	.	.
9	[ ]	[ ]	[.]	.	.	.
10	[ ]	[ ]	[.]	.	.	.
11	[ ]	[ ]	[.]	.	.	.
12	[ ]	[ ]	[.]	.	.	.
13	[ ]	[ ]	[.]	.	.	.
14	[ ]	[ ]	[.]	.	.	.
15	[ ]	[ ]	[.]	.	.	.

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By LH

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) (Rock, Stone, Dense Shale) [4 .]

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. LAYER NUMBER (FROM SHEET 4) AC - 3/4" [4]

		TYPE	PERCENT
	COMPOSITION OF COARSE AGGREGATE		
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]
	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.660]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.637]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [.4]

*12. Aggregate Combination (Calculated) [2.646]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.669]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

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	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[2 5.]
15.	Coarse	[— —]	[— —.]
16.	Coarse	[— —]	[— —.]
17.	Coarse and Fine - Combined	[— —]	[— —.]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) 4.

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT (AASHTO T228) [1.0 4 4]

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) (AASHTO T202) [_ _ 2 9 6 6.]

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) (AASHTO T202) [_ 4 0 3._ _]

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) (100 g., 5 sec.) [_ _ 5 6.]

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ N]	[_ 0.]
10.	DUCTILITY AT 77°F (CM) (AASHTO T51)		[_ _ _.]
11.	DUCTILITY AT 39.2°F (CM) (AASHTO T51)		[_ _ _.]
12.	TEST RATE FOR DUCTILITY MEASUREMENT AT 39.2°f (CM/MIN)		[_ _ _.]
13.	PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) (200 g., 60 sec.)		[_ _ _.]
14.	RING AND BALL SOFTENING POINT (AASHTO T53) (°F)		[_ _ _.]

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BY HN

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.4 4 1]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.3 5 7] NUMBER OF TESTS [_ 1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6 _ _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

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By HN

PERCENT AIR VOIDS

*10. MEAN [5.6 _ _] NUMBER OF SAMPLES [_ 1.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 5.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ 4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347._]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ 1 3.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [_._ _ N]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ N] NUMBER OF TESTS [_ N.]

5. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

6. STD. DEV. [_._ _ N]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.5 3 _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

9. STD. DEV. [_._ _ N]

PERCENT AIR VOIDS

*10. MEAN [_._ _ N] NUMBER OF SAMPLES [_ N.]

11. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

12. STD. DEV. [_._ _ N]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _.N]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _.N]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _.N]

*16. NUMBER OF BLOWS [_ N]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ _ N.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

ENTERED
JAN 23 1996
By HW

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 7-1 4-9 3]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 8-0 5-9 3]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers
Plant 1	[2]	FNF-ONSITE	[_ _ 1]	[_ 5]	[3] [4] [_]
Plant 2	[_]	_____	[_ _ _]	[_ _]	[_] [_] [_]
Plant 3	[_]	_____	[_ _ _]	[_ _]	[_] [_] [_]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet) [1 4.0]

7. ATB PLACEMENT LIFTS
   - Layer Number [_ N]
   - Nominal First Lift Placement Thickness (Inches) [_.N]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]
   - Nominal Third Lift Placement Thickness (Inches) [_.N]
   - Nominal Fourth Lift Placement Thickness (Inches) [_.N]

8. PATB PLACEMENT LIFTS
   - Layer Number [_ 3]
   - Nominal First Lift Placement Thickness (Inches) [5.2]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]

9. AC BINDER COURSE LIFT
   - Layer Number [_ N]
   - Nominal First Lift Placement Thickness (Inches) [_.N]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]

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10. AC SURFACE COURSE LIFT
    - Layer Number [_ 4]
    - Nominal First Lift Placement Thickness (Inches) [3.0]
    - Nominal Second Lift Placement Thickness (Inches) [2.8]

11. SURFACE FRICTION COURSE (If Placed)
    - Layer Number [_ N]
    - Nominal Placement Thickness (Inches) [_.N]

12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    - Binder Course [_ + _ N]
    - Surface Course [_ + _ N]
    - Surface Friction Course [_ + _ N]

13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
    - Between lanes.. 1 Within lane.. 2
    - (specify offset from O/S feet) [_ 6.0]

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

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 7-2 8-9 3]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 8-0 5-9 3]
*3. LAYER NUMBER [4] AC

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*4. MIXING TEMPERATURE (°F) [2 8 0.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 2 3 9.
Minimum..... 2 2 2.
Standard Deviation... 7.4
Number of Tests ..... 4 4.
Maximum..... 2 5 0.

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 2.3				
7	B	Steel-Whl Tandem	.				
8	C	Steel-Whl Tandem	.				
9	D	Steel-Whl Tandem	.				
10	E	Pneumatic-Tired	2 5.0	9 0.			
11	F	Pneumatic-Tired	1 8.0	1 0 0.			
12	G	Pneumatic-Tired	.	.			
13	H	Pneumatic-Tired	.	.			
14	I	Single-Drum Vibr.	.		.	.	.
15	J	Single-Drum Vibr.	.		.	.	.
16	K	Single-Drum Vibr.	.		.	.	.
17	L	Single-Drum Vibr.	.		.	.	.
18	M	Double-Drum Vibr.	1 2.3		2 4 0 0.	. U	. U
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				
23	Roller Code (A-Q)	M	M		
24	Coverages	4.	4.	.	.
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F		
26	Coverages	1 2.	1 2.	.	.
	FINAL				
27	Roller Code (A-Q)	A	A		
28	Coverages	2.	2.	.	.
29	Air Temperature (°F)	1 0 0	1 0 0	.	.
30	Compacted Thickness (In)	2 0	2 0	.	.
31	Curing Period (Days)	1.	2		.

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. LAYER NUMBER (FROM SHEET 4) PBTB [3]

		TYPE	PERCENT
	COMPOSITION OF COARSE AGGREGATE		
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[__]	[__ __ __.]
*4.	Other (Specify)... 6 _____	[__]	[__ __ __.]
	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[2]	[1 0 0.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[__]	[__ __ __.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[__]	[__ __ __.]

*8. TYPE OF MINERAL FILLER [N]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [__.__ __ U]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [__.__ __ U]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [__.__ __ N]

*12. Aggregate Combination (Calculated) [__.__ __ U]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [__.__ __ U]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[__ __]	[__ __ __.__ __ __]
15.	Coarse	[__ __]	[__ __ __.__ __ __]
16.	Coarse	[__ __]	[__ __ __.__ __ __]
17.	Coarse and Fine - Combined	[__ __]	[__ __ __.__ __ __]

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18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) __ __.

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. LAYER NUMBER (FROM SHEET 4) PBTB [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ _]	[_ _.]
9.	MODIFIER #2	[_ _]	[_ _.]

(IF OTHER, SPECIFY) _____

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

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12. TEST RATE FOR DUCTILITY MEASUREMENT AT 39.2°f (CM/MIN) [_ _ _.]

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [_._ _ N]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ N] NUMBER OF TESTS [_ N.]

5. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

6. STD. DEV. [_._ _ N]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [_._ _ _] NUMBER OF SAMPLES [_ _.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

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PERCENT AIR VOIDS

*10. MEAN [_._ _ N] NUMBER OF SAMPLES [_ N.]

11. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

12. STD. DEV. [_._ _ N]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _.N]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _.N]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _.N]

*16. NUMBER OF BLOWS [_ N]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ _ N.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [__ __]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [__]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [__ __.__]

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PBTB

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 7 - 1 4 - 9 3]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 7 - 1 4 - 9 3]
*3. LAYER NUMBER [3]

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*4. MIXING TEMPERATURE (°F) [2 4 0.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 1 9 8.
Minimum..... 1 5 7.
Standard Deviation... 2 3.5
Number of Tests ..... 2 5.
Maximum..... 2 2 3.

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 2.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired					
11	F	Pneumatic-Tired					
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
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				
23	Roller Code (A-Q)	A			
24	Coverages	1.			
	INTERMEDIATE				
25	Roller Code (A-Q)	A			
26	Coverages	1.			
	FINAL				
27	Roller Code (A-Q)	A			
28	Coverages	1.			
29	Air Temperature (°F)	9 0.			
30	Compacted Thickness (In)	4 0			
31	Curing Period (Days)	1 4.			

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	N	N	A	N
Number of Measurements	__ __	__ __	2 0	__ __
Average (pcf)	__ __ __.__	__ __ __.__	1 4 8.3	__ __ __.__
Maximum (pcf)	__ __ __.__	__ __ __.__	1 5 0.7	__ __ __.__
Minimum (pcf)	__ __ __.__	__ __ __.__	1 4 5.2	__ __ __.__
Standard Deviation (pcf)	__ __ __.__	__ __ __.__	__ 1.4	__ __ __.__
Layer Number	__ __	__ __	__ 4	__ __

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY 3 1 1 7
MOISTURE 6 1 6

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) __ N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) __.__ N
Cutoff Height (Inches) __.__ N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

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PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [21]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0	12.2	4.3		4.6	
	36	12.1	4.4		4.3	
	72	11.9	4.4		4.2	
	108	12.2	4.4		3.7	
	144	12.4	4.6		3.8	
0+50	0	12.7	4.2		4.4	
	36	12.5	4.1		4.3	
	72	12.1	4.4		4.0	
	108	12.0	4.3		3.8	
	144	11.8	4.2		4.0	
1+00	0	12.5	4.4		4.2	
	36	12.4	4.8		4.0	
	72	13.1	4.4		4.2	
	108	13.2	4.3		3.8	
	144	13.0	4.1		4.2	
1+50	0	12.1	4.6		4.3	
	36	12.4	4.8		3.8	
	72	12.1	4.3		4.0	
	108	12.0	4.4		3.7	
	144	12.5	3.7		4.1	
2+00	0	12.8	4.2		4.7	
	36	12.7	4.6		4.3	
	72	12.6	4.6		4.0	
	108	12.5	4.4		3.8	
	144	12.6	4.0		4.0	
2+50	0	12.4	4.1		4.6	
	36	12.6	4.0		4.4	
	72	12.8	3.7		4.4	
	108	12.7	3.7		3.7	
	144	12.4	3.7		4.1	
3+00	0	11.6	4.2		4.7	
	36	11.9	4.1		4.3	
	72	12.0	3.6		4.3	
	108	11.9	3.4		4.4	
	144	11.9	3.5		4.3	
LAYER NUMBER[1]		02	03	—	04	—

[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

By: LW

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0	11.9	3.6		4.6	
	36	11.9	3.8		4.2	
	72	11.8	3.6		4.2	
	108	12.0	3.4		4.1	
	144	11.6	3.5		4.1	
4+00	0	11.4	4.3		4.2	
	36	11.5	4.6		4.1	
	72	11.4	4.4		4.0	
	108	11.5	4.3		3.7	
	144	12.1	4.2		4.2	
4+50	0	12.2	4.1		4.6	
	36	12.0	4.4		4.2	
	72	12.2	4.3		4.1	
	108	12.4	4.4		4.1	
	144	12.6			4.2	
5+00	0	11.8	4.3			
	36	12.2	4.3			
	72	12.4	4.3			
	108	12.6	4.3			
	144	12.8	3.8			
+						
+						
+						
LAYER NUMBER[1]		02	03	—	04	—

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[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [0 6-0 7-9 3]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [0 6-2 9-9 3]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [1]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 _____

*5. GROSS WEIGHT (TONS) [2 5.0]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [_ 7]
Nominal Second Lift Placement Thickness (inches) [_ 7]
Nominal Third Lift Placement Thickness (inches) [_ _]
Nominal Fourth Lift Placement Thickness (inches) [_ _]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2-1 7-9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 6-0 1-9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 1]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [1.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [6.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

	SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5.	SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6.	TOTAL WIDTH (FEET)	[4.]	[8.]
*7.	PAVED WIDTH (FEET)	[4.]	[8.]
8.	SHOULDER BASE TYPE (CODES-TABLE A.6)	[3 1.]	[3 1.]
9.	SURFACE THICKNESS (INCHES)	[4. 0]	[4. 0]
10.	SHOULDER BASE THICKNESS (INCHES)	[4. 0]	[4. 0]
11.	DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[4. 0]
12.	SPACING OF LATERALS (FEET)		[2 2 5.]

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By HV

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[5 7]				
2	[0 ~~6~~ 5] (T)	[2 3]	[_ _7.3]	_ _6.1	_ _8.8	_ _0.6
3	[0 5]	[3 1]	[_ _4.3]	_ _3.0	_ _4.9	_ _0.4
4	[0 3]	[0 1]	[_ _4.2]	_ _3.6	_ _5.2	_ _0.3
5	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
6	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
7	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
8	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
9	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
10	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
11	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
12	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
13	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
14	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
15	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._

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By LW

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) (Rock, Stone, Dense Shale) [_ 4 . _]

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

*1. LAYER NUMBER (FROM SHEET 4) AC – 3/4" [4]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[ ]	[.]
*4.	Other (Specify)... 6 _____	[ ]	[.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[ ]	[.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.660]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.637]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [. 4]

*12. Aggregate Combination (Calculated) [2.646]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.669]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[2 5.]
15.	Coarse	[ ]	[.]
16.	Coarse	[ ]	[.]
17.	Coarse and Fine - Combined	[ ]	[.]

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18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) 4.

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ N]	[_ 0.]

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

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By _____

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.4 4 1]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.3 5 7] NUMBER OF TESTS [_ 1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6 _ _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [5.6 _ _] NUMBER OF SAMPLES [_ 1.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

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BY LV

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 5.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ 4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347._]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ 1 3.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [_._ _ N]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ N] NUMBER OF TESTS [_ N.]

5. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

6. STD. DEV. [_._ _ N]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [5.0 2 _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

9. STD. DEV. [_._ _ N]

PERCENT AIR VOIDS

*10. MEAN [_._ _ N] NUMBER OF SAMPLES [_ N.]

11. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

12. STD. DEV. [_._ _ N]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _.N]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _.N]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _.N]

*16. NUMBER OF BLOWS [_ N]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ _ N.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

*1. LAYER NUMBER (FROM SHEET 4) [4]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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JAN 23 1996
By _____

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 7-1 4-9 3]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 8-0 5-9 3]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers
Plant 1	[2]	FNF-ONSITE	[_ _ _]	[_ 5]	[3] [4] [_]
Plant 2	[_]	_____	[_ _ _]	[_ _]	[_] [_] [_]
Plant 3	[_]	_____	[_ _ _]	[_ _]	[_] [_] [_]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet) [1 4.0]

7. ATB PLACEMENT LIFTS
   - Layer Number [_ N]
   - Nominal First Lift Placement Thickness (Inches) [_.N]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]
   - Nominal Third Lift Placement Thickness (Inches) [_.N]
   - Nominal Fourth Lift Placement Thickness (Inches) [_.N]

8. PATB PLACEMENT LIFTS
   - Layer Number [_ 3]
   - Nominal First Lift Placement Thickness (Inches) [5.2]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]

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By LW

9. AC BINDER COURSE LIFT
   - Layer Number [_ N]
   - Nominal First Lift Placement Thickness (Inches) [_.N]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]

10. AC SURFACE COURSE LIFT
    - Layer Number [_ 4]
    - Nominal First Lift Placement Thickness (Inches) [2.9]
    - Nominal Second Lift Placement Thickness (Inches) [2.8]

11. SURFACE FRICTION COURSE (If Placed)
    - Layer Number [_ N]
    - Nominal Placement Thickness (Inches) [_.N]

12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    - Binder Course [_ + _ N]
    - Surface Course [_ + _ N]
    - Surface Friction Course [_ + _ N]

13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
    - Between lanes.. 1 Within lane.. 2
    - (specify offset from O/S feet) [_ 6.0]

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

PREPARER D. Fritz EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 7-2 8-9 3]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 8-0 5-9 3]
*3. LAYER NUMBER [4] AC

ENTERED
JAN 23 1996
BY W

*4. MIXING TEMPERATURE (°F) [2 8 0.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 2 3 9.
Minimum..... 2 1 7.
Standard Deviation... 8.9
Number of Tests ..... 6 0.
Maximum..... 2 5 7.

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 2.3				
7	B	Steel-Whl Tandem	.				
8	C	Steel-Whl Tandem	.				
9	D	Steel-Whl Tandem	.				
10	E	Pneumatic-Tired	2 5.0	9 0.			
11	F	Pneumatic-Tired	1 8.0	1 0 0.			
12	G	Pneumatic-Tired	.	.			
13	H	Pneumatic-Tired	.	.			
14	I	Single-Drum Vibr.	.		.	.	.
15	J	Single-Drum Vibr.	.		.	.	.
16	K	Single-Drum Vibr.	.		.	.	.
17	L	Single-Drum Vibr.	.		.	.	.
18	M	Double-Drum Vibr.	1 2.3		2 4 0 0.	. u	. u
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				
23	Roller Code (A-Q)	M	M		
24	Coverages	4.	4.	.	.
	INTERMEDIATE				
25	Roller Code (A-Q)	E & F	E & F		
26	Coverages	1 2.	1 2.	.	.
	FINAL				
27	Roller Code (A-Q)	A	A		
28	Coverages	2.	2	.	.
29	Air Temperature (°F)	9 0	1 0 0.	.	.
30	Compacted Thickness (In)	2 0	2 0	.	.
31	Curing Period (Days)	1	2	.	.

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

*1. LAYER NUMBER (FROM SHEET 4) PBTB [3]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[__]	[__ __ __.]
*4.	Other (Specify)... 6 _____	[__]	[__ __ __.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[2]	[1 0 0.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[__]	[__ __ __.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[__]	[__ __ __.]

*8. TYPE OF MINERAL FILLER [4]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [__.__ __ 4]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [__.__ __ 4]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [__.__ __ N]

*12. Aggregate Combination (Calculated) [__.__ __ 4]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [__.__ __ 4]

ENTERED
JAN 23 1996
BY: [illegible]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[__ __]	[__ __ __.__ __ __]
15.	Coarse	[__ __]	[__ __ __.__ __ __]
16.	Coarse	[__ __]	[__ __ __.__ __ __]
17.	Coarse and Fine - Combined	[__ __]	[__ __ __.__ __ __]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [20]

*1. LAYER NUMBER (FROM SHEET 4) PBTB [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [05]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [09]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.044]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [__2966.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_403.__]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [__56.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[__ __]	[__ __.]
9.	MODIFIER #2	[__ __]	[__ __.]

(IF OTHER, SPECIFY) _____

10. DUCTILITY AT 77°F (CM) [__ __ __.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [__ __ __.]
(AASHTO T51)

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JAN 23 1996
By LW

12. TEST RATE FOR DUCTILITY MEASUREMENT [__ __ __.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [__ __ __.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [__ __ __.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [2]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [_._ _ N]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ N] NUMBER OF TESTS [_ N.]

5. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

6. STD. DEV. [_._ _ N]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [2.7 1 _] NUMBER OF SAMPLES [_ 4.]

8. MINIMUM [2.4 5 _] MAXIMUM [2.8 9 _]

9. STD. DEV. [0.2 2 _]

ENTERED
JAN 23 1996
BY

PERCENT AIR VOIDS

*10. MEAN [_._ _ N] NUMBER OF SAMPLES [_ N.]

11. MINIMUM [_._ _ N] MAXIMUM [_._ _ N]

12. STD. DEV. [_._ _ N]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [_ _.N]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ _.N]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [_ _ _.N]

*16. NUMBER OF BLOWS [_ N]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ _ N.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [__ __]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [__]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [__ __.__]

ENTERED
JAN 23 1996
BY UU

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

December 1991

PBTB

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [20]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-14-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-14-93]
*3. LAYER NUMBER [3]

*4. MIXING TEMPERATURE (°F) [240.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 209.
Minimum..... 174.
Standard Deviation... 11.8
Number of Tests ..... 37.
Maximum..... 220.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired					
11	F	Pneumatic-Tired					
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
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				
23	Roller Code (A-Q)	A			
24	Coverages	1.			
	INTERMEDIATE				
25	Roller Code (A-Q)	A			
26	Coverages	1.			
	FINAL				
27	Roller Code (A-Q)	A			
28	Coverages	1.			
29	Air Temperature (°F)	90.			
30	Compacted Thickness (In)	4.0			
31	Curing Period (Days)	14.			

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W

PREPARER D. FEITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	N	N	A	N
Number of Measurements	__ __	__ __	2 0	__ __
Average (pcf)	__ __ __.__	__ __ __.__	1 4 6.8	__ __ __.__
Maximum (pcf)	__ __ __.__	__ __ __.__	1 4 8.7	__ __ __.__
Minimum (pcf)	__ __ __.__	__ __ __.__	1 4 3.1	__ __ __.__
Standard Deviation (pcf)	__ __ __.__	__ __ __.__	__ __ 1.6	__ __ __.__
Layer Number	__ __	__ __	__ 4	__ __

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY 3 1 1 7
MOISTURE 6 1 6

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) __ N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) __.__ N
Cutoff Height (Inches) __.__ N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

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PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [20]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0	8.8	4.8		4.3	
	36	8.4	4.4		4.3	
	72	8.5	4.2		4.2	
	108	8.6	4.0		4.1	
	144	8.4	3.5		4.1	
0+50	0	8.8	4.4		4.1	
	36	8.5	3.8		4.4	
	72	7.9	4.1		4.3	
	108	7.3	4.6		3.2	
	144	7.6	4.4		3.7	
1+00	0	7.0	4.0		4.3	
	36	7.1	4.1		4.1	
	72	7.6	3.5		4.2	
	108	8.2	3.6		3.7	
	144	8.2	3.4		3.7	
1+50	0	7.4	4.0		4.2	
	36	6.1	3.0		5.2	
	72	7.4	3.6		4.3	
	108	7.9	3.6		3.8	
	144	7.8	3.8		4.6	
2+00	0	7.1	4.8		3.6	
	36	7.2	4.4		3.7	
	72	7.1	4.3		3.7	
	108	7.4	4.0		3.6	
	144	7.2	3.8		3.7	
2+50	0	7.0	4.6		4.0	
	36	7.3	4.4		4.0	
	72	7.6	4.1		4.2	
	108	7.2	4.3		3.6	
	144	7.1	4.0		3.5	
3+00	0	6.6	4.7		4.2	
	36	6.7	3.8		4.8	
	72	6.8	4.3		4.2	
	108	6.8	4.6		4.0	
	144	6.4	4.9		4.1	
LAYER NUMBER[1]		02	03		04	—

[1] from Sheet 4

ENTERED JAN 23 1995 By [illegible]

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [20]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0	6.8	4.7		4.4	
	36	7.0	4.4		4.4	
	72	7.0	4.7		4.2	
	108	6.7	4.8		4.0	
	144	6.8	4.6		4.0	
4+00	0	7.2	4.6		4.1	
	36	7.1	4.4		4.3	
	72	7.1	4.3		4.2	
	108	7.2	4.4		3.8	
	144	7.3	4.4		4.0	
4+50	0	6.7	4.8		4.3	
	36	7.0	4.6		4.2	
	72	6.7	4.6		4.1	
	108	6.8	4.9		3.5	
	144	6.8	4.7		3.6	
5+00	0	7.3	4.9		4.3	
	36	7.2	4.8		4.3	
	72	7.0	4.9		4.0	
	108	7.2	4.9		4.0	
	144	7.1	4.6		4.2	
+						
+				ENTERED JAN 23 1996 By		
+						
LAYER NUMBER[1]		02	03	—	04	—

[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [20]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [06-07-93]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [06-29-93]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [1]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 _____

*5. GROSS WEIGHT (TONS) [25.0]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [__5]
Nominal Second Lift Placement Thickness (inches) [__5]
Nominal Third Lift Placement Thickness (inches) [__—]
Nominal Fourth Lift Placement Thickness (inches) [__—]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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JAN 23 1996
By _____

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [20]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [02-17-93]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [06-02-93]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [30.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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By LW

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [2 0]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 3]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [3.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6. TOTAL WIDTH (FEET)	[_ 4.]	[_ 8.]
*7. PAVED WIDTH (FEET)	[_ 4.]	[_ 8.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[2 3.]	[2 3.]
9. SURFACE THICKNESS (INCHES)	[_ 4. 0]	[_ 4. 0]
10. SHOULDER BASE THICKNESS (INCHES)	[_ 8. 0]	[_ 8. 0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[_. N]
12. SPACING OF LATERALS (FEET)		[_ _ N.]

ENTERED
JAN 23 1996
By WD

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 3]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[5 7]				
2	[0 5]	[2 3]	[7.5]	6.5	8.5	0.5
3	[0 3]	[0 1]	[4.2]	3.5	5.4	0.4
4	[ ]	[ ]	[.]	.	.	.
5	[ ]	[ ]	[.]	.	.	.
6	[ ]	[ ]	[.]	.	.	.
7	[ ]	[ ]	[.]	.	.	.
8	[ ]	[ ]	[.]	.	.	.
9	[ ]	[ ]	[.]	.	.	.
10	[ ]	[ ]	[.]	.	.	.
11	[ ]	[ ]	[.]	.	.	.
12	[ ]	[ ]	[.]	.	.	.
13	[ ]	[ ]	[.]	.	.	.
14	[ ]	[ ]	[.]	.	.	.
15	[ ]	[ ]	[.]	.	.	.

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By LV

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) (Rock, Stone, Dense Shale) [4 .]

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 3]

*1. LAYER NUMBER (FROM SHEET 4) AC - 3/4" [3]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.6 6 0]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.6 3 7]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [. 4]

*12. Aggregate Combination (Calculated) [2.6 4 6]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.6 6 9]

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AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[2 5.]
15.	Coarse	[— —]	[— — —.]
16.	Coarse	[— —]	[— — —.]
17.	Coarse and Fine - Combined	[— —]	[— — —.]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) 4.

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 3]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ N]	[_ 0.]

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

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11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 3]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.441]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.357] NUMBER OF TESTS [1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6 _ _] NUMBER OF SAMPLES [1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

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JAN 23 1996
BY [illegible]

*10. MEAN [5.6 _ _] NUMBER OF SAMPLES [1.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [15.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347._]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _13.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 3]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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BY UW

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 3]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-29-93]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [08-05-93]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers		
Plant 1	[2]	FNF-ONSITE	[_ _ 1]	[_ 5]	[3]	[_]	[_]
Plant 2	[_]		[_ _ _]	[_ _]	[_]	[_]	[_]
Plant 3	[_]		[_ _ _]	[_ _]	[_]	[_]	[_]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet) [14.0]

7. ATB PLACEMENT LIFTS
   - Layer Number [_ N]
   - Nominal First Lift Placement Thickness (Inches) [_.N]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]
   - Nominal Third Lift Placement Thickness (Inches) [_.N]
   - Nominal Fourth Lift Placement Thickness (Inches) [_.N]

8. PATB PLACEMENT LIFTS
   - Layer Number [_ N]
   - Nominal First Lift Placement Thickness (Inches) [_.N]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]

9. AC BINDER COURSE LIFT
   - Layer Number [_ N]
   - Nominal First Lift Placement Thickness (Inches) [_.N]
   - Nominal Second Lift Placement Thickness (Inches) [_.N]

10. AC SURFACE COURSE LIFT
    - Layer Number [_ 3]
    - Nominal First Lift Placement Thickness (Inches) [2.8]
    - Nominal Second Lift Placement Thickness (Inches) [2.9]

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11. SURFACE FRICTION COURSE (If Placed)
    - Layer Number [_ _]
    - Nominal Placement Thickness (Inches) [_._]

12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    - Binder Course [_ + _ _]
    - Surface Course [_ + _ _]
    - Surface Friction Course [_ + _ _]

13. LOCATION OF LONGITUDINAL SURFACE JOINT [_]
    - Between lanes.. 1 Within lane.. 2
    - (specify offset from O/S feet) [_ _._]

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

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [13]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-29-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [08-05-93]
*3. LAYER NUMBER [3] AC

*4. MIXING TEMPERATURE (°F) [280.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 234.
Minimum..... 220.
Standard Deviation... 7.4
Number of Tests ..... 35.
Maximum..... 256.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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			ENTERED	
23	Roller Code (A-Q)	M	M		
24	Coverages	4.	4.	JAN 23 1996	
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F		
26	Coverages	12.	12.		
	FINAL				
27	Roller Code (A-Q)	A	A		
28	Coverages	2.	2.		
29	Air Temperature (°F)	90	100.		
30	Compacted Thickness (In)	20	20		
31	Curing Period (Days)	4.	2		

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 3]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	N	N	A	N
Number of Measurements	__ __	__ __	2 0	__ __
Average (pcf)	__ __ __.__	__ __ __.__	1 4 7.5	__ __ __.__
Maximum (pcf)	__ __ __.__	__ __ __.__	1 5 0.8	__ __ __.__
Minimum (pcf)	__ __ __.__	__ __ __.__	1 4 3.2	__ __ __.__
Standard Deviation (pcf)	__ __ __.__	__ __ __.__	__ 2.2	__ __ __.__
Layer Number	__ __	__ __	__ 3	__ __

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY 3 1 1 7
MOISTURE 6 1 6

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) __ N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) __.__ N
Cutoff Height (Inches) __.__ N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

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By: JN

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [13]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0	7.6			3.7	
	36	7.4			3.5	
	72	7.7			3.5	
	108	7.8			3.7	
	144	7.8			4.0	
0+50	0	8.0			3.7	
	36	7.6			3.6	
	72	7.1			4.0	
	108	7.4			4.0	
	144	7.3			4.1	
1+00	0	7.8			3.8	
	36	7.9			3.8	
	72	7.9			3.7	
	108	7.7			4.1	
	144	7.6			4.2	
1+50	0	7.2			3.8	
	36	7.6			3.6	
	72	7.3			3.7	
	108	7.3			4.0	
	144	7.3			4.1	
2+00	0	7.6			3.8	
	36	8.0			3.8	
	72	7.4			4.2	
	108	7.6			4.3	
	144	7.6			4.3	
2+50	0	7.0			4.2	
	36	6.8			4.3	
	72	6.8			4.3	
	108	7.6			4.2	
	144	7.7			4.3	
3+00	0	7.7			4.4	
	36	6.5			4.4	
	72	6.5			4.4	
	108	6.6			4.7	
	144	6.8			4.8	
LAYER NUMBER[1]		02	—	—	03	—

[1] from Sheet 4

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PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [13]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0	7.3			5.3	
	36	7.2			5.4	
	72	7.2			5.0	
	108	7.3			4.7	
	144	7.2			4.7	
4+00	0	8.5			4.2	
	36	8.0			4.4	
	72	8.0			4.2	
	108	7.9			4.3	
	144	8.0			4.4	
4+50	0	8.3			4.3	
	36	8.3			4.3	
	72	8.2			4.2	
	108	8.4			4.3	
	144	8.4			4.8	
5+00	0	8.0			4.3	
	36	7.7			4.4	
	72	7.3			4.6	
	108	6.8			4.9	
	144	7.1			4.7	
+						
+						
+						
LAYER NUMBER[1]		02	—	—	03	—

[1] from Sheet 4

ENTERED JAN 23 1995

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 3]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [0 6-0 7-9 3]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [0 6-2 9-9 3]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [1]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 _____

*5. GROSS WEIGHT (TONS) [2 5.0]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [5]
Nominal Second Lift Placement Thickness (inches) [5]
Nominal Third Lift Placement Thickness (inches) [ ]
Nominal Fourth Lift Placement Thickness (inches) [ ]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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JAN 23 1995
BY NW

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 3]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2 - 1 7 - 9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 6 - 0 2 - 9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC - TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) (For Fill Sections Only) [8]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

ENTERED
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BY LW

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [1 3]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 1]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [3.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6. TOTAL WIDTH (FEET)	[4.]	[8.]
*7. PAVED WIDTH (FEET)	[4.]	[8]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[2 3.]	[2 3.]
9. SURFACE THICKNESS (INCHES)	[5.0]	[5.0]
10. SHOULDER BASE THICKNESS (INCHES)	[4.0]	[4.0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[.N]
12. SPACING OF LATERALS (FEET)		[N.]

ENTERED
JAN 23 1996
By LLV

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

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

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[6 1]	[redacted]	[redacted]	[redacted]	[redacted]
2	[0 5]	[2 3]	[3.7]	2.6	5.0	0.6
3	[0 3]	[0 1]	[5.6]	4.6	6.1	0.3
4	[ ]	[ ]	[.]	.	.	.
5	[ ]	[ ]	[.]	.	.	.
6	[ ]	[ ]	[.]	.	.	.
7	[ ]	[ ]	[.]	.	.	.
8	[ ]	[ ]	[.]	.	.	.
9	[ ]	[ ]	[.]	.	.	.
10	[ ]	[ ]	[.]	.	.	.
11	[ ]	[ ]	[.]	.	.	.
12	[ ]	[ ]	[.]	.	.	.
13	[ ]	[ ]	[.]	.	.	.
14	[ ]	[ ]	[.]	.	.	.
15	[ ]	[ ]	[.]	.	.	.

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) [4 .]
(Rock, Stone, Dense Shale)

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NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 1]

*1. LAYER NUMBER (FROM SHEET 4) AC - 3/4" [3]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]
	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.660]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.637]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [.04]

*12. Aggregate Combination (Calculated) [2.646]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.669]

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[25.]
15.	Coarse	[— —]	[— —.]
16.	Coarse	[— —]	[— —.]
17.	Coarse and Fine - Combined	[— —]	[— —.]

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18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) 4.

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 1]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2	[_ N]	[_ 0.]
	(IF OTHER, SPECIFY) _____		

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

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12. TEST RATE FOR DUCTILITY MEASUREMENT AT 39.2°f (CM/MIN) [_ _ _.]

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 1]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.4 4 1]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.3 5 7] NUMBER OF TESTS [_ 1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6 _ _] NUMBER OF SAMPLES [_ 1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [5.6 _ _] NUMBER OF SAMPLES [_ 1.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

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*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 5.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_ 4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347._]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [_ _ 1 3.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [_ _ _ N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 1]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 1]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 7-2 9-9 3]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 8-0 5-9 3]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers		
Plant 1	[2]	FNF-ON SITE	[1]	[5]	[3]	[ ]	[ ]
Plant 2	[ ]		[ ]	[ ]	[ ]	[ ]	[ ]
Plant 3	[ ]		[ ]	[ ]	[ ]	[ ]	[ ]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet) [1 4.0]

7. ATB PLACEMENT LIFTS
   - Layer Number [N]
   - Nominal First Lift Placement Thickness (Inches) [.N]
   - Nominal Second Lift Placement Thickness (Inches) [.N]
   - Nominal Third Lift Placement Thickness (Inches) [.N]
   - Nominal Fourth Lift Placement Thickness (Inches) [.N]

8. PATB PLACEMENT LIFTS
   - Layer Number [N]
   - Nominal First Lift Placement Thickness (Inches) [.N]
   - Nominal Second Lift Placement Thickness (Inches) [.N]

9. AC BINDER COURSE LIFT
   - Layer Number [N]
   - Nominal First Lift Placement Thickness (Inches) [.N]
   - Nominal Second Lift Placement Thickness (Inches) [.N]

10. AC SURFACE COURSE LIFT
    - Layer Number [3]
    - Nominal First Lift Placement Thickness (Inches) [4.1]
    - Nominal Second Lift Placement Thickness (Inches) [3.0]

11. SURFACE FRICTION COURSE (If Placed)
    - Layer Number [N]
    - Nominal Placement Thickness (Inches) [.N]

12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    - Binder Course [+ N]
    - Surface Course [+ N]
    - Surface Friction Course [+ N]

13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
    - Between lanes.. 1 Within lane.. 2
    - (specify offset from O/S feet) [6.0]

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

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PREPARER D. Frith EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [61]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-29-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [08-05-93]
*3. LAYER NUMBER [3]

*4. MIXING TEMPERATURE (°F) [280.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 240.
Minimum..... 218.
Standard Deviation... 9.5
Number of Tests ..... 40.
Maximum..... 265.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M	M		
24	Coverages	4.	4.		
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F		
26	Coverages	12.	12.		
	FINAL				
27	Roller Code (A-Q)	A	A		
28	Coverages	2.	2.		
29	Air Temperature (°F)	90	100.		
30	Compacted Thickness (In)	30	20		
31	Curing Period (Days)	6.	2		

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PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 1]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	N	N	A	N
Number of Measurements	_ _	_ _	2 0	_ _
Average (pcf)	_ _ _._	_ _ _._	1 4 6.2	_ _ _._
Maximum (pcf)	_ _ _._	_ _ _._	1 4 9.5	_ _ _._
Minimum (pcf)	_ _ _._	_ _ _._	1 4 3.4	_ _ _._
Standard Deviation (pcf)	_ _ _._	_ _ _._	_ _ 1.7	_ _ _._
Layer Number	_ _	_ _	_ 3	_ _

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY _ 3 1 1 7
MOISTURE 6 1 6

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) _ N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) _._ N
Cutoff Height (Inches) _._ N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

JAN 23 1996

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [61]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0	3.6			5.8	
	36	3.2			5.9	
	72	3.2			5.9	
	108	3.2			5.8	
	144	3.5			5.5	
0+50	0	2.8			5.8	
	36	3.1			5.9	
	72	2.6			5.9	
	108	3.2			5.6	
	144	3.6			5.6	
1+00	0	3.4			5.9	
	36	3.2			6.1	
	72	3.5			5.9	
	108	3.5			5.6	
	144	3.7			5.8	
1+50	0	3.2			5.9	
	36	2.9			6.1	
	72	3.1			6.0	
	108	3.6			5.4	
	144	4.1			5.5	
2+00	0	4.8			5.6	
	36	4.3			5.9	
	72	4.8			5.5	
	108	4.1			6.0	
	144	4.3			6.0	
2+50	0	5.0			4.9	
	36	4.6			4.8	
	72	4.8			4.6	
	108	4.4			4.6	
	144	4.3			4.8	
3+00	0	4.3			5.6	
	36	3.7			5.6	
	72	3.4			5.8	
	108	3.7			5.8	
	144	3.4			5.6	
LAYER NUMBER[1]		02	—	—	03	—

[1] from Sheet 4

PREPARER D. FREITH EMPLOYER NCE DATE 3/21/94

JAN 23 1996

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 1]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0	3.6			5.5	
	36	3.2			5.6	
	72	3.5			5.4	
	108	3.5			5.5	
	144	3.8			5.8	
4+00	0	4.8			5.6	
	36	4.6			5.5	
	72	4.3			5.6	
	108	4.2			5.6	
	144	4.3			5.5	
4+50	0	3.8			5.5	
	36	3.6			5.6	
	72	3.6			5.6	
	108	3.7			5.6	
	144	4.1			5.8	
5+00	0	3.6			5.8	
	36	3.2			5.9	
	72	3.5			5.6	
	108	3.1			5.6	
	144	2.9			6.1	
+						
+						
+						
LAYER NUMBER[1]		02	—	—	03	—

[1] from Sheet 4

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PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [61]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [06-07-93]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [06-29-93]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [1]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 _____

*5. GROSS WEIGHT (TONS) [25.0]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [5]
Nominal Second Lift Placement Thickness (inches) [—]
Nominal Third Lift Placement Thickness (inches) [—]
Nominal Fourth Lift Placement Thickness (inches) [—]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

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JAN 23 1996
By WW

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 1]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2-1 7-9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 6-0 2-9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

ENTERED
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By LN

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 1]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 2]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [3.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6. TOTAL WIDTH (FEET)	[4.]	[8.]
*7. PAVED WIDTH (FEET)	[4.]	[8.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[2 1.]	[2 1.]
9. SURFACE THICKNESS (INCHES)	[7. 0]	[7. 0]
10. SHOULDER BASE THICKNESS (INCHES)	[0.]	[0.]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[.N]
12. SPACING OF LATERALS (FEET)		[N.]

ENTERED
JAN 23 1996
By WN

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 2]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[6 1]				
2	[0 3]	[0 1]	[9.0]	8.4	9.7	0.3
3	[ ]	[ ]	[.]	.	.	.
4	[ ]	[ ]	[.]	.	.	.
5	[ ]	[ ]	[.]	.	.	.
6	[ ]	[ ]	[.]	.	.	.
7	[ ]	[ ]	[.]	.	.	.
8	[ ]	[ ]	[.]	.	.	.
9	[ ]	[ ]	[.]	.	.	.
10	[ ]	[ ]	[.]	.	.	.
11	[ ]	[ ]	[.]	.	.	.
12	[ ]	[ ]	[.]	.	.	.
13	[ ]	[ ]	[.]	.	.	.
14	[ ]	[ ]	[.]	.	.	.
15	[ ]	[ ]	[.]	.	.	.

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) (Rock, Stone, Dense Shale) [4 .]

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NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 2]

*1. LAYER NUMBER (FROM SHEET 4) AC - 3/4" [2]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[—]	[— — —.]
*4.	Other (Specify)... 6 _____	[—]	[— — —.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[5 8.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[4 2.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[—]	[— — —.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.6 6 0]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.6 3 7]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [.— — 4]

*12. Aggregate Combination (Calculated) [2.6 4 6]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.6 6 9]

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AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[2 5.— — —]
15.	Coarse	[— —]	[— — —.— — —]
16.	Coarse	[— —]	[— — —.— — —]
17.	Coarse and Fine - Combined	[— —]	[— — —.— — —]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) — 4.

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 2]

*1. LAYER NUMBER (FROM SHEET 4) [2]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES) [_ _ 2 9 6 6.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) [_ 4 0 3._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) [_ _ 5 6.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ 0.]
9.	MODIFIER #2	[_ N]	[_ 0.]
	(IF OTHER, SPECIFY) _____		

10. DUCTILITY AT 77°F (CM) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (CM) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (CM/MIN)

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13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 2]

*1. LAYER NUMBER (FROM SHEET 4) [2]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2 3/4" MIX

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.4 4 1]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.3 5 7] NUMBER OF TESTS [1.]

5. MINIMUM [.] MAXIMUM [.]

6. STD. DEV. [.]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX)
(AASHTO T164 OR ASTM D2172)

*7. MEAN [4.6] NUMBER OF SAMPLES [1.]

8. MINIMUM [.] MAXIMUM [.]

9. STD. DEV. [.]

PERCENT AIR VOIDS

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*10. MEAN [5.6] NUMBER OF SAMPLES [1.]

11. MINIMUM [.] MAXIMUM [.]

12. STD. DEV. [.]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [1 5.3]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.3]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [4347.]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) [1 3.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) [N.]
(AASHTO T246 OR ASTM 1561)

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 2]

*1. LAYER NUMBER (FROM SHEET 4) [2]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [0]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

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By LW

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 2]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 7-2 9-9 3]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 8-0 5-9 3]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers		
Plant 1	[2]	FNF-ONSITE	[1]	[5]	[2]	[ ]	[ ]
Plant 2	[ ]		[ ]	[ ]	[ ]	[ ]	[ ]
Plant 3	[ ]		[ ]	[ ]	[ ]	[ ]	[ ]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet) [1 4.0]

7. ATB PLACEMENT LIFTS
   - Layer Number [N]
   - Nominal First Lift Placement Thickness (Inches) [.N]
   - Nominal Second Lift Placement Thickness (Inches) [.N]
   - Nominal Third Lift Placement Thickness (Inches) [.N]
   - Nominal Fourth Lift Placement Thickness (Inches) [.N]

8. PATB PLACEMENT LIFTS
   - Layer Number [N]
   - Nominal First Lift Placement Thickness (Inches) [.N]
   - Nominal Second Lift Placement Thickness (Inches) [.N]

9. AC BINDER COURSE LIFT
   - Layer Number [2]
   - Nominal First Lift Placement Thickness (Inches) [4.0]
   - Nominal Second Lift Placement Thickness (Inches) [3.0]

10. AC SURFACE COURSE LIFT
    - Layer Number [2]
    - Nominal First Lift Placement Thickness (Inches) [3.9]
    - Nominal Second Lift Placement Thickness (Inches) [.N]

11. SURFACE FRICTION COURSE (If Placed)
    - Layer Number [N]
    - Nominal Placement Thickness (Inches) [.N]

12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    - Binder Course [+ N]
    - Surface Course [+ N]
    - Surface Friction Course [+ N]

13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
    - Between lanes.. 1 Within lane.. 2
    - (specify offset from O/S feet) [6.0]

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

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PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [62]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-29-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [08-05-93]
*3. LAYER NUMBER [2] AC

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JAN 23 1996

*4. MIXING TEMPERATURE (°F) [280.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 244.
Minimum..... 226.
Standard Deviation... 10.4
Number of Tests 82
Maximum..... 275.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	12.3				
7	B	Steel-Whl Tandem					
8	C	Steel-Whl Tandem					
9	D	Steel-Whl Tandem					
10	E	Pneumatic-Tired	25.0	90.			
11	F	Pneumatic-Tired	18.0	100.			
12	G	Pneumatic-Tired					
13	H	Pneumatic-Tired					
14	I	Single-Drum Vibr.					
15	J	Single-Drum Vibr.					
16	K	Single-Drum Vibr.					
17	L	Single-Drum Vibr.					
18	M	Double-Drum Vibr.	12.3		2400.	U	U
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				
23	Roller Code (A-Q)	M	M	M	
24	Coverages	4.	4.	4.	
	INTERMEDIATE				
25	Roller Code (A-Q)	E&F	E&F	E&F	
26	Coverages	12.	12.	12.	
	FINAL				
27	Roller Code (A-Q)	A	A	A	
28	Coverages	2.	2.	2.	
29	Air Temperature (°F)	90.	100.	100.	
30	Compacted Thickness (In)	30	20	2.0	
31	Curing Period (Days)	6	02	2	

PREPARER D. FRITH EMPLOYER NCE DATE 4/25/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 2]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	N	N	A	N
Number of Measurements	__ __	__ __	2 0	__ __
Average (pcf)	__ __ __.__	__ __ __.__	1 4 6.5	__ __ __.__
Maximum (pcf)	__ __ __.__	__ __ __.__	1 4 8.5	__ __ __.__
Minimum (pcf)	__ __ __.__	__ __ __.__	1 4 3.6	__ __ __.__
Standard Deviation (pcf)	__ __ __.__	__ __ __.__	__ __ 1.6	__ __ __.__
Layer Number	__ __	__ __	__ 2	__ __

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY 3 1 1 7
MOISTURE 6 1 6

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) __ N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) __.__ N
Cutoff Height (Inches) __.__ N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

JAN 23 1995

PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [62]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0				9.0	
	36				8.9	
	72				9.0	
	108				9.5	
	144				9.6	
0+50	0				9.4	
	36				9.1	
	72				9.0	
	108				9.2	
	144				9.7	
1+00	0				9.5	
	36				9.1	
	72				9.0	
	108				9.2	
	144				9.4	
1+50	0				9.1	
	36				9.1	
	72				9.2	
	108				9.4	
	144				9.4	
2+00	0				9.5	
	36				9.1	
	72				8.9	
	108				8.9	
	144				9.0	
2+50	0				8.9	
	36				8.8	
	72				8.4	
	108				8.6	
	144				9.0	
3+00	0				9.1	
	36				9.0	
	72				8.9	
	108				8.8	
	144				9.0	
LAYER NUMBER[1]		—	—	—	02	—

ENTERED JAN 23 1996

[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 2]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0				8.8	
	36				8.5	
	72				8.4	
	108				8.4	
	144				8.5	
4+00	0				9.4	
	36				8.8	
	72				8.6	
	108				8.6	
	144				8.8	
4+50	0				9.0	
	36				8.9	
	72				8.6	
	108				8.9	
	144				9.0	
5+00	0				9.1	
	36				8.8	
	72				8.6	
	108				8.8	
	144				9.1	
+						
+						
+						
LAYER NUMBER[1]					02	

[1] from Sheet 4

JAN 23 1996

PREPARER D. FEITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 2]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2-1 7-9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 6-0 2-9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

ENTERED
JAN 2 8 1996
BY HW

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 2]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 3]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [3.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6. TOTAL WIDTH (FEET)	[4.]	[8.]
*7. PAVED WIDTH (FEET)	[4.]	[8.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[21.]	[21.]
9. SURFACE THICKNESS (INCHES)	[15.0]	[15.0]
10. SHOULDER BASE THICKNESS (INCHES)	[0.0]	[0.0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[.N]
12. SPACING OF LATERALS (FEET)		[N.]

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 3]

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

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) [_ 4 . _]
(Rock, Stone, Dense Shale)

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [63]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	~~DENSE GRADED ASPHALT TREATED BASE~~ PCC	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0					
	36					
	72					
	108					
	144					
0+50	0					
	36					
	72					
	108					
	144					
1+00	0					
	36					
	72					
	108					
	144					
1+50	0					
	36					
	72					
	108					
	144					
2+00	0					
	36					
	72					
	108					
	144					
2+50	0					
	36					
	72					
	108					
	144					
3+00	0					
	36					
	72					
	108					
	144					
LAYER NUMBER[1]		—	—	02	03	—

[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [63]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	~~DENSE GRADED ASPHALT TREATED BASE~~ RCC	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0					
	36					
	72					
	108					
	144					
4+00	0					
	36					
	72					
	108					
	144					
4+50	0					
	36					
	72					
	108					
	144					
5+00	0					
	36					
	72					
	108					
	144					
+						
+						
+						
LAYER NUMBER[1]		—	—	02	03	—

[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 3]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2 - 1 7 - 9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 6 - 0 2 - 9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC - TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [6 3]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94

SPS-1 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [5 9]

*1. LANE WIDTH (FEET) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

*3. SUBSURFACE DRAINAGE LOCATION [3.]
Continuous Along Test Section... 1 Intermittent... 2 None... 3

*4. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 _____

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
*5. SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 _____	[3.]	[3.]
*6. TOTAL WIDTH (FEET)	[4.]	[8.]
*7. PAVED WIDTH (FEET)	[4.]	[8.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[2 3.]	[2 3.]
9. SURFACE THICKNESS (INCHES)	[7. 0]	[7. 0]
10. SHOULDER BASE THICKNESS (INCHES)	[4. 0]	[4. 0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[. N]
12. SPACING OF LATERALS (FEET)		[N.]

ENTERED
JAN 23 1996
BY LLV

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [5 9]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[5 9]				
2	[0 5]	[2 3]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
3	[0 3]	[0 1]	[_ _6.9]	_ _6.6	_ _7.2	_ _0.3
4	[0 9]	[0 2]	[_ _0.5]	_ _ _._	_ _ _._	_ _ _._
5	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
6	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
7	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
8	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
9	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
10	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
11	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
12	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
13	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
14	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
15	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) [_ 4 . _]
(Rock, Stone, Dense Shale)

JAN 23 1996

NOTES:

1. Layer 1 is the 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.....02	Subbase Layer.....06	Surface Treatment.....10
Original Surface.....03	Subgrade.....07	Embankment (Fill).....11
HMAC Layer (Subsurface).04	Interlayer.....08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990.

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [5 9]

*1. LAYER NUMBER (FROM SHEET 4) [3]

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[3]	[1 0 0.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[-]	[- - -.]
*4.	Other (Specify)... 6 _____	[-]	[- - -.]

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[1]	[- - 9.]
*6.	Crushed or Manufactured Sand (From Crushed Gravel or	[2]	[- 9 1.]
*7.	Stone... 2 Recycled Concrete... 3 Other (Specify)... 4 _____	[-]	[- - -.]

*8. TYPE OF MINERAL FILLER [3]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4
Other (Specify)... 5 _____

BULK SPECIFIC GRAVITIES:

*9. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.7 0 5]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.6 4 9]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [3.1 4 -]

*12. Aggregate Combination (Calculated) [2.6 7 3]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.6 8 9]

ENTERED
JAN 23 1996
By: W

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[0 1]	[- 2 5.- - -]
15.	Coarse	[- -]	[- - -.- - -]
16.	Coarse	[- -]	[- - -.- - -]
17.	Coarse and Fine - Combined	[- -]	[- - -.- - -]

18. POLISH VALUE OF COARSE AGGREGATES
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) - U.

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [5 9]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [0 5]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [0 9]
(IF OTHER, SPECIFY) _____

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.0 4 4]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

5. VISCOSITY OF ASPHALT AT 140°F (POISES)
(AASHTO T202) [_ _ 2 9 6 6.]

6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES)
(AASHTO T202) [_ 4 0 3._ _]

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM)
(100 g., 5 sec.) [_ _ 5 6.]

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

		TYPE	QUANTITY (%)
8.	MODIFIER #1	[_ N]	[_ N.]
9.	MODIFIER #2 (IF OTHER, SPECIFY) _____	[_ N]	[_ N.]

10. DUCTILITY AT 77°F (CM)
(AASHTO T51) [_ _ _.]

11. DUCTILITY AT 39.2°F (CM)
(AASHTO T51) [_ _ _.]

12. TEST RATE FOR DUCTILITY MEASUREMENT
AT 39.2°f (CM/MIN) [_ _ _.]

13. PENETRATION AT 39.2°F (AASHTO T49) (TENTHS OF A MM)
(200 g., 60 sec.) [_ _ _.]

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

ENTERED
JAN 23 1996
By LL

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [5 9]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [1]
SAMPLES COMPACTED IN LABORATORY... 1 MIX DESIGN
SAMPLES TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (AASHTO T209 OR ASTM D2041) [2.456]

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.391] NUMBER OF TESTS [1.]

5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX) (AASHTO T164 OR ASTM D2172)

*7. MEAN [4.1 _ _] NUMBER OF SAMPLES [1.]

8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [5.584] NUMBER OF SAMPLES [1.]

11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]

12. STD. DEV. [_._ _ _]

ENTERED
JAN 23 1996
BY LLV

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [14.5]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [3.9]

*15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) [5013.]

*16. NUMBER OF BLOWS [75]

*17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) (AASHTO T245 OR ASTM D1559) [10.]

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [N.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH) (AASHTO T246 OR ASTM 1561) [N.]

PREPARER D. FERTH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [5 9]

*1. LAYER NUMBER (FROM SHEET 4) [3]

*2. TYPE OF SAMPLES [N]
SAMPLES COMPACTED IN LABORATORY... 1
SAMPLES TAKEN FROM TEST SECTION... 2

*3. TYPE ASPHALT PLANT [2]

BATCH PLANT... 1 DRUM MIX PLANT... 2

OTHER (SPECIFY)... 3 _____

*4. TYPE OF ANTISTRIPPING AGENT USED [_ N]
(SEE TYPE CODES, TABLE A.21)
OTHER (SPECIFY) _____

*5. AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [N]

*6. (If liquid, enter code 1, and amount as percent of asphalt cement weight. If solid, enter code 2 and amount as percent of aggregate weight.) [_ _.N]

ENTERED
JAN 23 1996
By: W

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [59]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [06-24-93]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [09-30-93]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers		
Plant 1	[2]	FNF-ON SITE	[1]	[5]	[3]	[4]	[—]
Plant 2	[—]	—	[—]	[—]	[—]	[—]	[—]
Plant 3	[—]	—	[—]	[—]	[—]	[—]	[—]

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

4. MANUFACTURER OF ASPHALT CONCRETE PAVER BLAW-KNOX

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF-250

6. SINGLE PASS LAYDOWN WIDTH (Feet) [14.0]

7. ATB PLACEMENT LIFTS
   - Layer Number [—]
   - Nominal First Lift Placement Thickness (Inches) [—.—]
   - Nominal Second Lift Placement Thickness (Inches) [—.—]
   - Nominal Third Lift Placement Thickness (Inches) [—.—]
   - Nominal Fourth Lift Placement Thickness (Inches) [—.—]

8. PATB PLACEMENT LIFTS
   - Layer Number [—]
   - Nominal First Lift Placement Thickness (Inches) [—.—]
   - Nominal Second Lift Placement Thickness (Inches) [—.—]

9. AC BINDER COURSE LIFT
   - Layer Number [3]
   - Nominal First Lift Placement Thickness (Inches) [2.5]
   - Nominal Second Lift Placement Thickness (Inches) [2.5]

10. AC SURFACE COURSE LIFT
    - Layer Number [3]
    - Nominal First Lift Placement Thickness (Inches) [2.0]
    - Nominal Second Lift Placement Thickness (Inches) [.]

11. SURFACE FRICTION COURSE (If Placed)
    - Layer Number [4]
    - Nominal Placement Thickness (Inches) [0.8]

12. TEST SECTION STATION OF TRANSVERSE JOINTS (within test section)
    - Binder Course [+ N]
    - Surface Course [+ N]
    - Surface Friction Course [+ N]

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By UN

13. LOCATION OF LONGITUDINAL SURFACE JOINT [2]
    Between lanes.. 1 Within lane.. 2
    (specify offset from O/S feet) [6.0]

14. SIGNIFICANT EVENTS DURING CONSTRUCTION (disruptions, rain, equip. problems, etc.) NO ONE FROM LTPP PRESENT FOR PAVING THICKNESSES ARE PLAN FINISH THICKNESS. NO PROBLEMS NOTED.

PREPARER D. FRITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [5 9]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [0 6 - 2 3 - 9 3]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [0 6 - 2 5 - 9 3]
*3. LAYER NUMBER [3]

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*4. MIXING TEMPERATURE (°F) [2 6 0.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... _ _ u.
Minimum..... _ _ u.
Standard Deviation... _ _.u
Number of Tests ..... _ u.
Maximum..... _ _ u.

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 2.3				
7	B	Steel-Whl Tandem	_ _._				
8	C	Steel-Whl Tandem	_ _._				
9	D	Steel-Whl Tandem	_ _._				
10	E	Pneumatic-Tired	2 5.0	_ _ 9 0.			
11	F	Pneumatic-Tired	1 8.0	_ 1 0 0.			
12	G	Pneumatic-Tired	_ _._	_ _ _ _.			
13	H	Pneumatic-Tired	_ _._	.			
14	I	Single-Drum Vibr.	_ _._		_ _ _ _.	. _ _ _	_ _._
15	J	Single-Drum Vibr.	_ _._		_ _ _ _.	. _ _ _	_ _._
16	K	Single-Drum Vibr.	_ _._		_ _ _ _.	. _ _ _	_ _._
17	L	Single-Drum Vibr.	_ _._		_ _ _ _.	. _ _ _	_ _._
18	M	Double-Drum Vibr.	1 2.3		2 4 0 0.	. _ _ u	_ _.u
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				
23	Roller Code (A-Q)	M	M	M	_
24	Coverages	_ 4.	_ 4.	_ 4.	_ _.
	INTERMEDIATE				
25	Roller Code (A-Q)	E & F	E & F	E & F	_
26	Coverages	1 2.	1 2	1 2	_ _.
	FINAL				
27	Roller Code (A-Q)	A	A	A	_
28	Coverages	_ 2.	_ 2.	_ 2	_ _.
29	Air Temperature (°F)	_ _ _.	_ _ _	_ _ _.	_ _ _.
30	Compacted Thickness (In)	2 5	2.5	2 0	_._
31	Curing Period (Days)	_ _.u	_ _.u	_ _.u	_ _._

PREPARER D. FEITH EMPLOYER NCE DATE 2/22/94

SPS-1 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [5 9]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	ATB	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	N	N	A	N
Number of Measurements			20	
Average (pcf)			136.8	
Maximum (pcf)			140.0	
Minimum (pcf)			131.8	
Standard Deviation (pcf)			2.6	
Layer Number			3	

[1]Measurement Method Backscatter... A Direct Transmission... B Air Gap... C

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE TROXLER

3. NUCLEAR DENSITY GAUGE MODEL NUMBER 3411-B

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER 12876

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION DENSITY 3117
MOISTURE 616

6. PROFILOGRAPH MEASUREMENTS

Profilograph Type California... 1 Rainhart... 2 N
Profile Index (Inches/Mile) N
Interpretation Method Manual.. 1 Mechanical.. 2 Computer.. 3 N
Height of Blanking Band (Inches) N
Cutoff Height (Inches) N

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) N

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PREPARER D. FRITH EMPLOYER NCE DATE 4/27/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [59]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0					
	36					
	72					
	108					
	144					
0+50	0					
	36					
	72					
	108					
	144					
1+00	0					
	36					
	72					
	108					
	144					
1+50	0					
	36					
	72					
	108					
	144					
2+00	0					
	36					
	72					
	108					
	144					
2+50	0					
	36					
	72					
	108					
	144					
3+00	0					
	36					
	72					
	108					
	144					
LAYER NUMBER[1]		02	—	—	03	—

NO ELEVATIONS

NO ELEVATIONS

[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [5 9]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	DENSE GRADED ASPHALT TREATED BASE	SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0					
	36					
	72					
	108					
	144					
4+00	0					
	36					
	72					
	108					
	144					
4+50	0					
	36					
	72					
	108					
	144					
5+00	0					
	36					
	72					
	108					
	144					
+						
+						
+						
LAYER NUMBER[1]		02	—	—	03	—

[1] from Sheet 4

PREPARER D. FRITH EMPLOYER NCE DATE 3/21/94

SPS-1 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [04] * SPS PROJECT CODE [01] * TEST SECTION NO. [59]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [06-20-93]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [06-22-93]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [1]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 _____

*5. GROSS WEIGHT (TONS) [25.0]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [5]
Nominal Second Lift Placement Thickness (inches) [--]
Nominal Third Lift Placement Thickness (inches) [--]
Nominal Fourth Lift Placement Thickness (inches) [--]

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

ENTERED
JAN 23 1996
BY DN

PREPARER D. FRITH EMPLOYER NCE DATE 2/18/94

SPS-1 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [5 9]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [0 2-1 7-9 3]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [0 6-0 2-9 3]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [6]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 CONSTRUCTION TRAFFIC – TRUCKS & WATER WAGONS LOADED SCRAPERS

*4. GROSS WEIGHT (TONS) VARIED APP. [3 0.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[N]	[0.0]
*6. STABILIZING AGENT 2	[N]	[0.0]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 _____

*7. TYPICAL LIFT THICKNESS (INCHES) [8]
(For Fill Sections Only)

DENSITY DATA IS RECORDED ON SAMPLING DATA SHEET 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) _____

ENTERED
JAN 28 1999
By HW

PREPARER D. FRITH EMPLOYER NCE DATE 2/17/94

SPS-1 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [0 4] * SPS PROJECT CODE [0 1] * TEST SECTION NO. [5 9]

NEW CONSTRUCTION -

NO OVER EXCAVATION OR BACKFILLING WAS REQUIRED WITHIN 4 FEET OF TOP OF SUBGRADE.

PREPARER D. FEITH EMPLOYER NCE DATE 4/1/94