FEDERAL HIGHWAY ADMINISTRATION

Long Term Pavement Performance
Specific Pavement Studies

Dayton, Washington SPS-8

Construction Report on SHRP 530800
Federal Highway Administration / Columbia County

FINAL

Prepared by

Western Region Contractor
Nichols Consulting Engineers, Chtd.

September 1997

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ABSTRACT

It is well known that environmental climate and geology affect pavement performance. Environmental conditions, alone or interacting with the pavement materials, may generate major distress in pavements. The objective of this Specific Pavement Studies experiment, SPS-8, "Study of Environmental Effects in the Absence of Heavy Loads," near Dayton, Washington, in Columbia County, is to measure the deterioration of the pavement performance in the absence of heavy traffic loading. The North Touchet Road SPS-8 project combines two test sections with varying base course and asphalt concrete thicknesses in a very low volume traffic environment with extensive weather variations. The construction of the sections was closely monitored to ensure the sections were built to specification. Construction was begun in the spring of 1995 and paving was completed October 26, 1995. Details of construction are presented here, along with minor problems encountered during construction that may affect the pavement performance.

I. INTRODUCTION

The Strategic Highway Research Program (SHRP) Specific Pavement Studies experiment, SPS-8, was designed as a "Study of Environmental Effects in the Absence of Heavy Loads." Environmental conditions, acting alone or interacting with pavement materials, may generate major distresses in pavements. Frost heave, soil swell, and low temperature cracking are common environment-related distresses that have little or no traffic related components. The objective of the SPS-8 experiment is to measure the deterioration in pavement performance in the absence of heavy loads. This report covers construction of the SPS-8 project in Dayton, Washington, during the summer and fall of 1995. The test sections were constructed under a tri-party agreement between Western Direct Federal Lands, Washington State Department of Transportation, and Columbia County.

SPS-8 OBJECTIVES

The primary objectives of the SPS-8 experimentation are:

- Evaluation of existing environmental effects (damage) models.
- Determination of the effects of specific design features, thicknesses, and pavement types on pavement performance in the absence of heavy loads.
- Development of a comprehensive database for use by state and provincial engineers and other researchers for evaluating environmental effects on pavement performance.

II. SPS-8 PROJECT DESCRIPTION

This SPS-8 project was constructed in Columbia County on the North Touchet Road in Dayton, Washington (figure 1). The two monitoring test sections, both 500 ft long, were constructed with varying asphalt and base thicknesses, as shown in figure 2. They were constructed to the cross-sections shown in figure 3. The sections are located in the northbound lane near milepost 4. The sections were ordered as follows:

- Section 530801 - from station 233+50 to 239+50
- Section 530802 - from station 222+00 to 230+00

The terrain in the immediate area consists of rolling hills with scattered brush and trees. The site has a longitude of 117°52'56.9", a latitude of 46°16'14.1", and an elevation of 1,985 ft. Based on existing climatic data, the maximum air temperature for this area is 114°F with an average of 89.4°F. The minimum air temperature is 8°F with an average of 22°F.

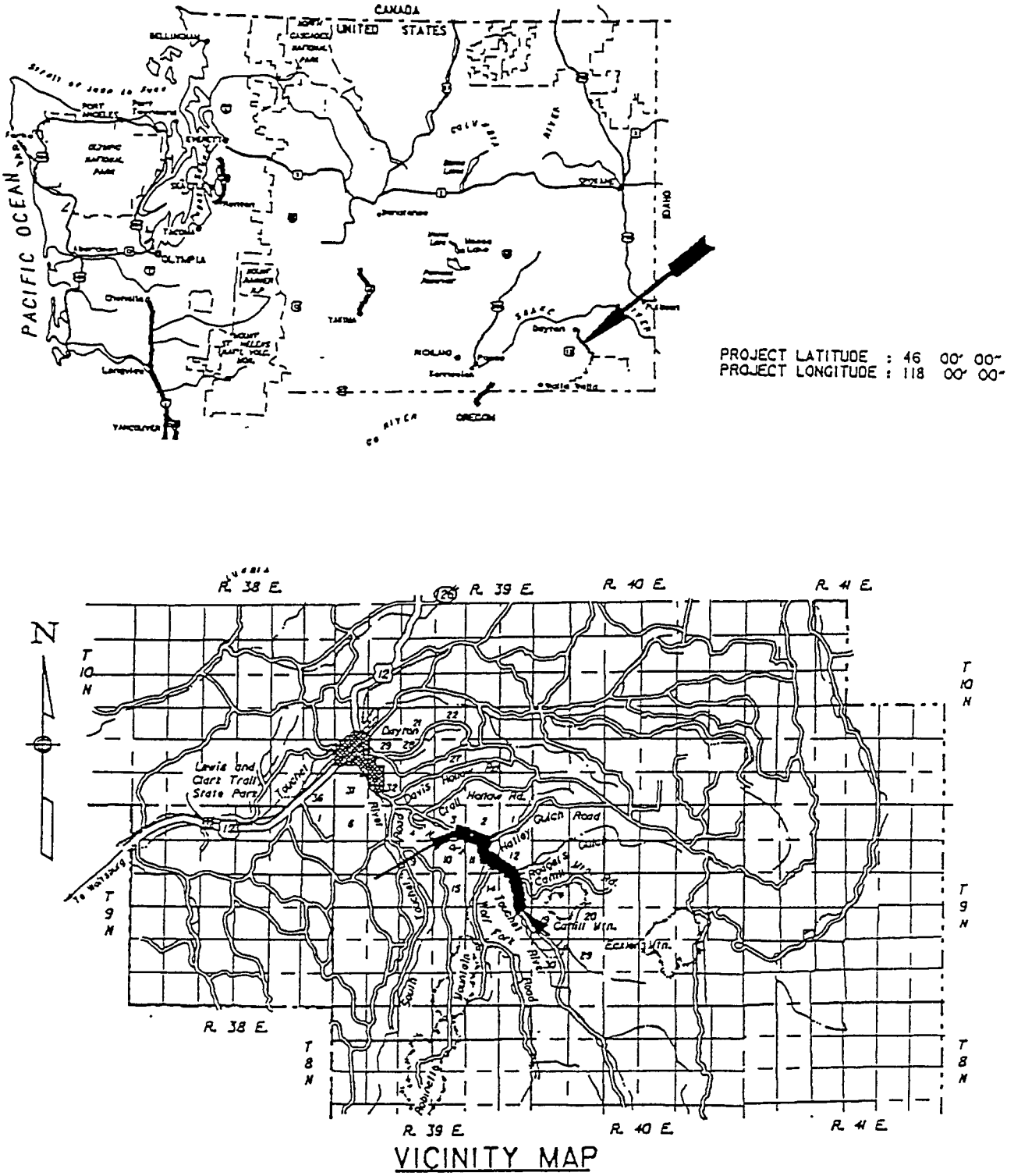
The site was originally moderately active and prone to swelling. However, extensive work on the subgrade was required, to be detailed later in this report, that could potentially eliminate this activity. The native site material appeared to be a clayey silt with large amounts of larger sized basalt rock and falls in the PaD (Palouse Silt Loam) subgrade soil category (AASHTO Classification A-4). A weather station was installed near the site to monitor the environmental changes throughout the life of the pavement.

The design annual average daily traffic (AADT) for this roadway in 1994 was 600 vehicles per day with three percent trucks. For a design period of 20 years, the total design equivalent single axle loads (ESALs) is approximately 200,000.

Western Direct Federal Lands Highway Division (WDFLHD) administered the construction contract. Mr. Dave Hardman served as the Project Engineer and Mr. Robert Toops was the Chief Project Inspector for WDFLHD. The primary contractor for the project was Steelman-Duff, Inc., from Lewiston, Idaho. They performed the earthwork through the placing of the base course. The paving subcontractor for this site was ACME Materials and Construction from Spokane, Washington. Mr. Gary Gasaway, Columbia County Engineer, was the County representative during construction.

In order to assure the proper climatic data would be available during analysis, an Automated Weather Station (AWS) was installed by the Western Regional Contractor. The AWS is located approximately four miles northwest of the test sections in the town of Dayton, Washington. A decision to locate the AWS in the Washington State Dayton Maintenance Yard, located on Main Street, was made to ensure security of the equipment.

Steelman-Duff, Inc. constructed the foundations for the equipment and connected the electrical power. Nichols Consulting Engineers, Chtd. (NCE) personnel installed the AWS equipment on May 4, 1995. The equipment installed consists of a wind monitor which measures wind



VICINITY MAP

Figure 1. Site location and vicinity map, Washington SPS-8 project.

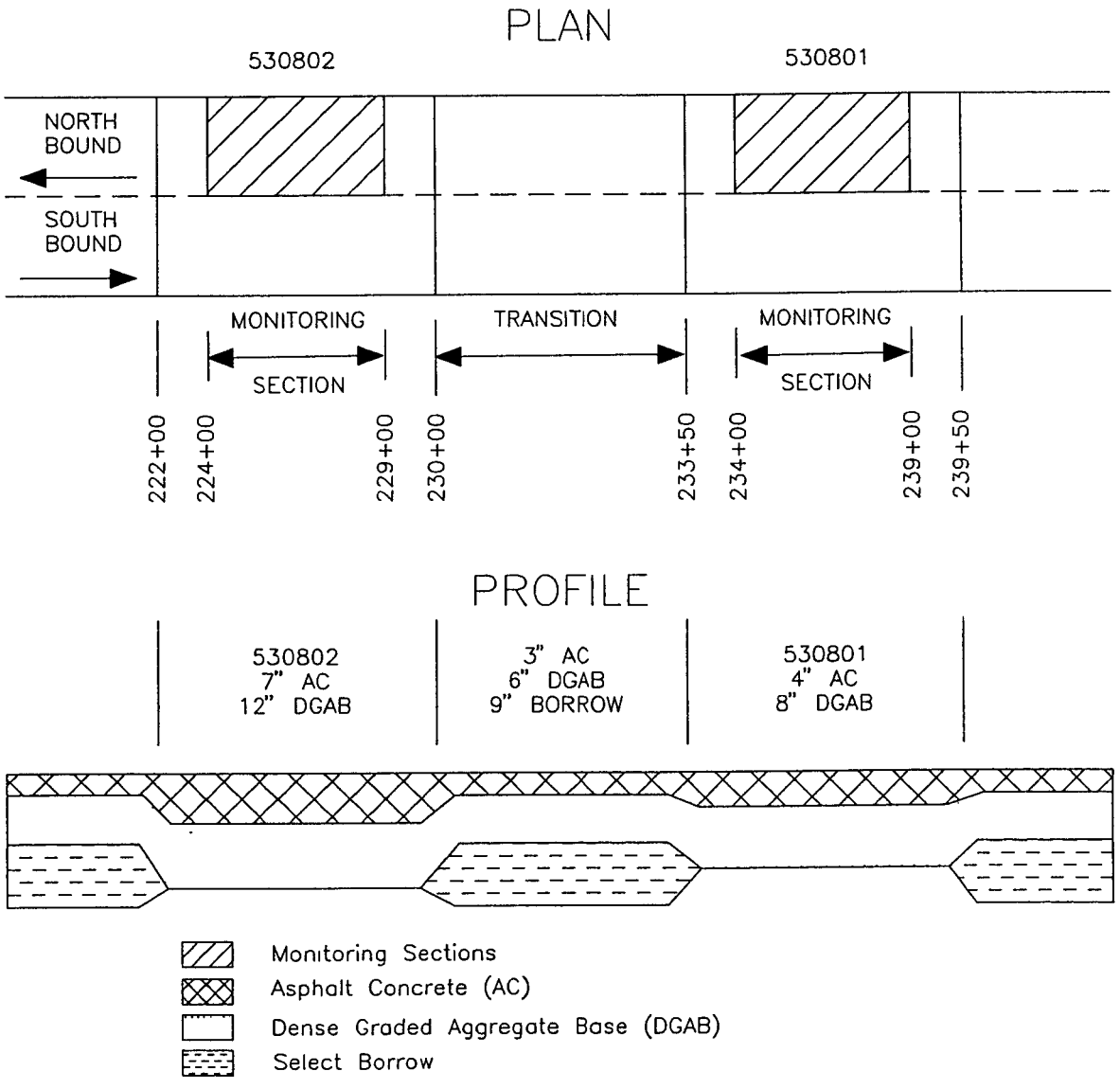


Figure 2. Layout of experimental test sections, Washington SPS–8 project

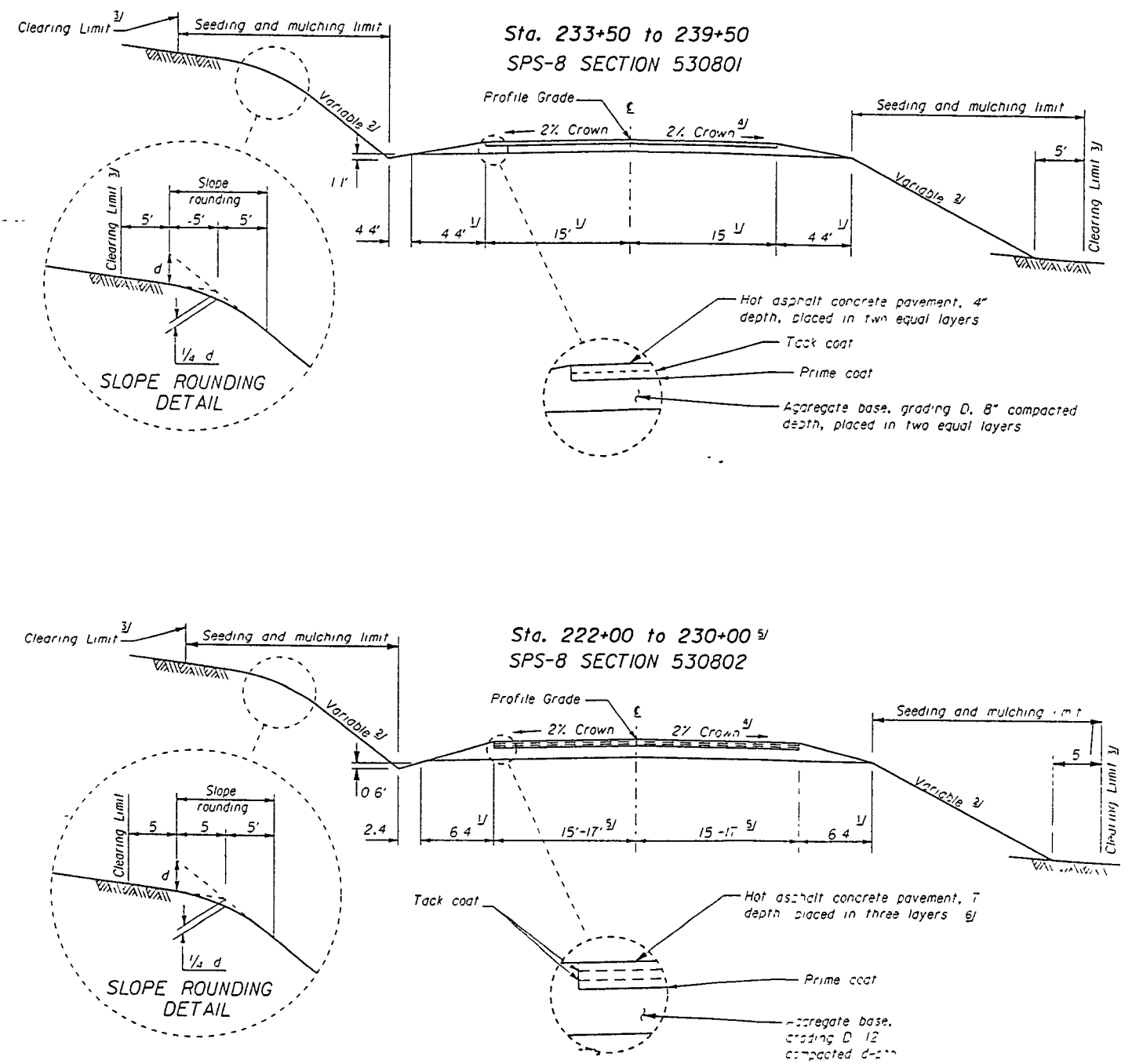


Figure 3. Design cross-sections, Washington SPS-8 project.

speed and direction, a probe to measure the temperature and humidity, a pyranometer to measure solar radiation, a rain gauge tipping bucket, a solar panel, and a datalogger. All equipment was provided by FHWA.

III. CONSTRUCTION

Construction of the SPS-8 project began in the spring of 1995. The first step in the test section construction was the removal of the existing asphalt concrete surface. Construction photos are displayed in appendix a. The existing AC was scarified, windrowed, and removed from the roadway. The contractor then began to construct the subgrade profile. This required widening of the cross-section and cutting of the profile. During this period, the project received a large amount of precipitation.

Due to precipitation, the Project Engineer, after conferring with the Western Regional Office, required the contractor to sub-excavate the subgrade material to a depth of 3 ft. This work began in August. Construction continued with the completion of the base aggregate in September and paving of the surfacing in October. The roadway remained open to traffic during the entire construction period. Each construction event is detailed in the following sections of the report.

EQUIPMENT

The following equipment was used in the construction of the subgrade and base layers on the SPS-8 test sections for the North Touchet Road construction site:

- 14G CAT Motor Grader
- SD150D Ingersoll-Rand Roller
- 15 ton Hyster Grid Roller
- RB-38 Roscoe Power Broom
- 966 CAT Loader
- D6C CAT Dozer & Ripper
- D8H CAT Dozer & Ripper
- D8L CAT Dozer & Ripper
- 631D CAT Scraper
- R22 Euclid Dump Truck
- 20 yard Belly Dump Trailer
- 623B CAT Water Truck
- 235 CAT Backhoe
- 988B CAT Loader

SUBGRADE

The test sections were intentionally located on the cut side of a side hill in hopes of avoiding potentially non-uniform overexcavation areas. However, due to an abnormally wet spring and summer during early stages of construction, the existing subgrade at the test sections was determined to be unacceptable because of excessive pumping. The contractor started subgrade excavation August 3, 1995. The existing subgrade consisted of large amounts of native basalt rock, and had a significant clayey silt content with a high water content (moist clayey silt). Table 1 summarizes the results of three sieve analysis tests performed on the subgrade material.

Table 1. Subgrade material gradation.

Sieve Size	Percent Passing by Sieve Size		
	Section 530801(1)	Section 530801(2)	Section 530802
3 in	100	100	100
2 in	100	100	97
1-1/2 in	97	98	95
1 in	93	94	91
3/4 in	91	92	84
1/2 in	88	89	77
3/8 in	86	88	74
#4	80	83	66
#10	74	77	57
#40	68	69	48
#80	65	66	45
#200	62.4	60.3	41.8

The contractor excavated a minimum of 3 ft throughout the test sections and replaced the excavated material with shot-rock followed by a thin layer of select borrow until the design subgrade elevation was matched. The shot-rock had a maximum diameter of approximately 18 in, and the select borrow was a grade A borrow with a maximum diameter of 2.5 in. The shot-rock came from two on-site blasting quarries, and the select borrow came from a single on-site blasting quarry. Gradations for the shot-rock and select borrow are presented in tables 2 and 3, respectively.

Table 2. Shot-rock gradation.

Sieve Size	Percent Passing by Sieve Size		
	Section 530801(1)	Section 530801(2)	Section 530802
3 in	100	100	100
2 in	96	95	91
1-1/2 in	89	90	84
1 in	80	73	72
3/4 in	75	65	67
1/2 in	70	58	59
3/8 in	67	55	55
#4	61	46	48
#10	48	30	36
#40	26	17	24
#80	17	14	20
#200	14 3	12 1	15 4

Table 3. Select borrow gradation.

Sieve Size	Percent Passing by Sieve Size		
	Section 530801(1)	Section 530801(2)	Section 530802
2 in	100	100	100
1-1/2 in	100	99	100
1 in	94	85	95
3/4 in	92	74	90
1/2 in	89	61	84
3/8 in	87	54	80
#4	83	39	64
#10	59	23	40
#40	29	10	16
#80	18	7	11
#200	12.9	5.6	8.5

The original subgrade testing was altered because of the need for the shot-rock fill. The following field sampling was completed on August 8, 1995:

- Bulk samples of the underlying subgrade material.
- Bulk samples of the shot-rock.
- Bulk samples of the grade A select borrow.
- 4 ft Standard Penetration Tests (SPT).

Distances from centerline to the edge of shot-rock were also recorded for each station. Shot-rock placement in all Shelby tube and auger testing sites was inevitable so the remaining subgrade testing was not performed.

Upon completion of the subgrade over-excavation, compaction was performed using a grid roller. Shot-rock was placed in approximately a 12 to 18 in thickness. This coarse rock was then capped with a select borrow for a minimum thickness of 2.5 in. Compaction of the shot-rock was initially achieved with a grid roller and final compaction utilized a vibrating roller. The selected borrow was compacted using a vibrating steel drum roller. Nuclear density measurements on the compacted borrow are listed in table 4.

BASE

The contractor laid down crushed stone throughout the project to complete the base course. Aggregate was produced on-site with a rock crusher and pug-mill. Gradation of the base aggregate is provided in table 5. The aggregate was transported and laid down by belly dumps. The rock was leveled to grade using a motor-grader followed by a vibratory roller making eight passes to achieve density. The nuclear density/moisture tests and bulk sampling were conducted following the completion of the base surfacing in the test sections. Density measurements are reported in table 6.

Table 4. Nuclear density measurements on top of select borrow.

Subgrade			
Station	**Density (pcf)**	**Moisture (%)**	**Compaction (%)**
530801			
0-40	143.3	8.8	101.1
1+00	144.5	5.2	98.2
2+50	144.4	5.5	98.2
4+00	132.6	3.3	90.2
5+50	137.6	5.4	97.1
530802			
0-25	151.5	5.1	106.9
1+00	148	3.5	100.9
2+50	146.6	4.2	99.7
4+00	142.8	6 8	96.1

Table 5. Base gradation.

Sieve Size	**Percent Passing by Sieve Size**		
	Section 530801(1)	**Section 530801(2)**	**Section 530802**
1 in	100	100	100
3/4 in	98	98	98
1/2 in	79	79	80
3/8 in	71	72	71
#4	53	53	51
#10	32	32	29
#40	16	15	15
#80	13	12	12
#200	10.0	9.6	9.9

Table 6. Density (base).

Base		
Station	**Density (pcf)**	**Moisture (%)**
530801		
0-45	141.8	6.8
1+00	141.8	7.3
2+50	147.0	8.1
4+00	144.9	8.8
5+45	144.3	7.2
530802		
0-30	149.2	9.2
1+00	148.8	9.0
2+50	148.4	8.3
4+00	146.5	8.5

It should be noted that noticeable pumping existed approximately 40 ft from test section 530801 in the intermediate (transition) section. The contractor excavated and replaced the existing material to stop the pumping. No prime coat of asphalt cement was placed on the base prior to paving.

ASPHALT CONCRETE

The asphalt mix design consisted of 62 percent coarse aggregate and 38 percent manufactured fine aggregate and AR-4000W grade cement. Table 7 shows the laboratory blend aggregate gradations of the mix. The original data submittals and further detailed testing results are located in appendix B. The mix design is summarized in table 8.

Table 7. Aggregate gradations and properties for asphalt concrete test sections.

Sieve Size	Percent Passing		
	Stockpile	Target	Specifications
1 in	100	100	100
3/4 in	100	100	97-100
1/2 in	98	98	93-100
3/8 in	91	91	85-97
#4	58	58	51-65
#8	38	38	33-43
#40	17	17	14-20
#200	7	7	5.0-9.0
	Fine Aggregate	Coarse Aggregate	
Bulk	2.639	2.672	
Bulk SSD SG	2.732	2.753	
Apparent SG	2.909	2.906	
Absorption	3.5%	3 0%	

Table 8. Asphalt concrete mix design.

Property	Job-Mix Formula
AC (by mass of total mix)	5.39%
AC (by mass of dry agg.)	5.70%
Air voids (AASHTO T 209)	3.9%
VMA	14 6%
Max. specific gravity (T 209)	2.494
Max. unit weight (T 209)	155 6
Stabilometer value (T 206)	39
Specific gravity of asphalt	1.030
Specific gravity of mineral filler	N/R
Dust/asphalt ratio	1.3
Immersion compression test results:	
Dry strength (psi)	384
Wet strength (psi)	294
Index of retained strength	77%

Paving of the asphalt surface layers for these test sections began on October 24, 1995, and was completed on October 26, 1995. The weather during paving ranged from partly sunny with temperatures in the low to mid 60s (°F) to cloudy and cool with temperatures in the low to mid 40s (°F). Section 530801 consisted of two lifts, while section 530802 consisted of three lifts. The test lane was paved first in each section, and both sections have paved shoulders. There were no automatic grade controls used during paving.

The asphalt concrete hot-mix was produced in a drum mix plant located about 15 minutes from the test sections. Belly dump trucks and trailers hauled the AC to the roadway and emptied the loads on grade in a windrow. A Blaw-Knox PF 510 paver, utilizing a Barber-Greene pick-up machine, laid the AC. Breakdown compaction was performed immediately by a double drum vibrating roller. Pneumatic rollers were used for intermediate rolling and the finish rolling was completed with a static steel drum roller.

Table 9 shows the laydown temperatures and uncompacted mat depths for each lift of the paving. Figure 4 illustrates the compacted DGAB and AC thicknesses computed based upon elevation measurements collected on the surface of each layer. The average haul time from the asphalt plant to the job site was approximately 15 minutes for both sections.

Table 9. Loose AC thicknesses.

Section	Lift	Variable	Nominal Thickness (in)	Laydown Temperature (°F)
530801	1	Mean	2.36*	259
		S.D.	0 197*	4.75
		High	2.625	264
		Low	2 125*	248
	2	Mean	2.33*	255
		S.D.	0.140*	3.23
		High	2.625*	259
		Low	2.125	248
530802	1	Mean	2.63	264
		S.D.	0.209	5.16
		High	3 25	273
		Low	2.5	253
	2	Mean	2.24	258
		S.D	0.17	5.98
		High	2.625	268
		Low	1.875	250
	3	Mean	3.97	251
		S D	0.185	6 75
		High	4.25	258
		Low	3.5	236

Note: * indicates that the transition depth was not included in the calculations

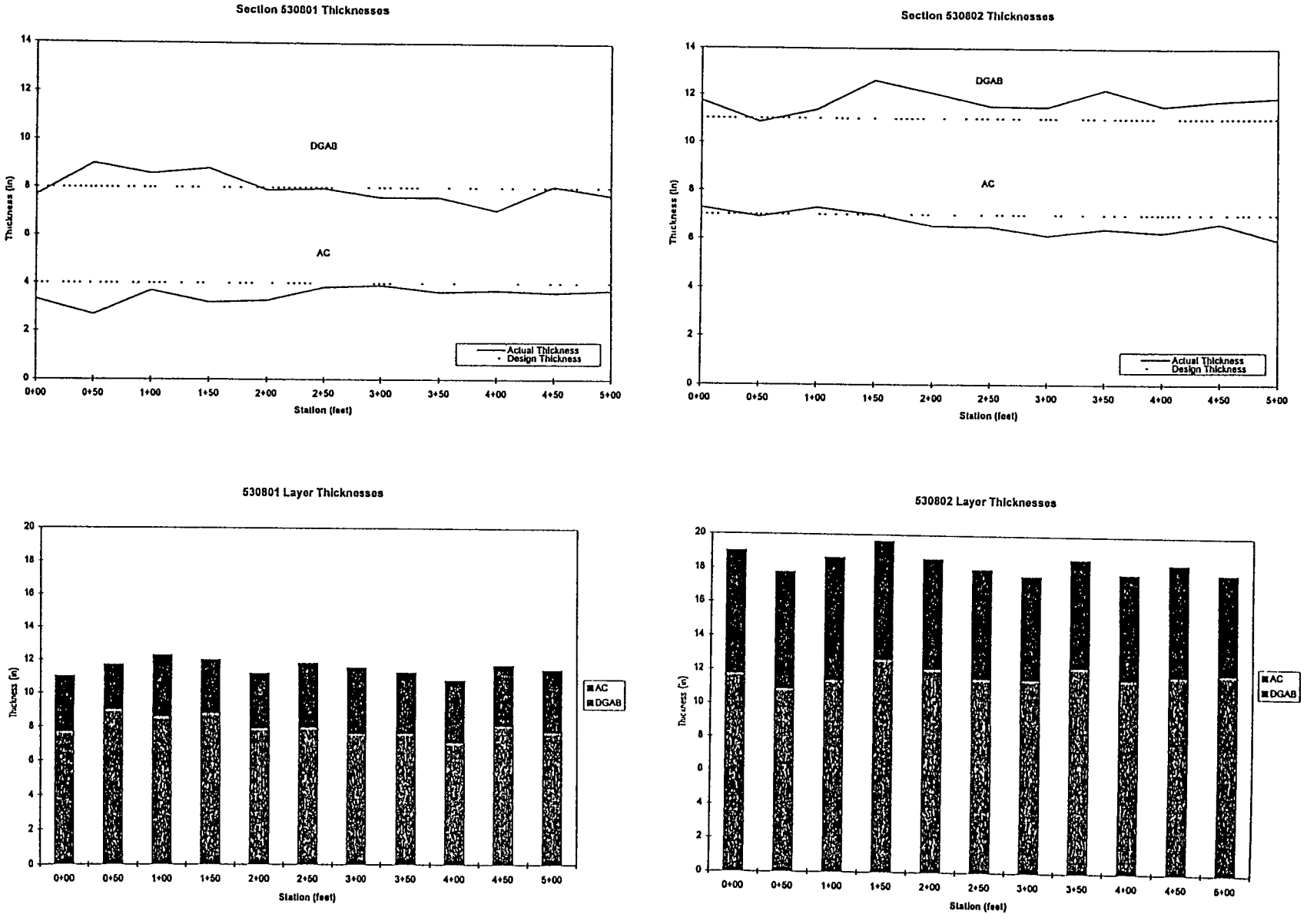


Figure 4. As constructed layer thicknesses, Washington SPS-8 project.

IV. DETAILED ASPHALT CONSTRUCTION

This section highlights the paving of each section individually.

SECTION 530901

Paving of the first lift started at 3:40 pm on October 24, 1995. The air temperature was approximately 45°F with overcast skies and strong winds. The paving started at station 0-50 with a small depression-joint transition between the test section and the base course of the normal roadway. The first lift was placed directly on the compacted aggregate base. Paving was completed for this lift at 4:25 pm at station 5+50. The mat was placed in a 2.25 in loose lift with an average mix laydown temperature of 259°F. The paving width was 14 ft 11 in. There were no problems in placing the first layer of this section.

Paving of the second lift started at 12:05 pm on October 26, 1995. The air temperature was approximately 65°F with partly cloudy skies with winds starting to build. The paving started at station 0-50. Paving was completed for this lift at 1:00 pm at station 5+50. The mat was placed in a 2.25 in loose lift with an average mix laydown temperature of 255°F. The paving width was 14 ft 7 in.

Detailed construction notes for the adjacent (southbound) lane were not recorded.

SECTION 530802

Paving of the first lift started at 8:55 am on October 24, 1995. The air temperature was approximately 50°F with overcast skies. The paving started at station -2-06 with a depression-joint transition between the test section and base aggregate. Paving was completed for this lift at 9:45 am at station 6+00. The mat was placed in a 2.5 in loose lift with an average mix lay-down temperature of 264°F. The paving width was 15 ft 3 in. There were no problems in placing the first layer of this section.

Paving of the second lift started at 9:55 am on October 24, 1995, immediately following the placement of the first lift. The contractor did not allow time for the first lift to cool, and added an emulsified tack coat to the first lift. The air temperature was approximately 50°F with overcast skies. The paving started at station -2-03 with a continuation of the depression-joint transition from the base course of the normal roadway. Paving was completed for this lift at 11:05 am at station 6+00. The mat was placed in a 2.25 in loose lift with an average mix lay-down temperature of 260°F. The paving width was 14 ft 11 in. There were no problems encountered while placing the second lift of this section.

Paving of the third lift started at 9:15 am on October 26, 1995. The air temperature was approximately 55°F with partly cloudy skies. The paving started at station -1-45 while starting a butt-joint to be continued with the remainder of the roadway during the following week. The sled separated from the paving at station 223+60, which caused a delay of

approximately 10 minutes. The contractor discovered the windrow was not large enough for the required mat thickness at station 0-25. Asphalt concrete was added to the paver by hand and backhoe for approximately 25 ft until the paver reached the section in which the larger windrow had started. This caused a delay of approximately 20 minutes. There was a substantial delay in trucks at station 5+20 for approximately 35 minutes. Paving was completed for this lift at 10:55 am at station 6+00. The mat was placed in a 4.0 in loose lift with an average mix laydown temperature of 250°F. The paving width was 14 ft 7 in.

Construction notes documenting the paving of the adjacent lane were not recorded.

V. SUMMARY

Construction of the Washington SPS-8 project began in June 1995 with subgrade preparation. This continued through August as excessive rainfall necessitated the overexcavation of approximately 3 ft of the existing material, and replaced this material with shot-rock followed by a thin layer of select borrow.

On September 24th, the aggregate base was placed with an average thickness of 8.0 in on section 530801 and 11.7 in on section 530802. There was no prime coat placed on the aggregate base.

Asphalt paving was performed from October 24-26, 1995. Section 530801 received an average of 3.5 in of asphalt concrete, and section 530802 received an average of 6.6 in.

No significant deviations from the construction guidelines were noted. Because the material subgrade was overexcavated as much as 3 ft and replaced with large granular material (shot-rock), the pavement will most likely perform as a coarse subgrade section. In addition, due to the construction sequencing and the placement of the shot-rock, only bulk sampling was possible. Shelby tubes, split spoon samples, and shoulder probes were unattainable.

Other than the deviations noted above, this SPS-8 project was constructed in accordance with the LTPP construction guidelines. Therefore, this project should prove to be a valuable test section in achieving the goals of the SPS-8 experimental design.

APPENDIX A -CONSTRUCTION PHOTOS

Appendix A consists of the following construction photos:

Photo 1. Removal of existing surface.
Photo 2. Embankment placement.
Photo 3. Embankment placement.
Photo 4. Embankment preparation.
Photo 5. Granular base material processing.
Photo 6. Granular base placement.
Photo 7. Finished granular base aggregate.
Photo 8. Asphalt concrete paving train.
Photo 9. Breakdown rolling.
Photo 10. Intermediate rolling.

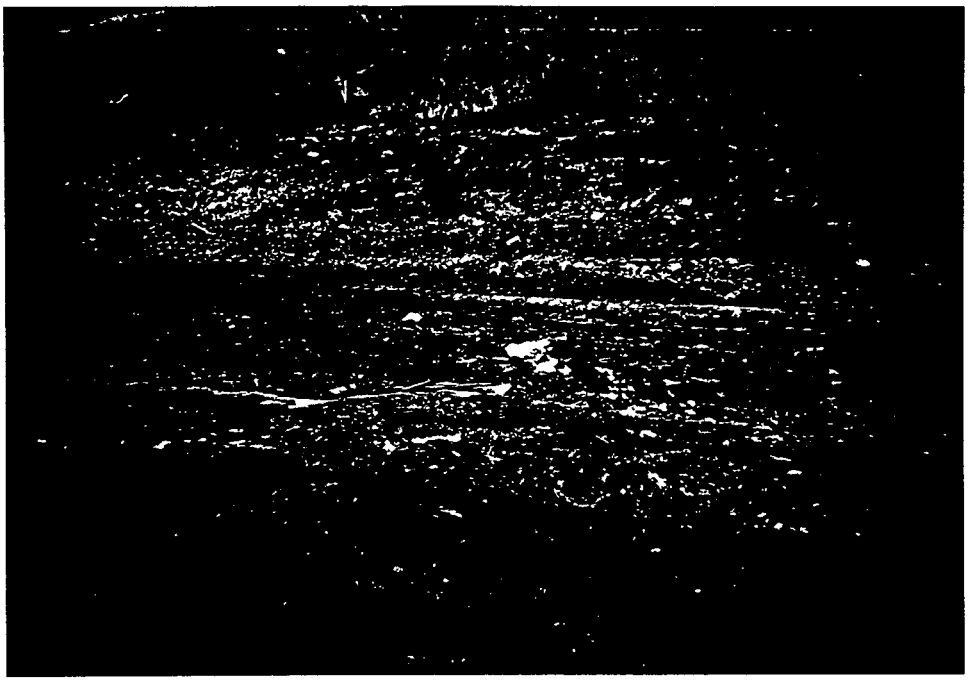


Photo 1. Removal of existing surface.

Photo 2. Embankment placement.

Photo 3. Embankment placement.

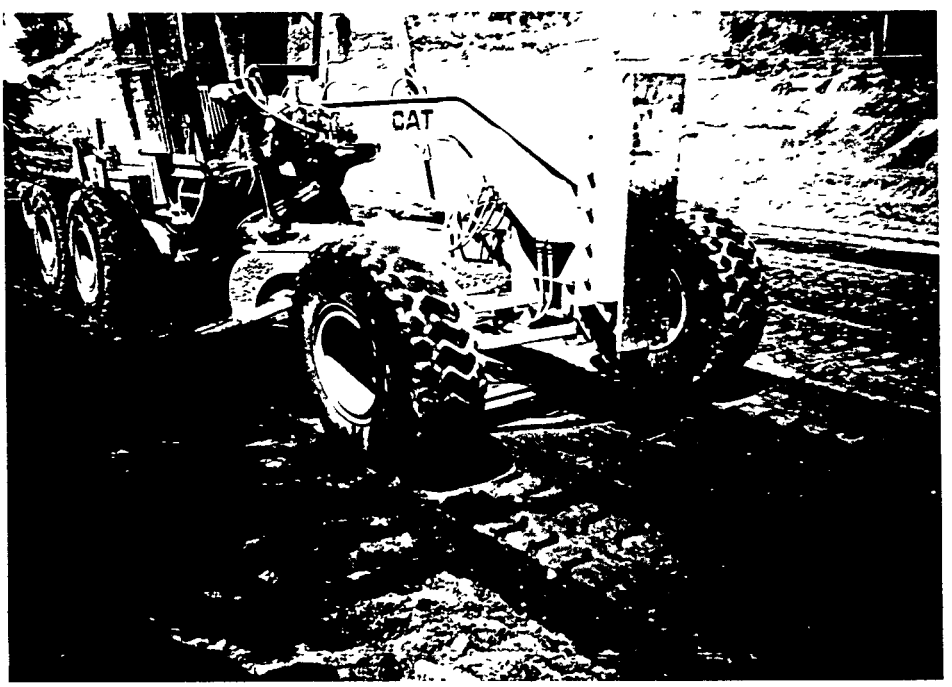


Photo 4. Embankment preparation.

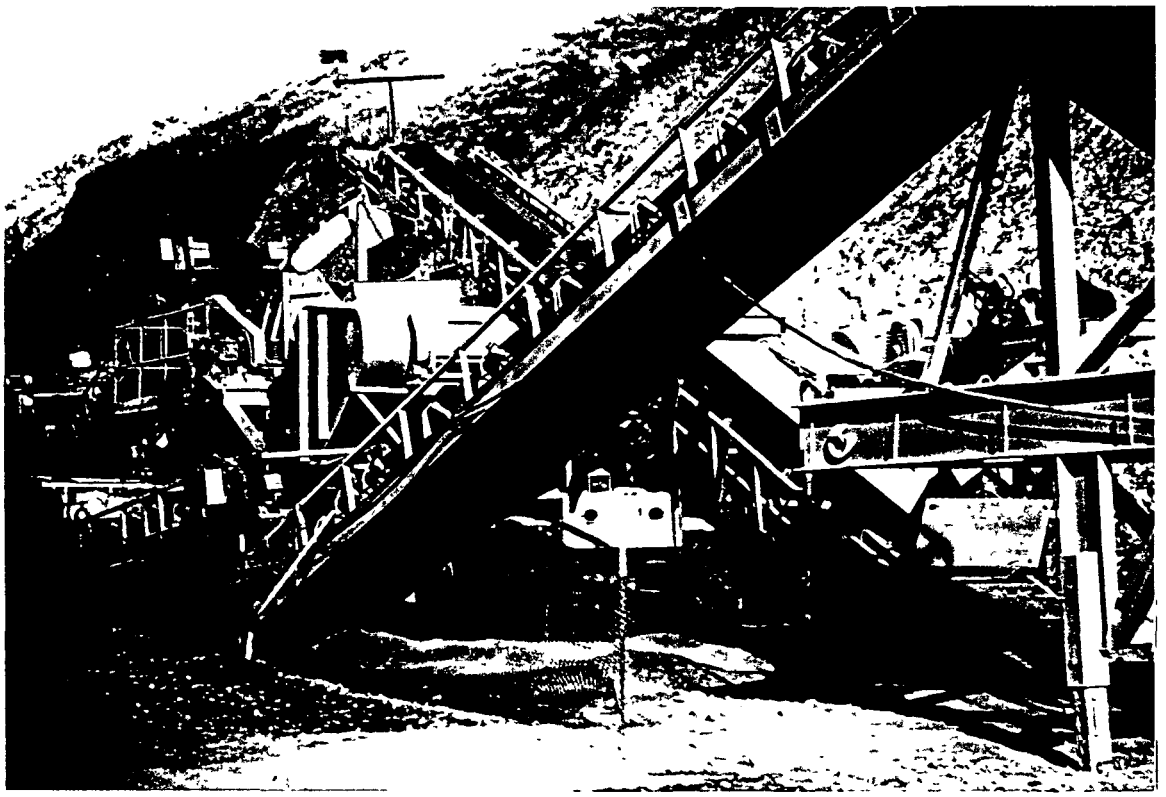


Photo 5. Granular base material processing.

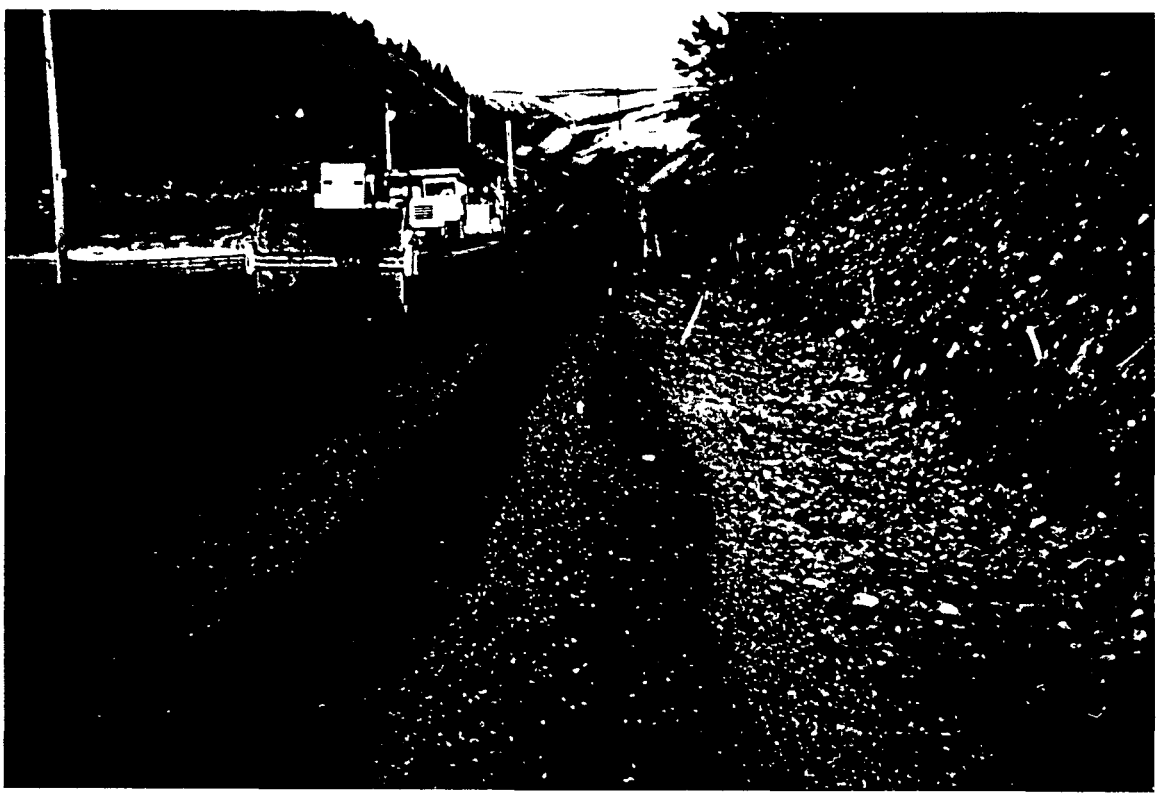


Photo 6. Granular base placement.

Photo 7. Finished granular base aggregate.

Photo 8. Asphalt concrete paving train.

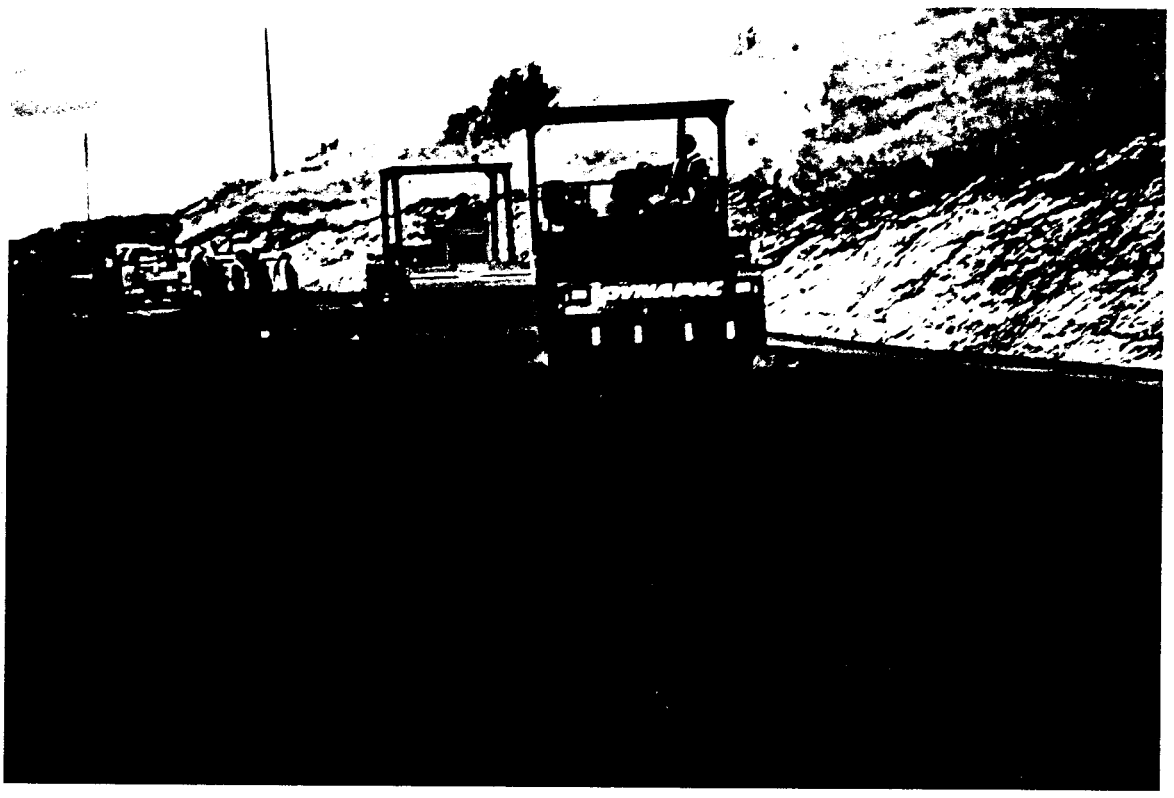


Photo 9. Breakdown rolling.

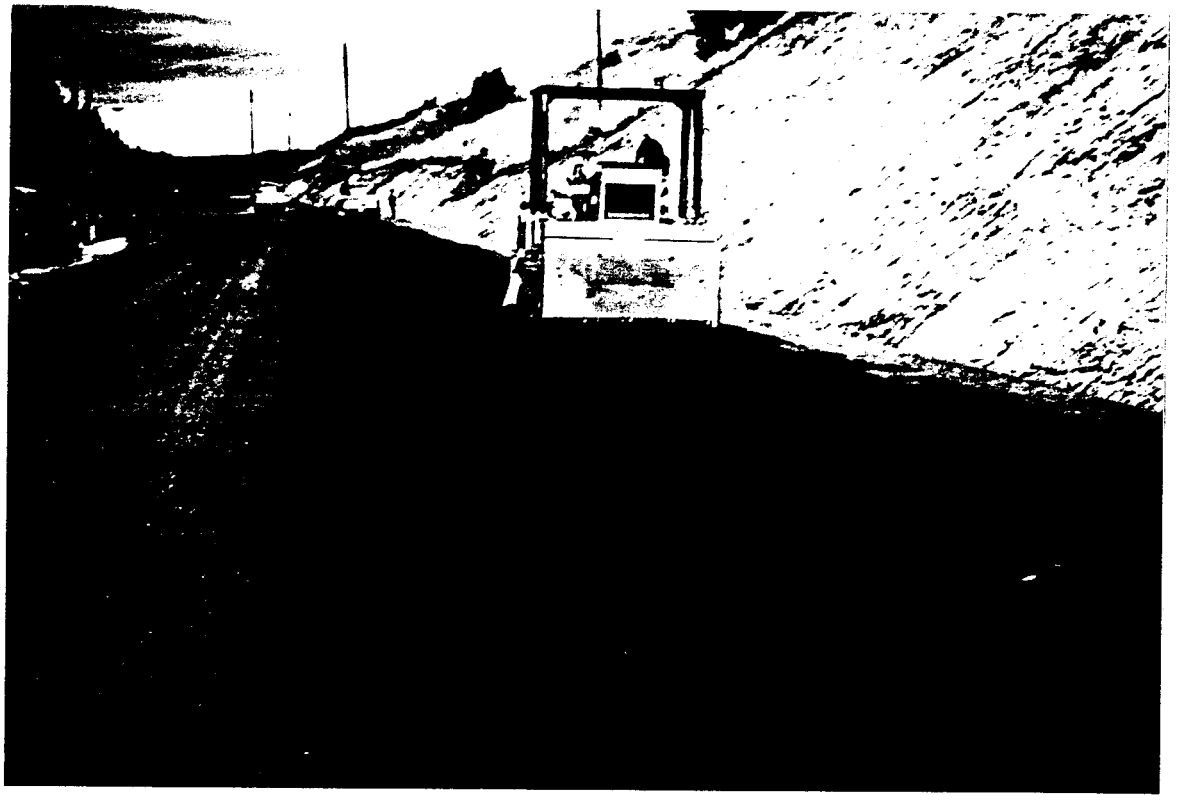


Photo 10. Intermediate rolling.

APPENDIX B - ASPHALT CONCRETE MIXTURE DESIGN

Appendix B consists of asphalt concrete mixture design worksheets.

U.S. Department of Transportation
Federal Highway Administration
Federal Lands Highway Office

WORKSHEET FOR AN ASPHALTIC CONCRETE MIX DESIGN

Project: N Tolichet Road, WA PFH 176-1 (1) Date: 8/29/95

Contractor: Acme Materials & Construction Type of Asphalt: AR-4000W

Asphalt Producer: Koch Materials Co. Type of Mixture: Hveem

Sources for: Aggregates: Konen Quarry, Mineral Filler: N/R

Admixtures:

Summary of the Proposed Job-Mix-Formula

1. Percent asphalt by weight of total mix [1]	5.39	8. Specific Gravity of Asphalt	1.030
2. Percent asphalt by weight of aggregate	5.70	9. Specific Gravity of Mineral Filler	N/R
3. Air voids (AASHTO T 209)	3.9	10. Dust/Asphalt Ratio	1.3
4. Voids in mineral aggregate (VMA)	14.6	11. Immersion compression Test Results:	
5. Maximum specific gravity (AASHTO T 209)	2.494	a. Dry strength, psi	384
6. Maximum unit weight (AASHTO T 209)	155.6	b. Wet strength, psi	294
7. Stabilometer value (AASHTO T 246)	39	c. Index of retained strength, %	77

GRADATION TARGET VALUES AND ALLOWABLE TOLERANCES			SPECIFIC GRAVITY AND ABSORPTION			CKE
Sieve Sizes	Target Value [2] % by Weight Passing	Allowable Tolerances [3] %		Fine Aggregate (AASHTO T 84)	Coarse Aggregate (AASHTO T 85)	Centrifuge Kerosene Equivalent (AASHTO T 270)
1 inch	100					Surface Area:
¾ inch	100		Bulk SG	2.639	2.672	N/R ft²/lb
½ inch	98	5				
⅜ inch	91	6	Bulk SSD SG	2.732	2.753	
No. 4	58	7				Asphalt % by CKE:
No. 8	38	5	Apparent SG	2.909	2.906	N/R %
No. 40	17	3				
No. 200	7.0	2	Absorption	3.5 %	3.0 %	

[1] Asphalt cement content (percent by weight of mix) shall be established to the nearest 0.01 percent.
[2] Target Values to be established by the contractor as part of the JMF. Target values shall be established to the nearest 0.1 percent.
[3] Allowable tolerances plus or minus from established target values.

Page 1 of 1

Form FHWA 1257 (Rev 9-90)

APPROVED
AUG 31 1995
BY PROJECT ENGINEER

	Stockpile Description	Quantity Represented	Blend Ratio
Stockpile A	3/4" Plant Mix		100 %
Stockpile B			%
Stockpile C			%
Stockpile D			%
Stockpile E			%

Stockpile Gradings

Sieve Sizes	Stockpile A 100 %	Stockpile B ____ %	Stockpile C ____ %	Stockpile D ____ %	Stockpile E ____ %	Blended Stockpile Gradation	Target Values	Specification Limits
1 inch	100					100	100	100.0
¾ inch	100					100	100	97.0 - 100.0
½ inch	98					98	98	93-100.0
⅜ inch	91					91	91	85-97
No. 4	58					58	58	51-65
No. 8	38					38	38	33-43
No. 40	17					17	17	14-20
No. 200	7.0					7.0	7.0	5.0-9.0

Remarks: _____

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Form FHWA 1609 (Rev 9-63)

Note: Three test trials are required for each asphalt content

Trial Number	1			2			3		
% Asphalt by wt. of total mix	4.76			5.21			5.66		
% Asphalt by wt. of aggregate	5.00			5.50			6.00		
Specimen height in inches	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Stabilometer value	46	41	41	44	40	35	42	35	30
% Air voids	5.6	5.5	6.2	4.7	5.1	4.6	3.2	3.0	3.6
Actual bulk specific gravity	2.375	2.378	2.360	2.384	2.372	2.384	2.403	2.409	2.395
Actual bulk unit wt. (lb/ft³)	148.2	148.4	147.3	148.7	148.0	148.8	150.0	150.3	149.4
Max. sp. gr. (AASHTO T 209)	2.517			2.500			2.483		
Max. unit wt. (AASHTO T 209)	157.0			156.0			155.0		
Dust/Asphalt ratio	1.5			1.3			1.2		
Voids in mineral aggr. (VMA)	14.7	14.6	15.3	14.8	15.2	14.8	14.5	14.3	14.8

Trial Number	4			5			6		
% Asphalt by wt. of total mix	6.10			6.54					
% Asphalt by wt. of aggregate	6.50			7.00					
Specimen height in inches	2.50	2.50	2.50	2.50	2.50	2.50			
Stabilometer value	29	36	33	18	26	31			
% Air voids	1.4	2.6	2.7	1.0	1.4	1.5			
Actual bulk specific gravity	2.431	2.402	2.401	2.426	2.416	2.414			
Actual bulk unit wt. (lb/ft³)	151.7	149.9	149.8	151.4	150.8	150.6			
Max. sp. gr. (AASHTO T 209)	2.467			2.451					
Max unit wt. (AASHTO T 209)	154.0			153.0					
Dust/Asphalt ratio	1.1			1.1					
Voids in mineral aggr. (VMA)	13.9	15.0	15.0	14.5	14.9	15.0			

Test Results for Each of the Individual Immersion Compression Test Specimens

Percent asphalt cement 5.70

Specimen ID		Specimen Height		Bulk Specific Gravity		Air Voids		Compressive Strength	
Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet
1A	3A	4.02	4.02	2.298	2.314	7.9	7.2	383	316
2A	5A	4.00	4.02	2.308	2.309	7.5	7.4	378	280
4A	6A	4.00	4.00	2.341	2.319	6.1	7.0	390	286
Averages				2.316	2.314	7.2	7.2	384	294

Index of retained strength: 77 %

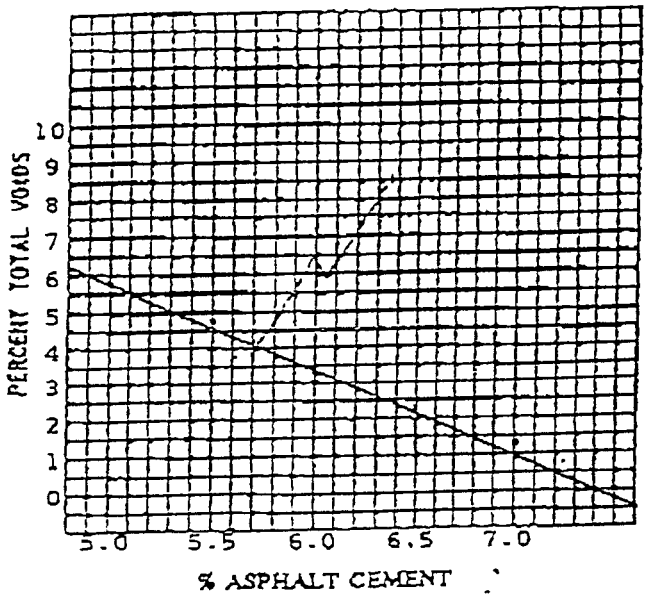
Page 3 of 3

Form FHWA 1687 (Rev 9-90)

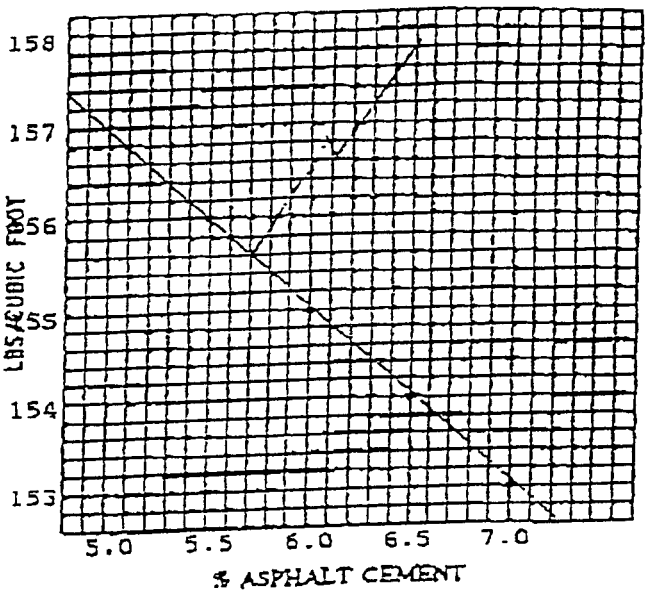
WORKSHEET FOR AN ASPHALTIC CONCRETE MIX DESIGN (CONTINUED)

Design Curves for Proposed Job Mix Formula (JMF)

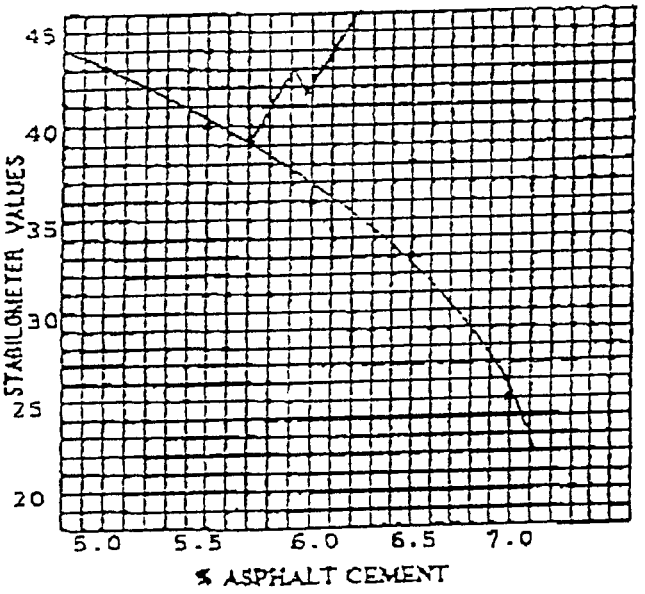
AIR VOIDS



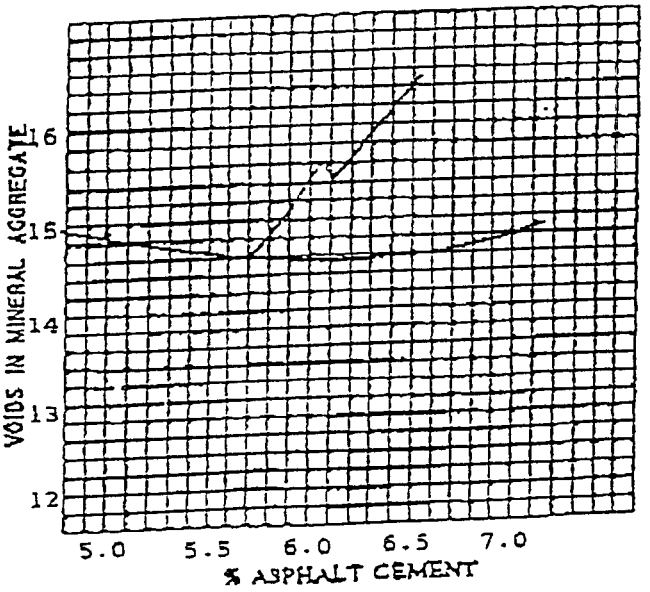
UNIT WEIGHT



STABILOMETER



VMA



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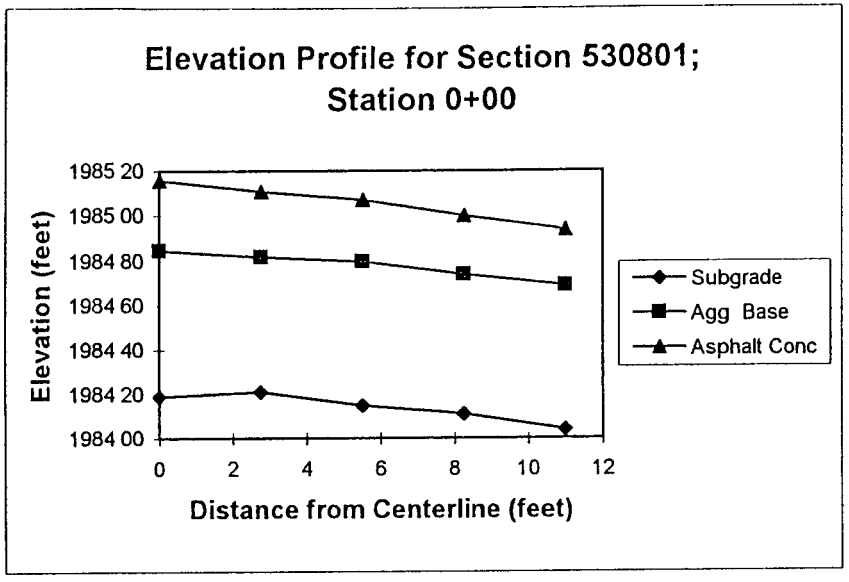
APPENDIX C - ELEVATION PROFILES

Appendix C consists of elevation profiles.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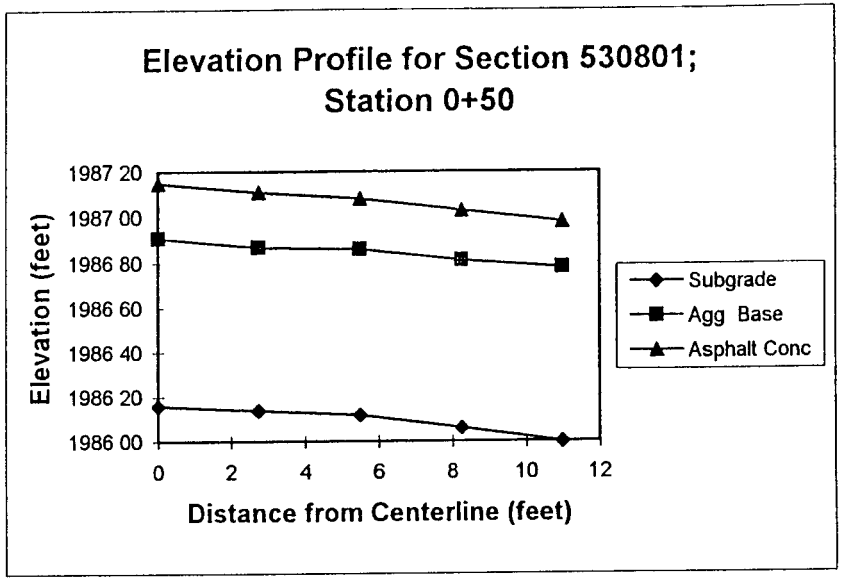
Station 0+00
1985 20
1985 00
1984 80
1984 60
1984 40
1984 20
1984 00
Elevation (feet)
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc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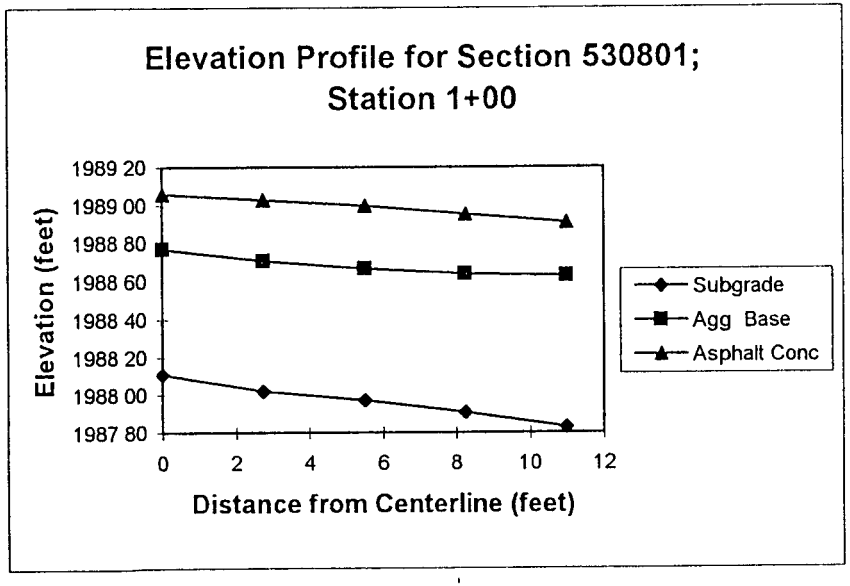
Station 0+50
1987 20
1987 00
1986 80
1986 60
1986 40
1986 20
1986 00
Elevation (feet)
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc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Station 1+00
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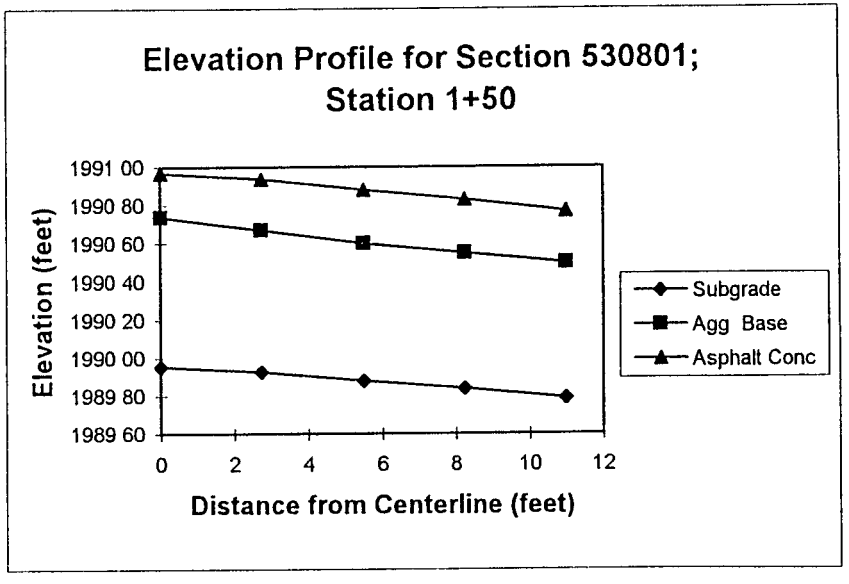
1989 00
1988 80
1988 60
1988 40
1988 20
1988 00
1987 80
Elevation (feet)
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc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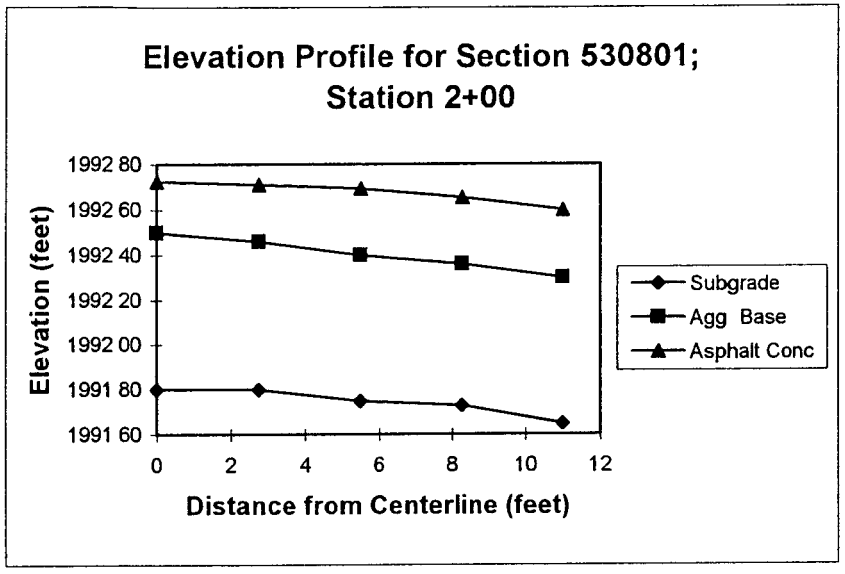
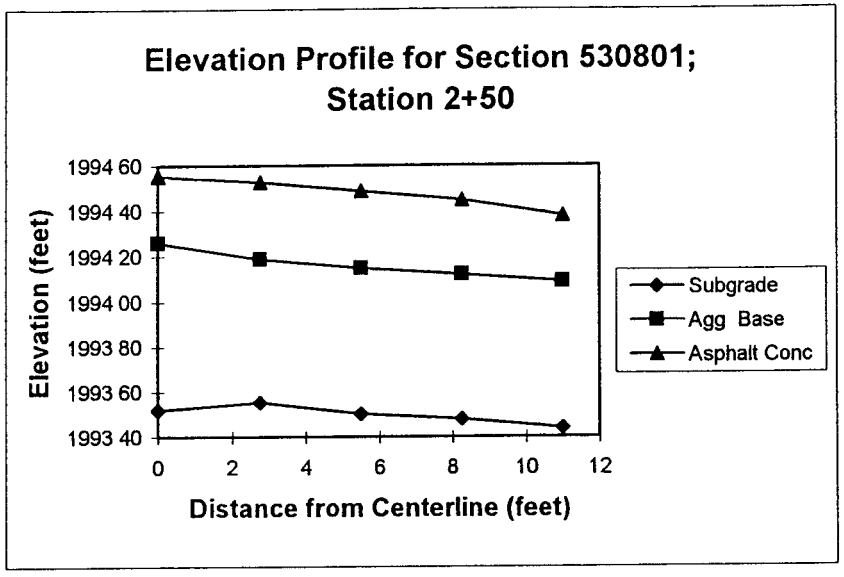
Station 1+50
1991 00
1990 80
1990 60
1990 40
1990 20
1990 00
1989 80
1989 60
Elevation (feet)
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc


Elevation Profile for Section 530801;
Station 2+00
Elevation (feet)
1992 80
1992 60
1992 40
1992 20
1992 00
1991 80
1991 60
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc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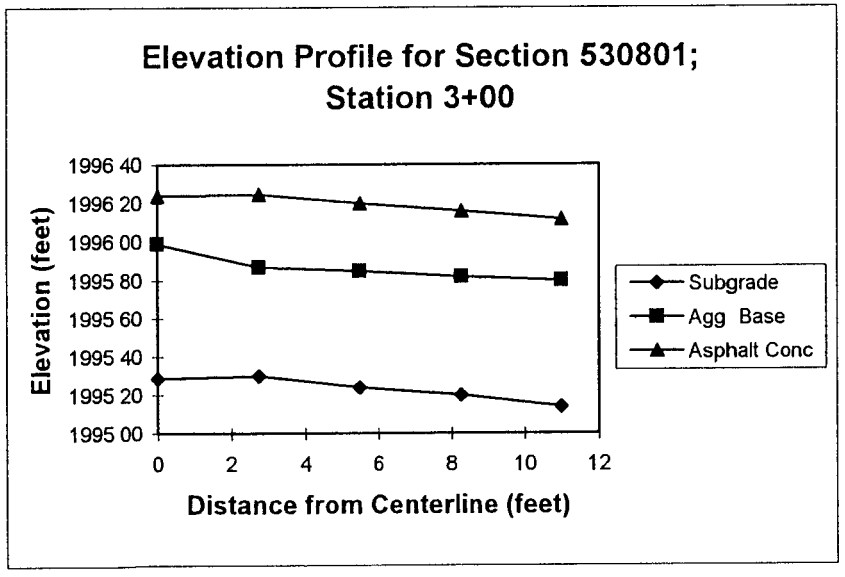
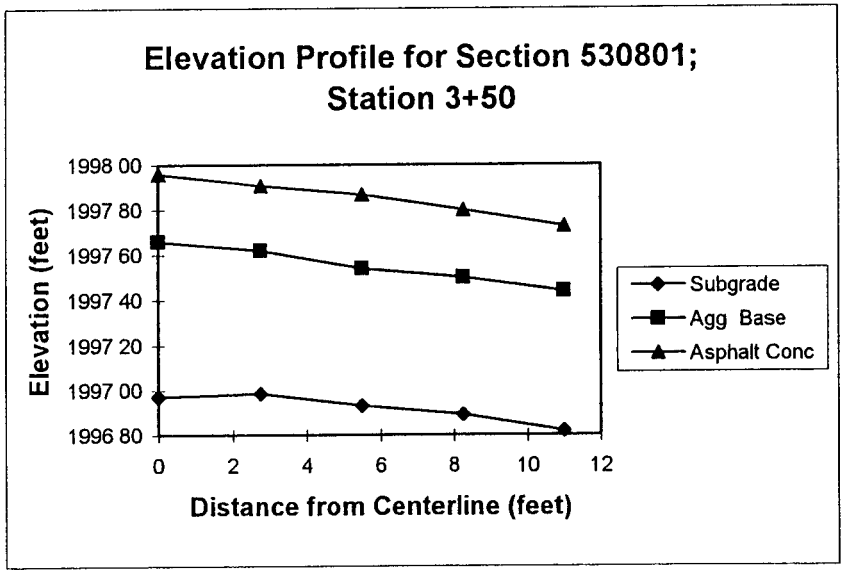
Station 2+50
Elevation (feet)
1994 60
1994 40
1994 20
1994 00
1993 80
1993 60
1993 40
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc


Elevation Profile for Section 530801;
Station 3+00
Elevation (feet)
1996 40
1996 20
1996 00
1995 80
1995 60
1995 40
1995 20
1995 00
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc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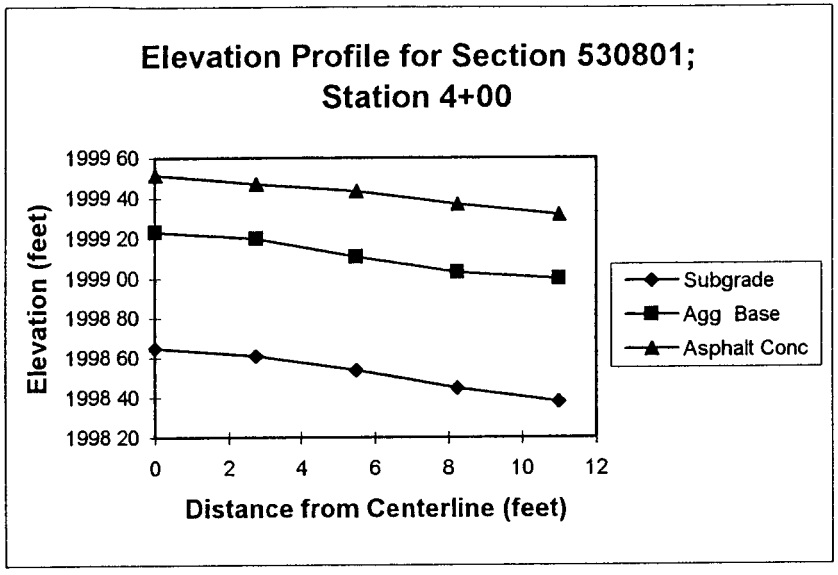
Station 3+50
Elevation (feet)
1998 00
1997 80
1997 60
1997 40
1997 20
1997 00
1996 80
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc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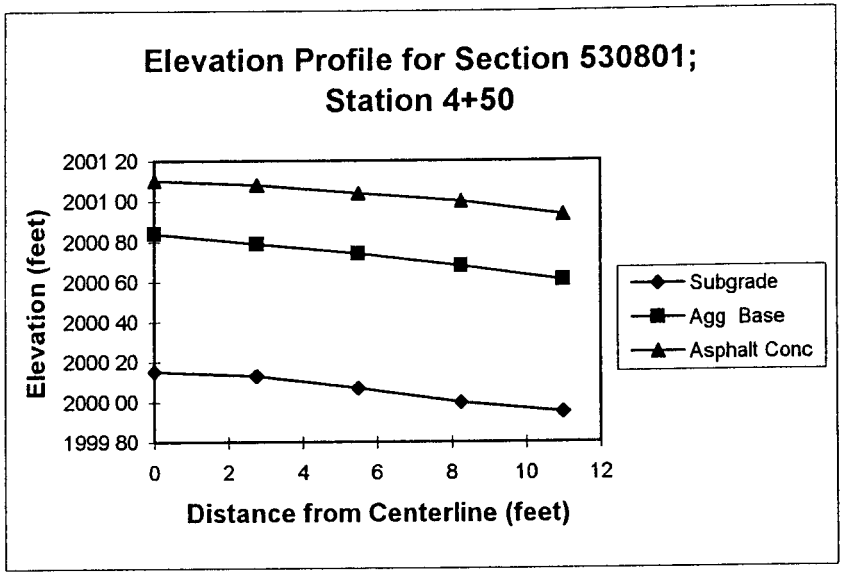
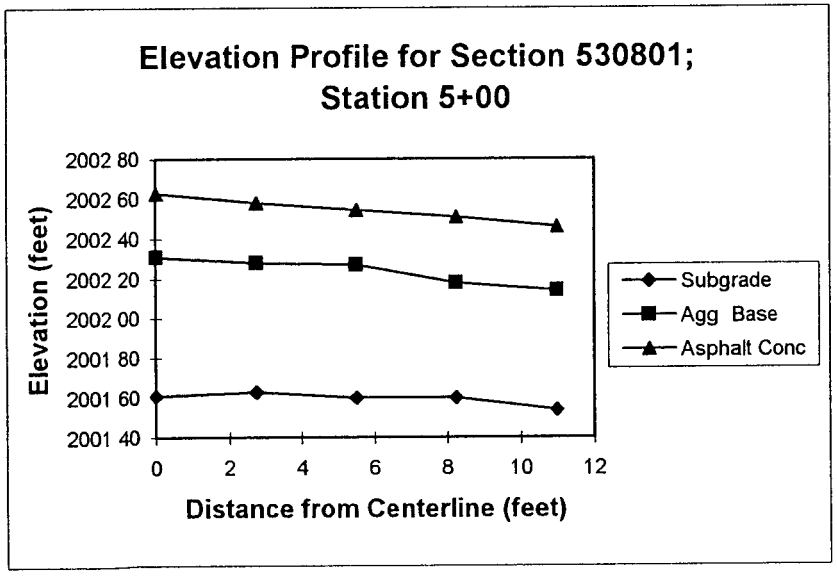
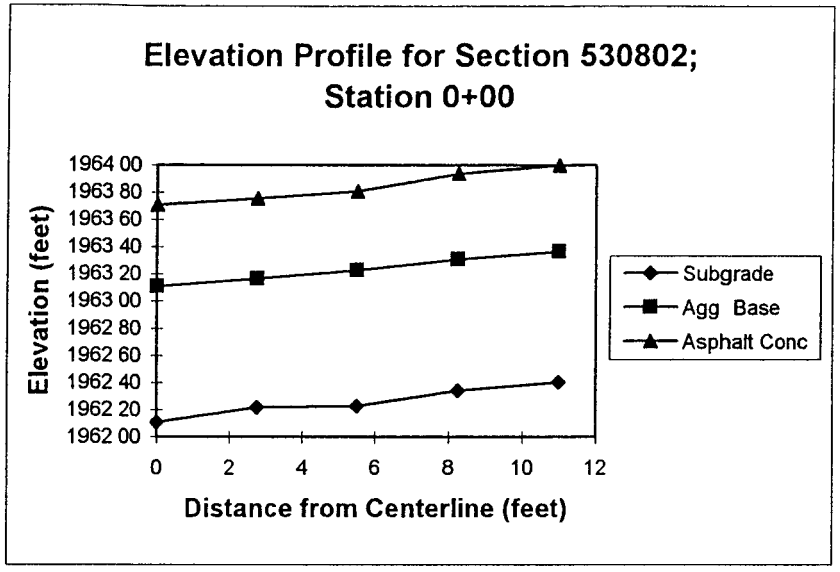
Station 4+00
Elevation (feet)
1999 60
1999 40
1999 20
1999 00
1998 80
1998 60
1998 40
1998 20
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc


Elevation Profile for Section 530801;
Station 4+50
Elevation (feet)
2001 20
2001 00
2000 80
2000 60
2000 40
2000 20
2000 00
1999 80
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc


Elevation Profile for Section 530801;
Station 5+00
Elevation (feet)
2002 80
2002 60
2002 40
2002 20
2002 00
2001 80
2001 60
2001 40
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc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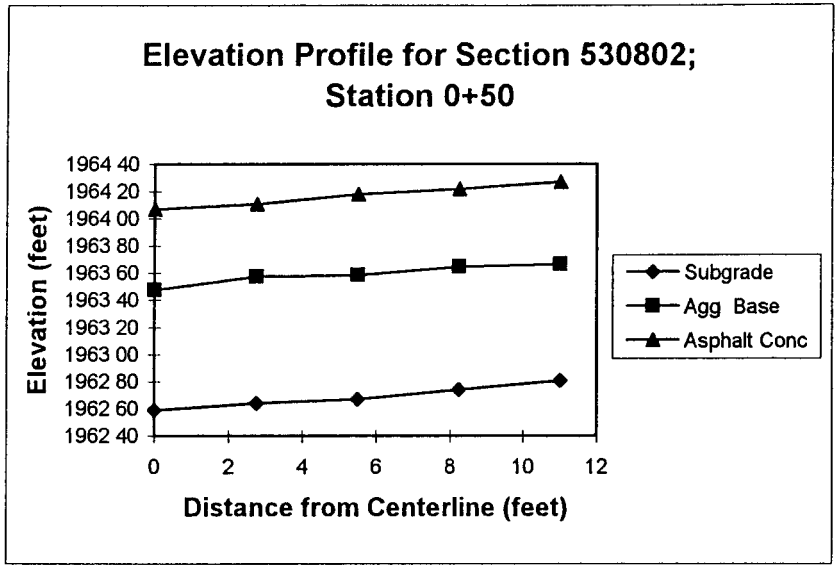
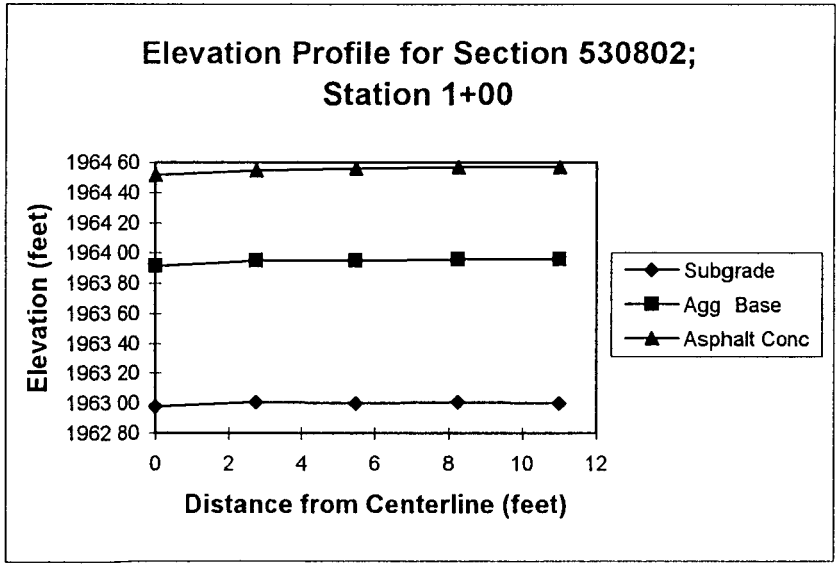
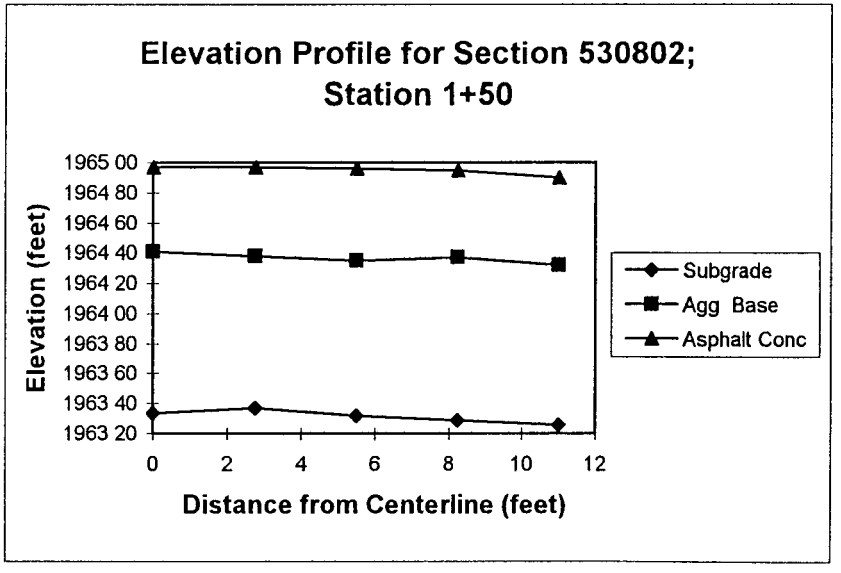
Station 0+00
Elevation (feet)
1964 00
1963 80
1963 60
1963 40
1963 20
1963 00
1962 80
1962 60
1962 40
1962 20
1962 00
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc


Elevation Profile for Section 530802;
Station 0+50
Elevation (feet)
1964 40
1964 20
1964 00
1963 80
1963 60
1963 40
1963 20
1963 00
1962 80
1962 60
1962 40
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc


Elevation Profile for Section 530802;
Station 1+00
Elevation (feet)
1964 60
1964 40
1964 20
1964 00
1963 80
1963 60
1963 40
1963 20
1963 00
1962 80
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc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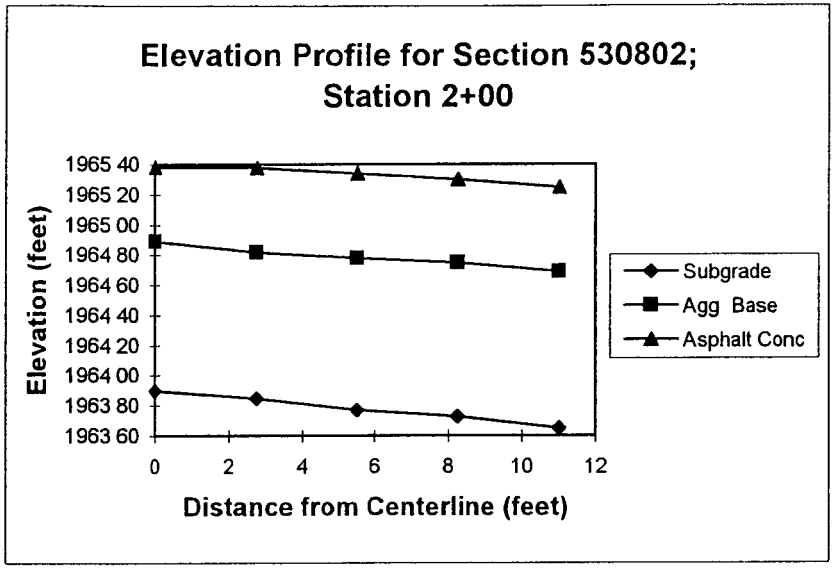
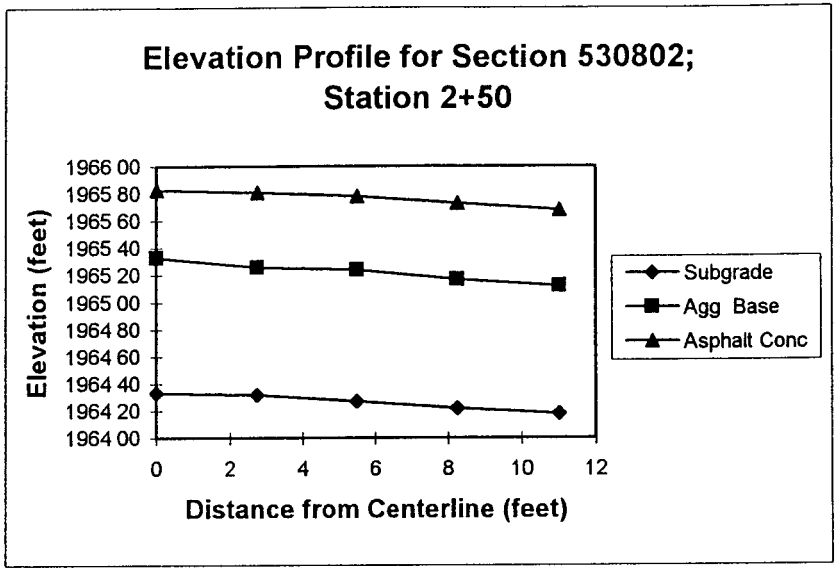
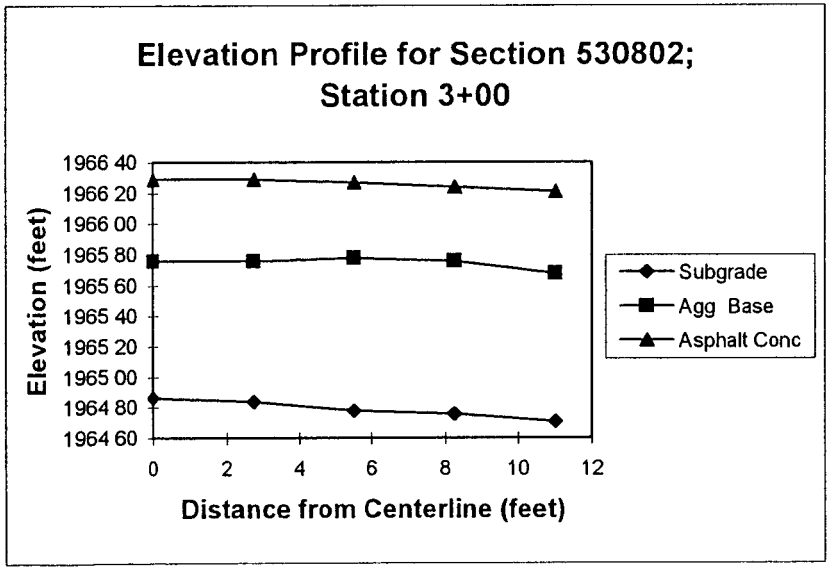
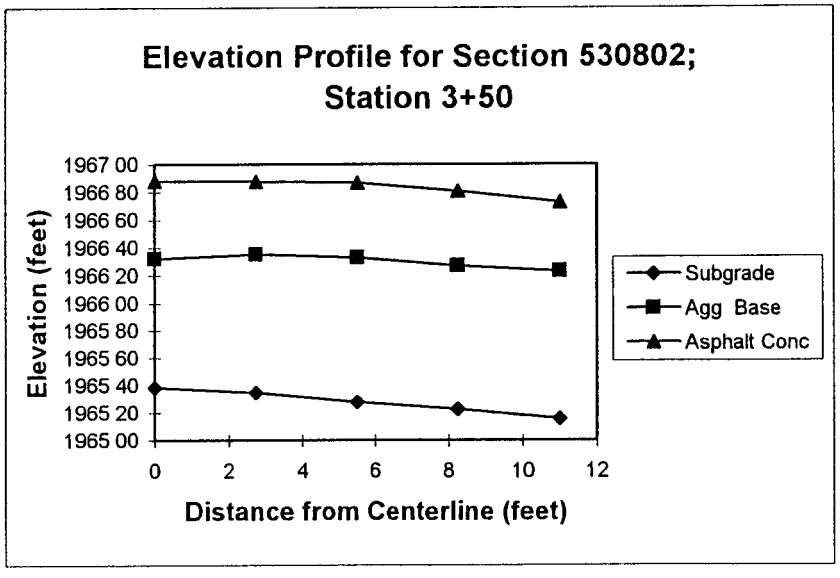
Station 1+50
Elevation (feet)
1965 00
1964 80
1964 60
1964 40
1964 20
1964 00
1963 80
1963 60
1963 40
1963 20
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc


Elevation Profile for Section 530802;
Station 2+00
Elevation (feet)
1965 40
1965 20
1965 00
1964 80
1964 60
1964 40
1964 20
1964 00
1963 80
1963 60
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc


Elevation Profile for Section 530802;
Station 2+50
Elevation (feet)
1966 00
1965 80
1965 60
1965 40
1965 20
1965 00
1964 80
1964 60
1964 40
1964 20
1964 00
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc


Elevation Profile for Section 530802;
Station 3+00
Elevation (feet)
1966 40
1966 20
1966 00
1965 80
1965 60
1965 40
1965 20
1965 00
1964 80
1964 60
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc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Station 3+50
Elevation (feet)
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1966 80
1966 60
1966 40
1966 20
1966 00
1965 80
1965 60
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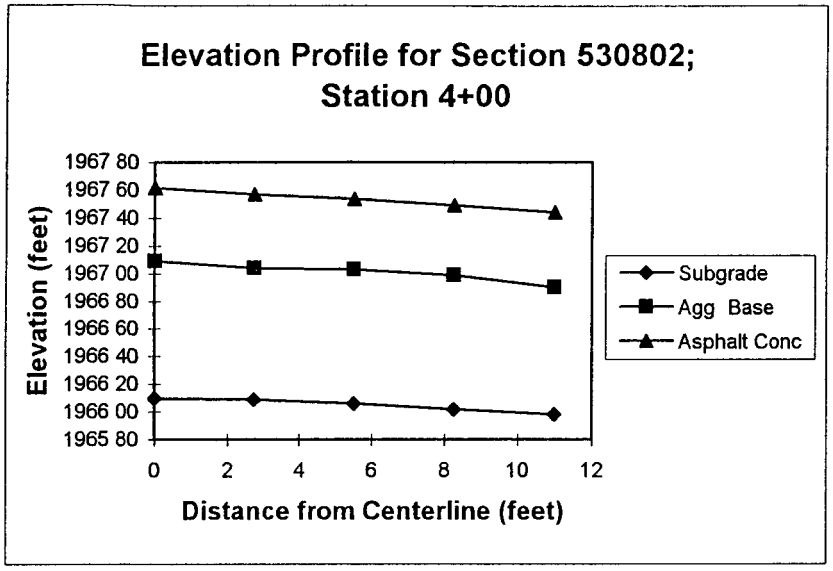
1965 20
1965 00
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc


Elevation Profile for Section 530802;
Station 4+00
Elevation (feet)
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1967 60
1967 40
1967 20
1967 00
1966 80
1966 60
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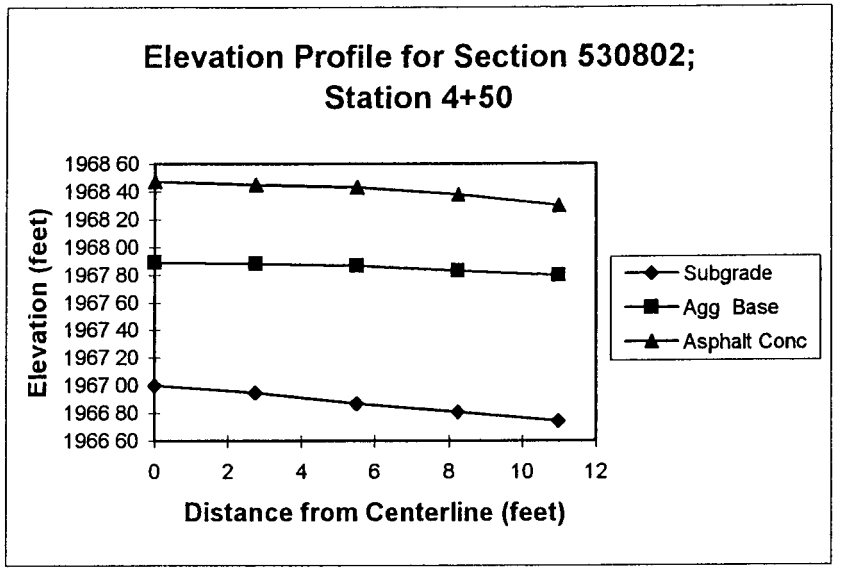
1966 00
1965 80
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc


Elevation Profile for Section 530802;
Station 4+50
Elevation (feet)
1968 60
1968 40
1968 20
1968 00
1967 80
1967 60
1967 40
1967 20
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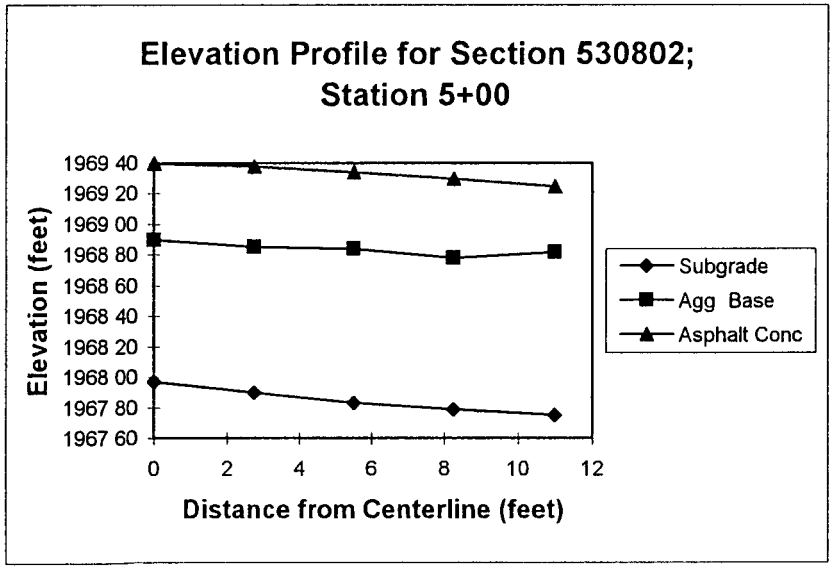
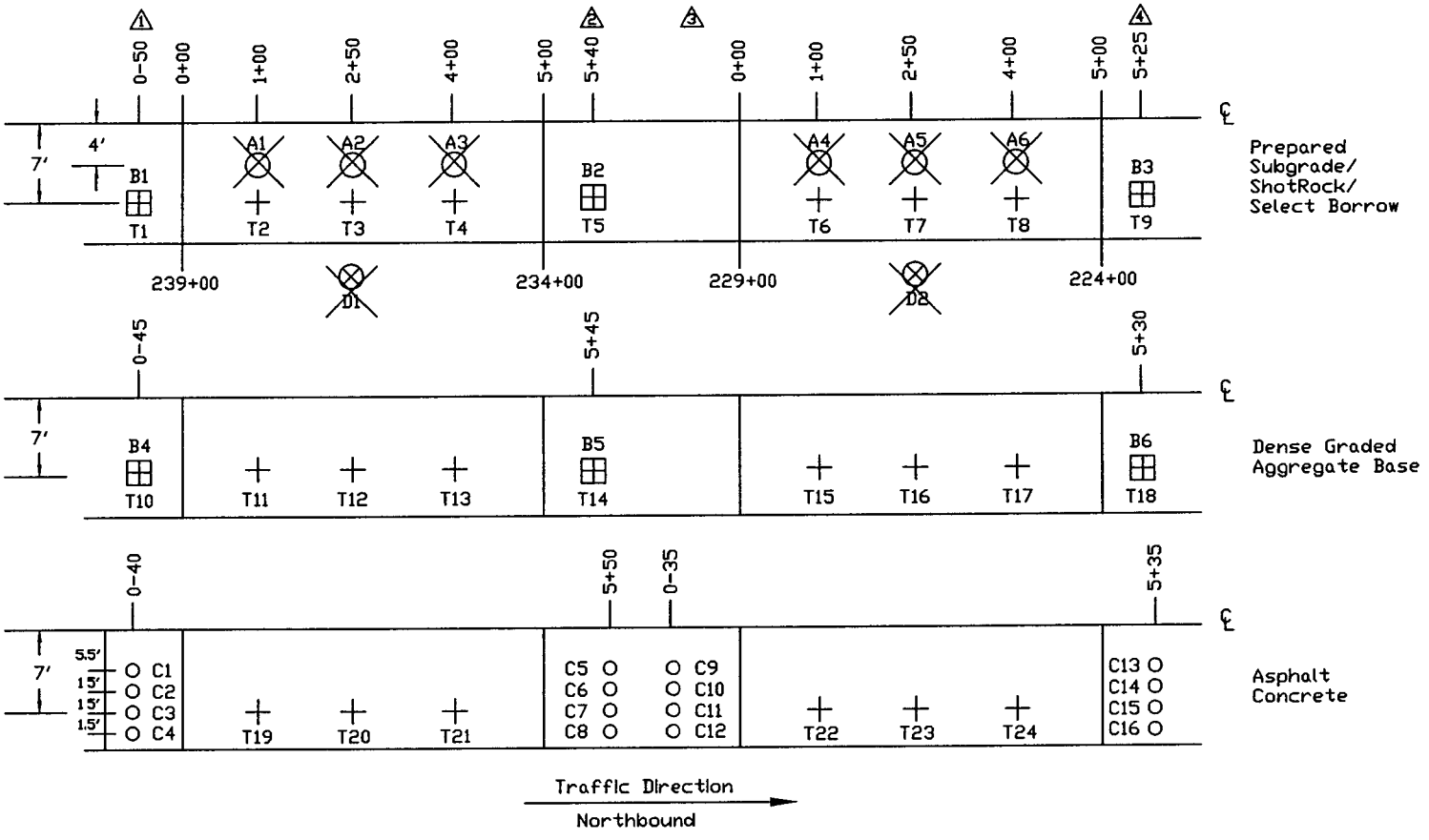
1966 80
1966 60
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc


Elevation Profile for Section 530802;
Station 5+00
Elevation (feet)
1969 40
1969 20
1969 00
1968 80
1968 60
1968 40
1968 20
1968 00
1967 80
1967 60
0
2
4
6
8
10
12
Distance from Centerline (feet)
Subgrade
Agg Base
Asphalt Conc

APPENDIX D - MATERIALS SAMPLING AND TESTING PLAN



D1-D2 - 20' Shoulder probe
A1-A6 - Thinwall tube samples of subgrade
T1-T9 - Moisture-density tests on subgrade (Nuclear)
B1-B3 - Bulk samples of subgrade material, Shot Rock material and Select Borrow
T10-T18 - Moisture-density tests on DGAB (Nuclear)
B4-B6 - Bulk samples of DGAB
T19-T24 - Density tests on AC (Nuclear)
C1-C16 - Cores of AC surface
① - Sample area numbers

Figure 2. Overview of sampling, testing and coring plan for Asphalt Concrete sections on SPS-8 Washington. (Actual sampling plan used during construction)

Table 20. Tracking Table of **Asphalt Concrete** Testing in the **State Laboratory**.

Layer Number (Note 1)	Layer Description Code	Layer Type	Test Section Number	Sample Location Number	Sample Number	Lab Test Number	Steps Involved in Laboratory Handling and Testing Sequence						
							Required Laboratory Tests Per Layer				Extra Sample	Sample Storage	Sample Disposed?
							First	Second	Third	Fourth			
5	03	AC	02	C10	CA10	1	AC01/P01	AC02/P02			Yes	(a)	No
5	03	AC	02	C11	CA11	1	AC01/P01	AC02/P02			Yes	(a)	No
5	03	AC	02	C12	CA12	1	AC01/P01	AC02/P02			Yes	(a)	No
5	03	AC	01	B7	BA01	3	AC03/P03	AC04/P04	AC05/P05	Note 2	No	(a)	Yes
5	03	AC	02	B8	BA02	3	AC03/P03	AC04/P04	AC05/P05	Note 2	No	(a)	Yes
5	03	AC	02	B9	BA03	3	AC03/P03	AC04/P04	AC05/P05	Note 2	No	(a)	Yes
5	03	AC	00	B10	BC01	3	AE02/P22	AE03/P23	~~AE04/P24~~	AE05/P25	No	(a)	Yes
5	03	AC	00	B11	BC02	3	AE02/P22	AE03/P23	~~AE04/P24~~	AE05/P25	No	(a)	Yes
5	03	AC	00	B12	BC03	3	AE02/P22	AE03/P23	~~AE04/P24~~	AE05/P25	No	(a)	Yes

Note 1: Layer Number to be completed by testing lab after reviewing field sampling logs.
2: Run tests AE01/P21 - AE05/P25 on recovered asphalt cement and tests AG01/P11 - ***AG05/P14A*** on extracted aggregate.
No results for test AE04/P24.

Table 21. Tracking Table of **Unbound Granular Base** Testing in the **State Laboratory**.

Layer Number (Note 1)	Layer Description Code	Layer Type	Test Section Number	Sample Location Number	Sample Number	Lab Test Number	Steps Involved in Laboratory Handling and Testing Sequence						
							Required Laboratory Tests Per Layer				Extra Sample	Sample Storage	Sample Disposed?
							First	Second	Third	Fourth			
4	05	GB	01	B4	BG01	1	UG09/P48	*UG01/P41*	*UG04/P43*		No	(b)	Yes
4	05	GB	01	B5	BG02	2	UG09/P48	*UG01/P41*	*UG04/P43*		No	(b)	Yes
4	05	GB	02	B6	BG03	2	UG09/P48	*UG01/P41*	*UG04/P43*		No	(b)	Yes
2	*06*	*GS*	*01*	*B1*	*BG11*	*1*	*UG01/P41*	*UG04/P43*			*No*	*(b)*	*Yes*
2	*06*	*GS*	*01*	*B2*	*BG12*	*2*	*UG01/P41*	*UG04/P43*			*No*	*(b)*	*Yes*
2	*06*	*GS*	*02*	*B3*	*BG13*	*2*	*UG01/P41*	*UG04/P43*			*No*	*(b)*	*Yes*
3	*06*	*GS*	*01*	*B1*	*BG21*	*1*	*UG01/P41*	*UG04/P43*			*No*	*(b)*	*Yes*
3	*06*	*GS*	*01*	*B2*	*BG22*	*2*	*UG01/P41*	*UG04/P43*			*No*	*(b)*	*Yes*
3	*06*	*GS*	*02*	*B3*	*BG23*	*2*	*UG01/P41*	*UG04/P43*			*No*	*(b)*	*Yes*

Note 1: Layer Number to be completed by testing lab after reviewing field sampling logs

Table 22. Tracking Table of **Subgrade** Testing in the **State Laboratory**.

Layer Number (Note 1)	Layer Description Code	Layer Type	Test Section Number	Sample Location Number	Sample Number	Lab Test Number	Steps Involved in Laboratory Handling and Testing Sequence						
							Required Laboratory Tests Per Layer				Extra Sample	Sample Storage	Sample Disposed?
							First	Second	Third	Fourth			
1	07	SS	01	B1	BS01	1	No Testing - Samples stored				Yes	(b)	No
1	07	SS	01	B2	BS02	2	~~UG09/P48 - If TS03 or TS04 unavailable~~				Yes	(b)	No
1	07	SS	02	B3	BS03	2	No Testing - Samples Stored				Yes	(b)	No
1	07	SS	01	A2	~~TS03~~	~~3~~	~~SS04/P52~~	~~SS11/P57~~			~~No~~	~~(c)~~	~~Yes~~
1	07	SS	01	A2	~~TS04~~	~~3~~					~~Yes~~	~~(c)~~	~~No~~
1	07	SS	02	A4	~~TS07~~	~~3~~	~~SS04/P52~~	~~SS08/P56~~	~~SS10/P54~~		~~No~~	~~(c)~~	~~Yes~~
1	07	SS	02	A4	~~TS08~~	~~3~~					~~Yes~~	~~(c)~~	~~No~~
1	07	SS	02	A6	~~TS11~~	~~3~~	~~SS04/P52~~	~~SS08/P56~~	~~SS10/P54~~		~~No~~	~~(c)~~	~~Yes~~
1	07	SS	02	A6	~~TS12~~	~~3~~					~~Yes~~	~~(c)~~	~~No~~
1	07	SS	01	D1	~~JS01~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	01	D1	~~JS02~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	01	D1	~~JS03~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	01	D1	~~JS04~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	01	D1	~~JS05~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	01	D1	~~JS06~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	01	D1	~~JS07~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	01	D1	~~JS08~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	01	D1	~~JS09~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	01	D1	~~JS10~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	02	D2	~~JS11~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~

Layer Number (Note 1)	Layer Description Code	Layer Type	Test Section Number	Sample Location Number	Sample Number	Lab Test Number	Steps Involved in Laboratory Handling and Testing Sequence						
							Required Laboratory Tests Per Layer				Extra Sample	Sample Storage	Sample Disposed?
							First	Second	Third	Fourth			
1	07	SS	02	D2	~~JS12~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	02	D2	~~JS13~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	02	D2	~~JS14~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	02	D2	~~JS15~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	02	D2	~~JS16~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	02	D2	~~JS17~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	02	D2	~~JS18~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	02	D2	~~JS19~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~
1	07	SS	02	D2	~~JS20~~	~~3~~	~~SS12/P60~~				~~No~~	~~(b)~~	~~Yes~~

Note 1: Layer Number to be completed by testing lab after reviewing field sampling logs.

No tube samples or shoulder samples could be collected after shot rock (layer 2) was placed.

Table 23. Tracking Table of **Asphaltic Concrete** Testing in the **FHWA-LTPP Testing Contractor Laboratory**

Layer Number (Note 1)	Layer Description Code	Layer Type	Test Section Number	Sample Location Number	Sample Number	Lab Test Number	Steps Involved in Laboratory Handling and Testing Sequence						
							Required Laboratory Tests Per Layer				Extra Sample	Sample Storage	Sample Disposed?
							First	Second	Third	Fourth			
5	03	AC	01	C1	CA01	1	AC01/P01	AC02/P02	AC07/P07	AC07/P07 (ITS)	No	(a)	Yes
5	03	AC	01	C2	CA02	1	AC01/P01	AC02/P02	AC07/P07	AC07/P07 (ITS)	No	(a)	Yes
5	03	AC	01	C3	CA03	1	AC01/P01	AC02/P02	AC07/P07	AC07/P07 (ITS)	No	(a)	Yes
5	03	AC	01	C4	CA04	1	AC01/P01	AC02/P02	AC07/P07 (ITS)		No	(a)	Yes
5	03	AC	01	C5	CA05	2	AC01/P01	AC02/P02	AC07/P07	AC07/P07 (ITS)	No	(a)	Yes
5	03	AC	01	C6	CA06	2	AC01/P01	AC02/P02	AC07/P07	AC07/P07 (ITS)	No	(a)	Yes
5	03	AC	01	C7	CA07	2	AC01/P01	AC02/P02	AC07/P07	AC07/P07 (ITS)	No	(a)	Yes
5	03	AC	01	C8	CA08	2	AC01/P01	AC02/P02	AC07/P07 (ITS)		No	(a)	Yes
5	03	AC	02	C9	CA09	1	AC01/P01	AC02/P02	AC06/P06		No	(a)	Yes
5	03	AC	02	C13	CA13	2	AC01/P01	AC02/P02	AC07/P07	AC07/P07 (ITS)	No	(a)	Yes
5	03	AC	02	C14	CA14	2	AC01/P01	AC02/P02	AC07/P07	AC07/P07 (ITS)	No	(a)	Yes
5	03	AC	02	C15	CA15	2	AC01/P01	AC02/P02	AC07/P07	AC07/P07 (ITS)	No	(a)	Yes
5	03	AC	02	C16	CA16	2	AC01/P01	AC02/P02	AC07/P07 (ITS)		No	(a)	Yes

Note 1: Layer Number to be completed by testing lab after reviewing field sampling logs.

Table 24. Tracking Table of **Unbound Granular Base** Testing in the **FHWA-LTPP Testing Contractor Laboratory**

Layer Number (Note 1)	Layer Description Code	Layer Type	Test Section Number	Sample Location Number	Sample Number	Lab Test Number	Steps Involved in Laboratory Handling and Testing Sequence								
							Required Laboratory Tests Per Layer						Extra Sample	Sample Storage	Sample Disposed?
							First	Second	Third	Fourth	Fifth	Sixth			
4	05	GB	01	B4	BG01	1	UG01/P41	UG02/P41	UG04/P43	UG08/P47	UG05/P44	UG07/P46	No	(b)	Yes
4	05	GB	01	B5	BG02	2	UG01/P41	UG02/P41	UG04/P43	UG08/P47	UG05/P44	UG07/P46	No	(b)	Yes
4	05	GB	02	B6	BG03	2	UG01/P41	UG02/P41	UG04/P43	UG08/P47	UG05/P44	UG07/P46	No	(b)	Yes
4	05	GB	01	B4	MG01	1	UG10/P49						No	(b)	Yes
4	05	GB	01	B5	MG02	2	UG10/P49						No	(b)	Yes
4	05	GB	02	B6	MG03	2	UG10/P49						No	(b)	Yes
2	*06*	*GS*	*01*	*B1*	*BG11*	*1*	*UG01/P41*	*UG02/P41*	*UG04/P43*	*UG08/P47*	*UG05/P44*	*UG07/P46*	*No*	*(b)*	*Yes*
2	*06*	*GS*	*01*	*B2*	*BG12*	*2*	*UG01/P41*	*UG02/P41*	*UG04/P43*	*UG08/P47*	*UG05/P44*	*UG07/P46*	*No*	*(b)*	*Yes*
2	*06*	*GS*	*02*	*B3*	*BG13*	*2*	*UG01/P41*	*UG02/P41*	*UG04/P43*	*UG08/P47*	*UG05/P44*	*UG07/P46*	*No*	*(b)*	*Yes*
3	*06*	*GS*	*01*	*B1*	*BG21*	*1*	*UG01/P41*	*UG02/P41*	*UG04/P43*	*UG08/P47*	*UG05/P44*	*UG07/P46*	*No*	*(b)*	*Yes*
3	*06*	*GS*	*01*	*B2*	*BG22*	*2*	*UG01/P41*	*UG02/P41*	*UG04/P43*	*UG08/P47*	*UG05/P44*	*UG07/P46*	*No*	*(b)*	*Yes*
3	*06*	*GS*	*02*	*B3*	*BG23*	*2*	*UG01/P41*	*UG02/P41*	*UG04/P43*	*UG08/P47*	*UG05/P44*	*UG07/P46*	*No*	*(b)*	*Yes*

Note 1 Layer Number to be completed by testing lab after reviewing field sampling logs

Table 25. Tracking Table of **Subgrade** Testing in the **FHWA-LTPP Testing Contractor Laboratory.**

Layer Number (Note 1)	Layer Description Code	Layer Type	Test Section Number	Sample Location Number	Sample Number	Lab Test Number	Steps Involved in Laboratory Handling and Testing Sequence								
							Required Laboratory Tests Per Layer						Extra Sample	Sample Storage	Sample Disposed?
							First	Second	Third	Fourth	Fifth	Sixth			
1	07	SS	01	B1	BS01	1	SS01/P51	SS02/P42	SS03/P43	SS04/P52	SS05/P55	SS07/P46	No	(b)	Yes
1	07	SS	01	B2	BS02	2	SS01/P51	SS02/P42	SS03/P43	SS04/P52	SS05/P55	SS07/P46	No	(b)	Yes
1	07	SS	02	B3	BS03	2	SS01/P51	SS02/P42	SS03/P43	SS04/P52	SS05/P55	SS07/P46	No	(b)	Yes
1	07	SS	01	B1	MS01	1	SS09/P49						No	(b)	Yes
1	07	SS	01	B2	MS02	2	SS09/P49						No	(b)	Yes
1	07	SS	02	B3	MS03	2	SS09/P49						No	(b)	Yes
1	07	SS	01	A1	~~TS01~~	~~3~~	~~SS04/P52~~	~~SS07/P46~~					~~No~~	~~(c)~~	~~Yes~~
1	07	SS	01	A1	~~TS02~~	~~3~~							~~Yes~~	~~(c)~~	~~No~~
1	07	SS	01	A3	~~TS05~~	~~3~~	~~SS04/P52~~	~~SS07/P46~~					~~No~~	~~(c)~~	~~Yes~~
1	07	SS	01	A3	~~TS06~~	~~3~~							~~Yes~~	~~(c)~~	~~No~~
1	07	SS	02	A5	~~TS09~~	~~3~~	~~SS04/P52~~	~~SS07/P46~~					~~No~~	~~(c)~~	~~Yes~~
1	07	SS	02	A5	~~TS10~~	~~3~~							~~Yes~~	~~(c)~~	~~No~~

Note 1 Layer Number to be completed by testing lab after reviewing field sampling logs
2 SS07/P46 only performed if Tube samples are unavailable

APPENDIX E - LTPP CONSTRUCTION DATA FORMS

SPS-8 CONSTRUCTION DATA SHEET 1 PROJECT IDENTIFICATION	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [00]

*1. DATE OF DATA COLLECTION OR UPDATE (Month/Year) [09/97]

*2. STATE HIGHWAY AGENCY (SHA) DISTRICT NUMBER [53.]

*3. COUNTY OR PARISH Columbia County [_13.]

4. FUNCTIONAL CLASS (SEE TABLE A.2, APPENDIX A) [09.]

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

*6. ROUTE NUMBER WA Forest Road 176 North Touchet Road Columbia County [91150.]

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

8. NUMBER OF THROUGH LANES (ONE DIRECTION) [1.]

*9. DATE OF CONSTRUCTION COMPLETION (Month/Year) [10/95]

*10. DATE OPENED TO TRAFFIC (Month/Year) [11/95]

11. CONSTRUCTION COSTS PER LANE MILE (In $1000) [____4.]

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

PROJECT STARTING POINT LOCATION

*13. MILEPOINT [__4.__]

*14. ELEVATION [_1985]

*15. LATITUDE [46° 16' 14.1 _"]

*16. LONGITUDE [117° 52' 56.9 _"]

17. ADDITIONAL LOCATION INFORMATION (SIGNIFICANT LANDMARKS): [Test sections are on North Touchet Road four miles South of the intersection with US 12 in Dayton, Washington]

18. HPMS SAMPLE NUMBER (HPMS ITEM 28) [_____4]

19. HPMS SECTION SUBDIVISION (HPMS ITEM 29) [4]

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

*1. LANE WIDTH (FEET) [12.]

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 _____	[N.]	[3.]
*6. TOTAL WIDTH (FEET)	[__.]	[__3.]
*7. PAVED WIDTH (FEET)	[__.]	[__3.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[__.]	[23.]
9. SURFACE THICKNESS (INCHES)	[__.__]	[__3.5]
10. SHOULDER BASE THICKNESS (INCHES)	[__.__]	[__8.0]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[N.__]
12. SPACING OF LATERALS (FEET)		[__N.]

PREPARER K. Senn EMPLOYER NCE DATE 6/16/97

SPS-8 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [02]

*1. LANE WIDTH (FEET) [12.]

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 _____	[N.]	[3.]
*6. TOTAL WIDTH (FEET)	[__.]	[3.]
*7. PAVED WIDTH (FEET)	[__.]	[3.]
8. SHOULDER BASE TYPE (CODES-TABLE A.6)	[__.]	[23.]
9. SURFACE THICKNESS (INCHES)	[__.__]	[6.6]
10. SHOULDER BASE THICKNESS (INCHES)	[__.__]	[11.7]
11. DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES)		[N.__]
12. SPACING OF LATERALS (FEET)		[__N.]

PREPARER K. Senn EMPLOYER AKE DATE 6/6/97

SPS-6 CONSTRUCTION DATA SHEET 3 REFERENCE PROJECT STATION TABLE	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

ORDER	*1 TEST SECTION ID NO	REFERENCE PROJECT STATION NUMBER		*4 CUT-FILL[1] TYPE
		*2 START	*3 END	
1	530802	0 + 0 0	5 + 0 0	2
2	530801	1 0 + 0 0	1 5 + 0 0	2
3		+	+	
4		+	+	
5		+	+	
6		+	+	
7		+	+	
8		+	+	
9		+	+	
10		+	+	
11		+	+	
12		+	+	
13		+	+	
14		+	+	
15		+	+	
16		+	+	
17		+	+	
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
	+					
	+					
	+					

Note 1. Indicate the type of subgrade construction the test section is located on:
Cut... 1 Fill... 2 At-Grade... 3 Cut, Fill, and At-Grade Combo... 4

If a section contains any combination of cut, fill and at-grade portions (code 4 above), enter the specific details of the cut, fill and at-grade locations on SPS-8 Construction Data Sheet 15.

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[52]	[redacted]	[redacted]	[redacted]	[redacted]
2	[06]	[23]	[36.]	[ ]	[ ]	[ ]
3	[06]	[23]	[2.4]	[ ]	[ ]	[ ]
4	[05]	[23]	[8.0]	[6.8]	[9.6]	[0.7]
5	[03]	[01]	[3.5]	[2.4]	[4.5]	[0.4]
6	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
7	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
8	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
9	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
10	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
11	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
12	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
13	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
14	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
15	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) [ ]
(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 K. Senn EMPLOYER NCE DATE 6/16/97

SPS-8 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [02]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[52]				
2	[06]	[23]	[36.]	---.-	---.-	---.-
3	[06]	[23]	[2.4]	---.-	---.-	---.-
4	[05]	[23]	[11.7]	10.3	13.0	0.6
5	[03]	[01]	[6.6]	5.2	7.6	0.5
6	[ ]	[ ]	[---.-]	---.-	---.-	---.-
7	[ ]	[ ]	[---.-]	---.-	---.-	---.-
8	[ ]	[ ]	[---.-]	---.-	---.-	---.-
9	[ ]	[ ]	[---.-]	---.-	---.-	---.-
10	[ ]	[ ]	[---.-]	---.-	---.-	---.-
11	[ ]	[ ]	[---.-]	---.-	---.-	---.-
12	[ ]	[ ]	[---.-]	---.-	---.-	---.-
13	[ ]	[ ]	[---.-]	---.-	---.-	---.-
14	[ ]	[ ]	[---.-]	---.-	---.-	---.-
15	[ ]	[ ]	[---.-]	---.-	---.-	---.-

*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.

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

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

	COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[1]	[100.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[__]	[___.]
*4.	Other (Specify)... 6 _____	[__]	[___.]
	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[2]	[100.]
*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) [2.672]

*10. Fine Aggregate (AASHTO T84 or ASTM C128) [2.639]

*11. Mineral Filler (AASHTO T100 or ASTM D854) [__.__N]

*12. Aggregate Combination (Calculated) [2.659]

13. Effective Specific Gravity of Aggregate Combination (Calculated) [2.714]

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

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[__ __]	[___.__U]
15.	Coarse	[__ __]	[___.___]
16.	Coarse	[__ __]	[___.___]
17.	Coarse and Fine - Combined	[__ __]	[___.___]

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

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 5 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [02]

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

		TYPE	PERCENT
	COMPOSITION OF COARSE AGGREGATE		
*2.	Crushed Stone... 1 Gravel... 2 Crushed Gravel... 3	[1]	[100.]
*3.	Crushed Slag... 4 Manufactured Lightweight... 5	[__]	[___.]
*4.	Other (Specify)... 6 _____	[__]	[___.]
	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
*5.	Natural Sand... 1	[2]	[100.]
*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)	[2.672]
*10.	Fine Aggregate (AASHTO T84 or ASTM C128)	[2.639]
*11.	Mineral Filler (AASHTO T100 or ASTM D854)	[__.__N]
*12.	Aggregate Combination (Calculated)	[2.659]
13.	Effective Specific Gravity of Aggregate Combination (Calculated)	[2.714]

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

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[__ __]	[___.__U]
15.	Coarse	[__ __]	[___.___]
16.	Coarse	[__ __]	[___.___]
17.	Coarse and Fine - Combined	[__ __]	[___.___]

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

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

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

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [09]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [77]
(IF OTHER, SPECIFY) Koch Materials Company

4. SPECIFIC GRAVITY OF ASPHALT CEMENT (AASHTO T228) [1.030]

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

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

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

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM) (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".

PREPARER K. Senn EMPLOYER NCE DATE 6/16/97

SPS-8 CONSTRUCTION DATA SHEET 6 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [53] * SPS PROJECT CODE [0803] * TEST SECTION NO. [02]

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

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [09]
(IF OTHER, SPECIFY) _____

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [77]
(IF OTHER, SPECIFY) Koch Materials Company

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [1.030]
(AASHTO T228)

GENERAL ASPHALT CEMENT PROPERTIES (If available from supplier)

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

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

7. PENETRATION AT 77°F (AASHTO T49) (TENTHS OF A MM)
(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".

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [53] * SPS PROJECT CODE [083] * TEST SECTION NO. [01]

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

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

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [2.494]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.316] NUMBER OF TESTS [03.]

5. MINIMUM [2.298] MAXIMUM [2.341]

6. STD. DEV. [0.023]

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

*7. MEAN [5.39] NUMBER OF SAMPLES [1.]

8. MINIMUM [.] MAXIMUM [.]

9. STD. DEV. [.]

PERCENT AIR VOIDS

*10. MEAN [3.9] NUMBER OF SAMPLES [1.]

11. MINIMUM [.] MAXIMUM [.]

12. STD. DEV. [.]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [14.6]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [4.6]

*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) [39.]

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

PREPARER K. Sran EMPLOYER NCE DATE 6/16/97

SPS-8 CONSTRUCTION DATA SHEET 7 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [02]

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

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

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) (AASHTO T209 OR ASTM D2041) [2.494]

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [2.316] NUMBER OF TESTS [03.]

5. MINIMUM [2.298] MAXIMUM [2.341]

6. STD. DEV. [0.023]

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

*7. MEAN [5.39__] NUMBER OF SAMPLES [__1.]

8. MINIMUM [__.___] MAXIMUM [__.___]

9. STD. DEV. [__.___]

PERCENT AIR VOIDS

*10. MEAN [3.9__] NUMBER OF SAMPLES [__1.]

11. MINIMUM [__.___] MAXIMUM [__.___]

12. STD. DEV. [__.___]

*13. VOIDS IN MINERAL AGGREGATE (PERCENT) [14.6]

*14. EFFECTIVE ASPHALT CONTENT (PERCENT) [_4.6]

*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) [_39.]

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

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

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

*2. TYPE OF SAMPLES [1]
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]

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 8 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES (CONTINUED)	* STATE CODE [53] * SPS PROJECT CODE [02] * TEST SECTION NO. [02]

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

*2. TYPE OF SAMPLES [1]
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]

PREPARER K. Senn EMPLOYER NJCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [10-24-95]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [10-26-95]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers
Plant 1	[2]	_____	[___]	[15]	[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 510

6. SINGLE PASS LAYDOWN WIDTH (Feet) [15.0]

7. AC BINDER COURSE LIFT
   - Layer Number [__ 0]
   - Nominal First Lift Placement Thickness (Inches) [__.0]
   - Nominal Second Lift Placement Thickness (Inches) [__.0]

8. AC SURFACE COURSE LIFT
   - Layer Number [__ 5]
   - Nominal First Lift Placement Thickness (Inches) [2.3]
   - Nominal Second Lift Placement Thickness (Inches) [2.3]

9. SURFACE FRICTION COURSE (If Placed)
   - Layer Number [__ 0]
   - Nominal Placement Thickness (Inches) [__.0]

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

11. LOCATION OF LONGITUDINAL SURFACE JOINT [1]
    Between lanes.. 1 Within lane.. 2
    (specify offset from O/S feet) [12.0]

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

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 9 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [02]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [10-24-95]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [10-26-95]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Numbers		
Plant 1	[2]	_____	[___]	[15]	[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 510

6. SINGLE PASS LAYDOWN WIDTH (Feet) [14.9]

7. AC BINDER COURSE LIFT
   Layer Number [__ N]
   Nominal First Lift Placement Thickness (Inches) [__.N]
   Nominal Second Lift Placement Thickness (Inches) [__.N]

8. AC SURFACE COURSE LIFT
   Layer Number [__ 5]
   Nominal First Lift Placement Thickness (Inches) [2.5]
   Nominal Second Lift Placement Thickness (Inches) [2.3] 4.0
   Third Lift

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

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

11. LOCATION OF LONGITUDINAL SURFACE JOINT [1]
    Between lanes.. 1 Within lane.. 2
    (specify offset from O/S feet) [12.0]

12. SIGNIFICANT EVENTS DURING CONSTRUCTION (disruptions, rain, equip. problems, etc.) 1st lift wasn't cooled so tack coat was applied before placement of second lift.

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [10-24-95]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [10-26-95]
*3. LAYER NUMBER [5]

*4. MIXING TEMPERATURE (°F) [__ __ U.]

5. LAYDOWN TEMPERATURES (°F)
Mean..... 257.
Minimum..... 248.
Standard Deviation... __ 4.5
Number of Tests ..... 26.
Maximum..... 264.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	__ U.__				
7	B	Steel-Whl Tandem	__ __.__				
8	C	Steel-Whl Tandem	__ __.__				
9	D	Steel-Whl Tandem	__ __.__				
10	E	Pneumatic-Tired	__ U.__	__ __ __ U.			
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.	__ U.__		__ __ __ U.	.__ __ 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	__ U.	__ U.	__ __.	__ __.
	INTERMEDIATE				
25	Roller Code (A-Q)	E	E	__	__
26	Coverages	__ U.	__ U.	__ __.	__ __.
	FINAL				
27	Roller Code (A-Q)	A	A	__	__
28	Coverages	__ U.	__ U.	__ __.	__ __.
29	Air Temperature (°F)	__ 50.	__ 60.	__ __ __.	__ __ __.
30	Compacted Thickness (In)	2.__	2.__	__.__	__.__
31	Curing Period (Days)	__ 0.1	__ 0.1	__ __.__	__ __.__

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [02]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [10-24-95]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [10-26-95]
*3. LAYER NUMBER [5]

*4. MIXING TEMPERATURE (°F) [__ __ U.]

5. LAYDOWN TEMPERATURES (°F)

Mean..... 258.
Minimum..... 236.
Standard Deviation... __ 7.8

Number of Tests ..... 50.
Maximum..... 273.

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	__ U.__				
7	B	Steel-Whl Tandem	__ __.__				
8	C	Steel-Whl Tandem	__ __.__				
9	D	Steel-Whl Tandem	__ __.__				
10	E	Pneumatic-Tired	__ U.__	__ __ __ U.			
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.	__ U.__		__ __ __ U.	.__ __ 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	__ U.	__ U.	__ U.	__ __.
	INTERMEDIATE				
25	Roller Code (A-Q)	E	E	E	__
26	Coverages	__ U.	__ U.	__ U.	__ __.
	FINAL				
27	Roller Code (A-Q)	A	A	A	__
28	Coverages	__ U.	__ U.	__ U.	__ __.
29	Air Temperature (°F)	__ 50.	__ 50.	__ 60.	__ __ __.
30	Compacted Thickness (In)	3.__	3.__	3.0	__.__
31	Curing Period (Days)	__ 0.1	__ 0.1	__ 0.1	__ __.__

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	N		N
Number of Measurement	N		N
Average (pcf)	N.	.	N.
Maximum (pcf)	N.	.	N.
Minimum (pcf)	N.	.	N.
Standard Deviation (pcf)	N.	.	N.
Layer Number	N		N

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

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE _____

3. NUCLEAR DENSITY GAUGE MODEL NUMBER _____

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER _____

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION _____

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) NO

PREPARER K. Senn EMPLOYER NCE DATE 6/16/97

SPS-8 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS DENSITY AND PROFILE DATA	* STATE CODE [5 3] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

1. NUCLEAR DENSITY MEASUREMENTS

LAYER TYPE	Binder Course	Surface Course	Surface Friction Layer
Measurement Method (A, B, C)[1]	N		N
Number of Measurement	N		N
Average (pcf)	N.	.	N.
Maximum (pcf)	N.	.	N.
Minimum (pcf)	N.	.	N.
Standard Deviation (pcf)	N.	.	N.
Layer Number	N		N

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

2. MANUFACTURER OF NUCLEAR DENSITY GAUGE _____

3. NUCLEAR DENSITY GAUGE MODEL NUMBER _____

4. NUCLEAR DENSITY GAUGE IDENTIFICATION NUMBER _____

5. NUCLEAR GAUGE COUNT RATE FOR STANDARDIZATION _____

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) NO

PREPARER K. Senn EMPLOYER NCE DATE 6/16/97

SPS-8 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [53] * SPS PROJECT CODE [083] * TEST SECTION NO. [01]

SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS MEASUREMENTS (Inches)			
		DENSE GRADED AGGREGATE BASE	PORTLAND CEMENT CONCRETE SURFACE	ASPHALT SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0 3 6 9 13	7.9 7.3 7.8 7.6 7.8	— — . — — — . — — — . — — — . — — — . —	3.7 3.5 3.2 3.1 3.0	— — . — — — . — — — . — — — . — — — . —
0+50	0 3 6 9 13	9.0 8.8 8.9 9.0 9.4	— — . — — — . — — — . — — — . — — — . —	2.9 2.5 2.6 2.6 2.4	— — . — — — . — — — . — — — . — — — . —
1+00	0 3 6 9 13	7.9 8.3 8.3 8.8 8.6	— — . — — — . — — — . — — — . — — — . —	3.5 3.3 3.0 3.8 4.1	— — . — — — . — — — . — — — . — — — . —
1+50	0 3 6 9 13	9.4 9.9 8.6 8.5 8.5	— — . — — — . — — — . — — — . — — — . —	2.8 3.2 3.4 3.4 3.2	— — . — — — . — — — . — — — . — — — . —
2+00	0 3 6 9 13	8.4 7.9 7.8 7.6 7.8	— — . — — — . — — — . — — — . — — — . —	2.7 3.0 3.5 3.5 3.6	— — . — — — . — — — . — — — . — — — . —
2+50	0 3 6 9 13	8.9 7.6 7.8 7.7 7.9	— — . — — — . — — — . — — — . — — — . —	3.5 4.1 4.1 4.0 3.5	— — . — — — . — — — . — — — . — — — . —
3+00	0 3 6 9 13	8.4 8.6 7.3 7.4 7.9	— — . — — — . — — — . — — — . — — — . —	3.0 4.5 4.2 4.1 3.8	— — . — — — . — — — . — — — . — — — . —
LAYER NUMBER		— —	— —	— —	— —

PREPARER K. Senn EMPLOYER NCE DATE 6/16/97

SPS-8 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [53] * SPS PROJECT CODE [02] * TEST SECTION NO. [01]

SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS MEASUREMENTS (Inches)			
		DENSE GRADED AGGREGATE BASE	PORTLAND CEMENT CONCRETE SURFACE	ASPHALT SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0 3 6 9 12	8.3 7.6 7.3 7.3 7.4	— — .—	2.6 3.5 4.0 3.6 3 .5	— — .—
4+00	0 3 6 9 12	7.0 7.1 7.6 7.0 7.4	— — .—	2.4 2.9 3 4 3 .8	— — .—
4+50	0 3 6 9 12	7.2 7.9 8.0 8.2 7.9	— — .—	2.4 2.6 2.8 2.9 2 .9	— — .—
5+00	0 3 6 9 12	8.4 7.8 8.0 7.7 7.2	— — .—	3.0 2.6 3.2 4.0 3 .8	— — .—
__+__		— — .—	— — .—	— — .—	— — .—
__+__		— — .—	— — .—	— — .—	— — .—
__+__		— — .—	— — .—	— — .—	— — .—
LAYER NUMBER		— —	— —	— —	— —

PREPARER K. Senn EMPLOYER NICE DATE 6/15/93

SPS-8 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [53] * SPS PROJECT CODE [083] * TEST SECTION NO. [02]

SHEET 1 OF 2

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS MEASUREMENTS (Inches)			
		DENSE GRADED AGGREGATE BASE	PORTLAND CEMENT CONCRETE SURFACE	ASPHALT SURFACE AND BINDER	SURFACE FRICTION LAYER
0+00	0 33 66 99 132	12.0 11.4 12.0 11.6 11.6	——.— ——.— ——.— ——.— ——.—	7.2 7.1 7.0 7.6 7.6	——.— ——.— ——.— ——.— ——.—
0+50	0 33 66 99 132	10.7 11.3 11.0 10.9 10.3	——.— ——.— ——.— ——.— ——.—	7.1 6.4 7.1 6.8 7.2	——.— ——.— ——.— ——.— ——.—
1+00	0 33 66 99 132	11.2 11.3 11.4 11.4 11.5	——.— ——.— ——.— ——.— ——.—	7.3 7.2 7.3 7.3 7.3	——.— ——.— ——.— ——.— ——.—
1+50	0 33 66 99 132	12.9 12.1 12.4 13.0 12.7	——.— ——.— ——.— ——.— ——.—	6.7 7.1 7.3 7.0 7.0	——.— ——.— ——.— ——.— ——.—
2+00	0 33 66 99 132	11.9 11.6 12.1 12.2 12.5	——.— ——.— ——.— ——.— ——.—	5.9 6.7 6.7 6.6 6.7	——.— ——.— ——.— ——.— ——.—
2+50	0 33 66 99 132	12.0 11.3 11.6 11.4 11.3	——.— ——.— ——.— ——.— ——.—	6.0 6.6 6.5 6.7 6.7	——.— ——.— ——.— ——.— ——.—
3+00	0 33 66 99 132	10.7 11.0 12.0 12.0 11.6	——.— ——.— ——.— ——.— ——.—	6.4 6.4 5.9 5.8 6.4	——.— ——.— ——.— ——.— ——.—
LAYER NUMBER		——	——	——.	——

PREPARER K. Senn EMPLOYER NICE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 12 LAYER THICKNESS MEASUREMENTS	* STATE CODE [5 3] * SPS PROJECT CODE [0 8] * TEST SECTION NO. [0 2]

SHEET 2 OF 2

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS MEASUREMENTS (Inches): DENSE GRADED AGGREGATE BASE	PORTLAND CEMENT CONCRETE SURFACE	ASPHALT SURFACE AND BINDER	SURFACE FRICTION LAYER
3+50	0	11.2		6.8	
	33	12.0		6.4	
	66	12.6		6.5	
	99	12.5		6.5	
	132	12.8		6.0	
4+00	0	11.9		6.4	
	33	11.4		6.4	
	66	11.6		6.1	
	99	11.6		6.0	
	132	11.0		6.5	
4+50	0	10.7		7.0	
	33	11.2		6.8	
	66	12.0		6.7	
	99	12.2		6.6	
	132	12.7		6.0	
5+00	0	11.1		6.0	
	33	11.4		6.4	
	66	12.1		6.0	
	99	11.9		6.2	
	132	12.8		5.2	
+					
+					
+					
LAYER NUMBER					

PREPARER K. Sear[illegible] EMPLOYER [illegible] DATE 6-[illegible]

SPS-8 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [09-27-95]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [09-29-95]

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

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [3]

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) [15.]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [4]
Nominal Second Lift Placement Thickness (inches) [4]
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.) Pumping ≈ 40' after section (located in transition). This area was excavated and replaced

PREPARER K. Senn EMPLOYER NCE DATE 6/16/97

SPS-8 CONSTRUCTION DATA SHEET 13 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [02]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [09-27-95]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [09-29-95]

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

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [3]

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) [15.]

*6. LIFT THICKNESSES
Nominal First Lift Placement Thickness (inches) [6]
Nominal Second Lift Placement Thickness (inches) [6]
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 K. Senn EMPLOYER UCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [07-01-95]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [09-01-95]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [4]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 _____

*4. GROSS WEIGHT (TONS) [15.0]

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

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) [N]
(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 K. Senn EMPLOYER NCE DATE 6/16/97

SPS-8 CONSTRUCTION DATA SHEET 14 SUBGRADE PREPARATION	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [02]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [07-01-95]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [09-01-95]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [4]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 _____

*4. GROSS WEIGHT (TONS) [15.0]

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

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) [__N]
(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 K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 15 CUT-FILL SECTION LOCATIONS	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

ORDER	*1 CUT-FILL TYPE¹	TEST SECTION STATION NUMBER	
		*2 START	*3 END
1	Cut	0 + 0 0	5 + 0 0
2		+	+
3		+	+
4		+	+
5		+	+
6		+	+
7		+	+
8		+	+
9		+	+
10		+	+

NOTES:

1. Indicate the type of subgrade construction with one of the following:

   Cut... 1 Fill... 2 At-Grade... 3

2. Use one line for each cut, fill or at-grade zone present within the section boundaries.

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 15 CUT-FILL SECTION LOCATIONS	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [02]

ORDER	*1 CUT-FILL TYPE	TEST SECTION STATION NUMBER	
		*2 START	*3 END
1	CUT	0 + 0 0	5 + 0 0
2		+	+
3		+	+
4		+	+
5		+	+
6		+	+
7		+	+
8		+	+
9		+	+
10		+	+

NOTES:

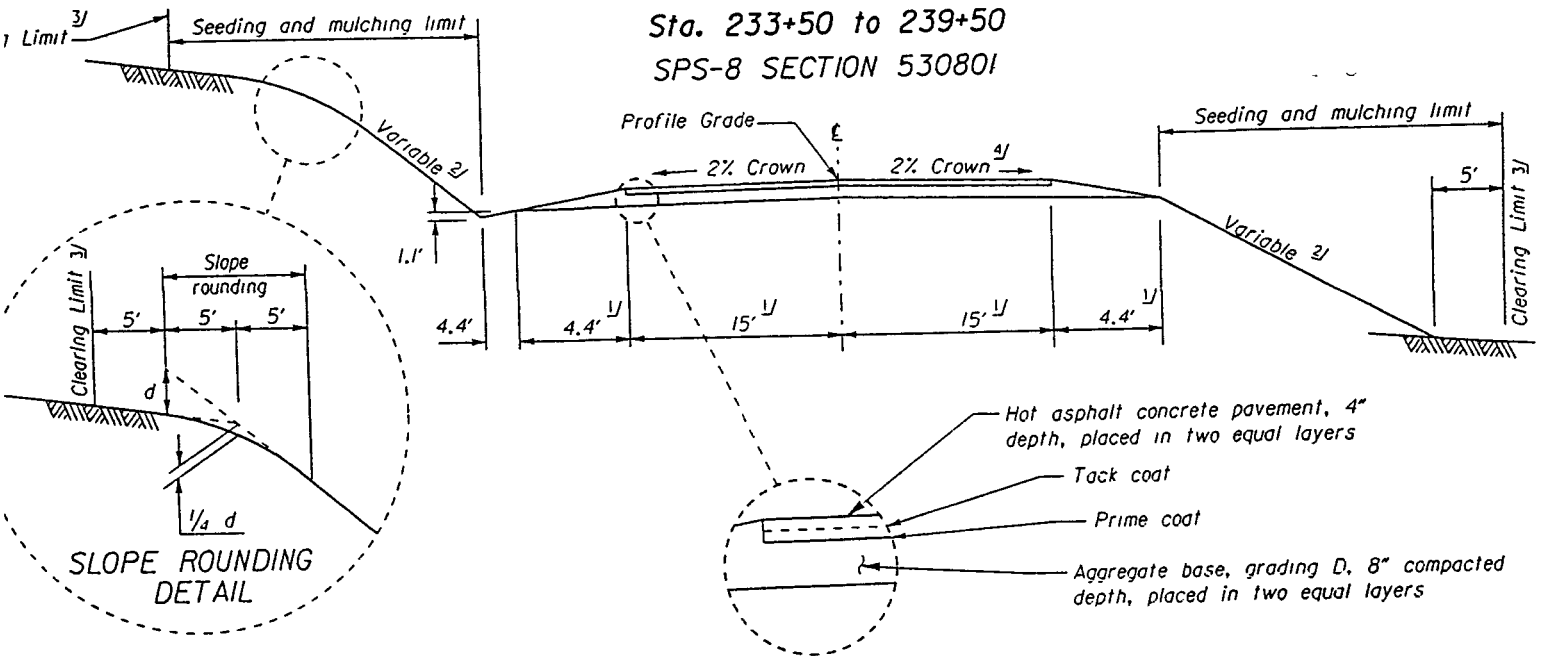
1. Indicate the type of subgrade construction with one of the following:

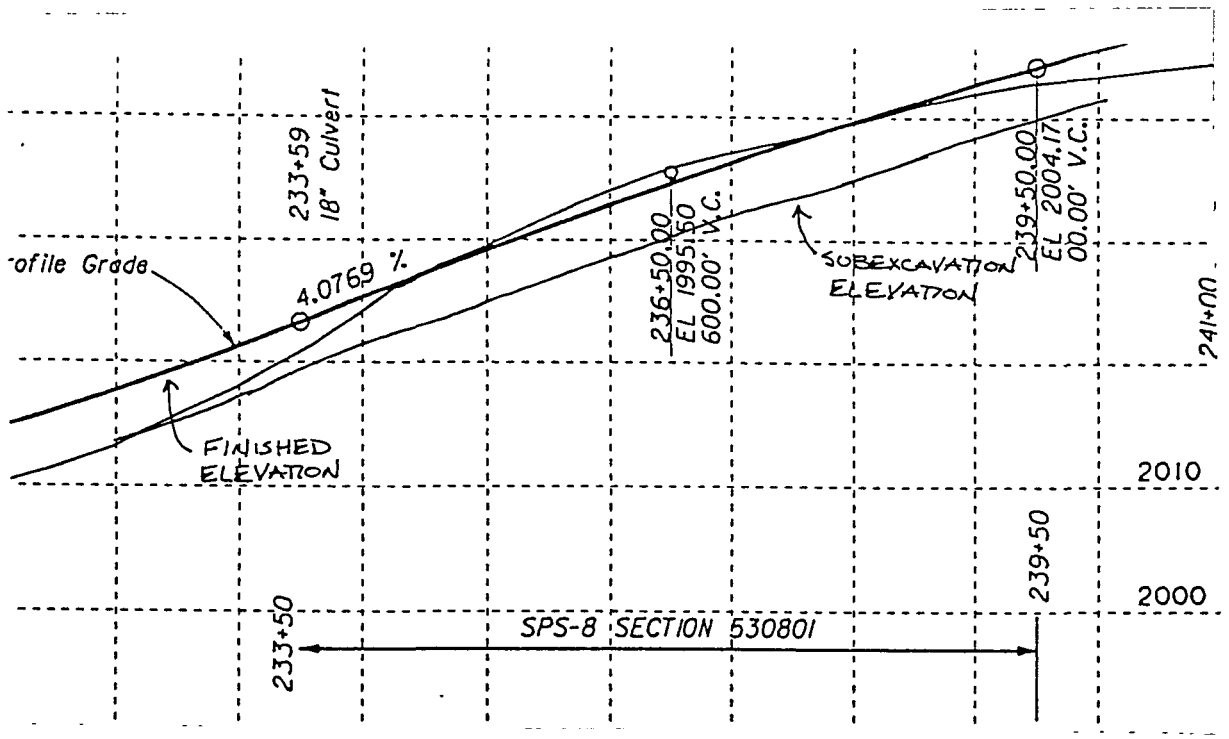
   Cut... 1 Fill... 2 At-Grade... 3

2. Use one line for each cut, fill or at-grade zone present within the section boundaries.

PREPARER K. Senn EMPLOYER UCE DATE 6/6/97

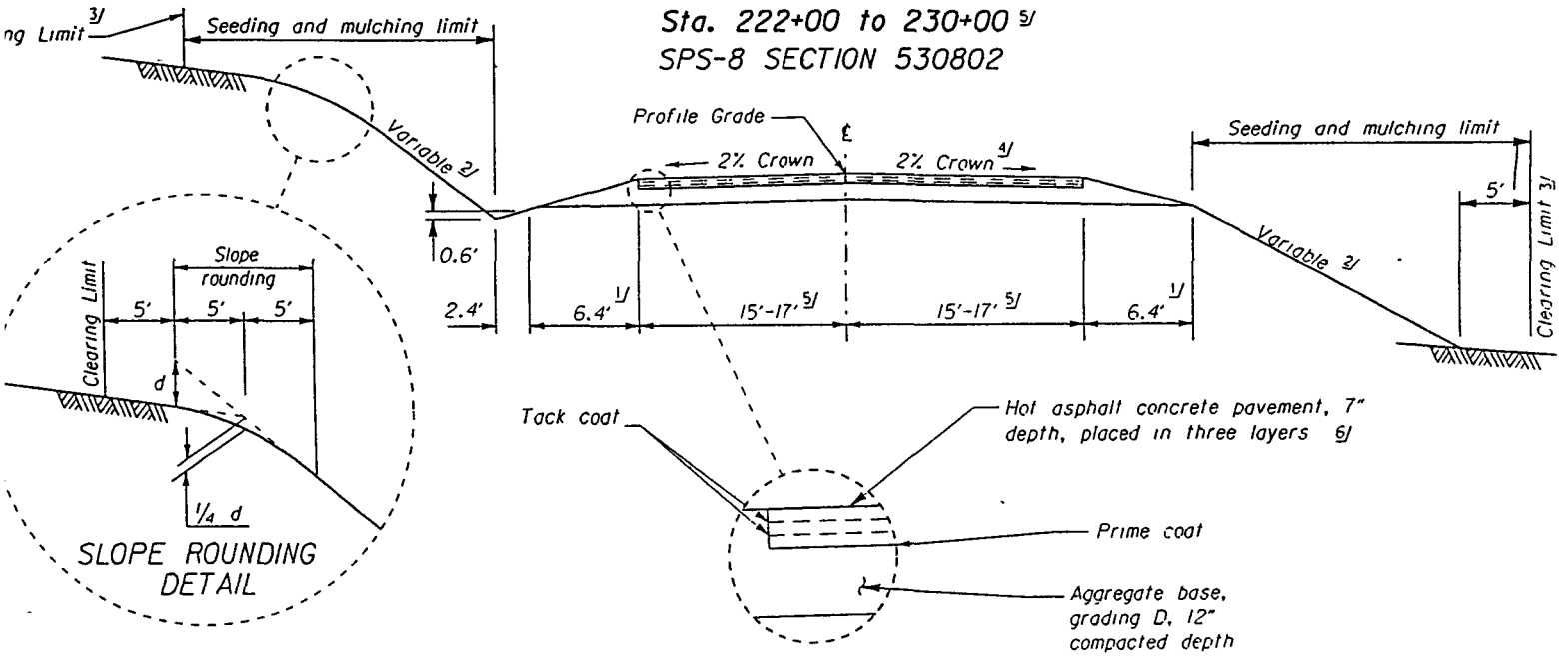
SPS-8 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

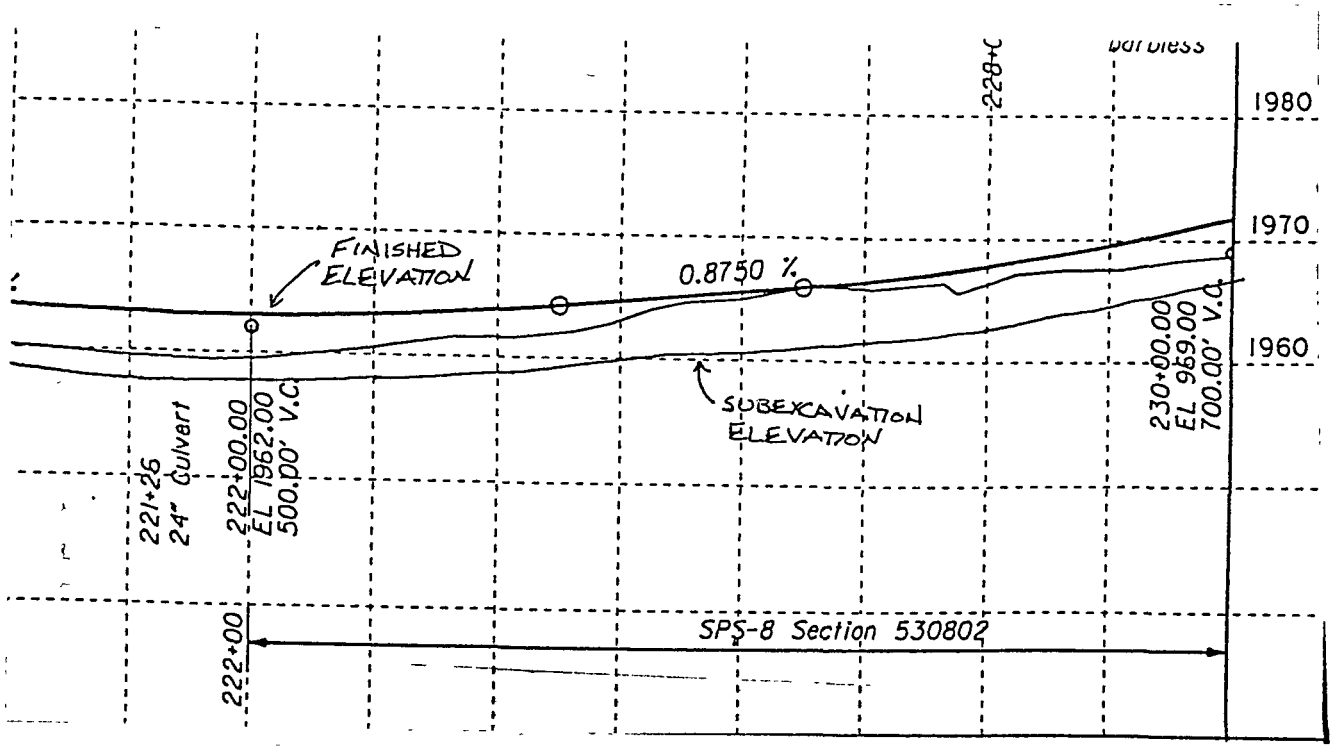




PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 16 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [02]





PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 28 MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [01]

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

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97

SPS-8 CONSTRUCTION DATA SHEET 28 MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS	* STATE CODE [53] * SPS PROJECT CODE [08] * TEST SECTION NO. [02]

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

PREPARER K. Senn EMPLOYER NCE DATE 6/6/97