

Sampling and Testing Plan

SPS-9A Experimental Project

I-70 Eastbound



Prepared by:
SHRP North Central Region

Summer 1997



Submitted by

ERES
CONSULTANTS, INC

**SAMPLING AND TESTING PLAN
SPS-9A EXPERIMENTAL PROJECT
I-70 EASTBOUND
HANCOCK COUNTY, INDIANA**

Strategic Highway Research Program
Long-Term Pavement Performance
Specific Pavement Studies

Prepared by
ERES Consultants, Inc.
North Central Region Coordination Office (NCRCO)
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1.0 INTRODUCTION

The SPS-9A experiment is the first part of a multi-stage approach to validation of the Strategic Highway Research Program's (SHRP) SUPERPAVE Asphalt Binder Study. The objectives of the SPS-9A experiment are:

- Evaluate and improve the practical aspects of implementing the SUPERPAVE system through a hands-on field trial by interested highway agencies.
- Compare the performance of the SUPERPAVE mixes against mixes designed with current highway agencies' asphalt specifications, asphalt-aggregate specifications, and mix design procedure.
- Provide long-term performance data for evaluation and refinement of the SUPERPAVE specifications, design procedures, and models.
- Test the sensitivity of the SUPERPAVE asphalt binder specification relative to low temperature cracking, fatigue, or permanent deformation distress factors.
- Provide highway agencies the opportunity to evaluate the performance of other experimental features by the construction of supplemental sections.

An SPS-9A experiment is planned for construction on a 2.5-km stretch of eastbound I-70 in Hancock County, Indiana, just east of Indianapolis. The Hancock County SPS-9A site incorporates six test sections. One test section incorporates the State's standard mix, one the SUPERPAVE-designed standard mix, and one a SUPERPAVE mix with alternate binder. The remaining three sections are State supplemental sections. All test sections are built as a part of an asphalt overlay of an existing cracked and seated jointed reinforced concrete roadway. An existing AC overlay will be milled prior to the crack and seat operation.

Field tests are conducted and samples obtained at the six test sections at different stages of construction. The purpose of the sampling and testing activities is to document the conditions of the as-built pavement layers. The sampling and testing at each section are conducted on the outer (right) lane. The sampling and testing include two types of testing activities: (a) Pavement/materials performance testing and (b) asphalt mixtures testing. Pavement/materials performance testing includes tests intended for materials characterization and pavement performance evaluation. Asphalt mixture testing includes tests intended for asphalt research and validation of SHRP performance-based specifications.

This document presents the type, number, and locations for the sampling and testing activities at different stages of construction on the six test sections. In addition, it contains details of the laboratory tests to be conducted on the samples. Further details of the SPS-9A experiment, material sampling procedures, and laboratory testing procedures are given in references 1 through 3.

The laboratory tests shall be performed by the Indiana DOT laboratory or their designee and the FHWA-LTPP Laboratory Materials Testing Contractor.

2.0 LAYOUT OF TEST SECTIONS

The layout of the six test sections included in the SPS-9A experimental project is shown in figure 1. This figure shows the monitoring portion of each test section, which is 150 m long, as well as the sampling areas and transition areas. Tables 1 and 2 provide the layering schemes for each test section. Table 3 gives the section limits for the six test sections. Each test section includes a monitoring section of 150 m, and 75 feet at each end of the monitoring section which is used to obtain material samples. Transitions between sections are 115 m in length. The pavement materials and thicknesses for the six sections are shown in table 4.

3.0 MATERIALS SAMPLING AND TESTING

Material sampling and field testing are required at different stages of construction. These activities shall be conducted according to the standards specified or referenced in this document. The standards may be specific to the SHRP-LTPP program or standard AASHTO/ASTM methods. LTPP sampling and field testing procedures have been developed specifically for the SHRP program and are described in reference 2. In addition, protocols have been developed by SHRP for conducting laboratory tests. These protocols are documented in appendix E.2 of the *SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing* (ref. 1).

Sampling and field testing shall be performed on the existing pavement prior to placement of the overlay. A summary of the samples to be obtained and field tests to be performed on all layers are described in the following sections.

3.1 Subgrade

- Obtain bulk samples for material classification tests through augering.
- Obtain jar samples for laboratory moisture measurements.

- Conduct auger probes on the shoulder of test sections to a depth of 6 m from the prepared subgrade surface to detect the presence of a rigid layer.

3.2 Base Layers (*Optional*)

- Visual material classification during augering.
- Obtain bulk samples for material classification tests through augering.
- Obtain jar samples for laboratory moisture measurements.

3.3 Existing Overlaid JRCP

- Coring for thickness measurement and visual damage assessment.

3.4 Existing JRCP (after crack and seat)

- Conduct elevation measurements on the prepared surface.
- Conduct deflection testing using a falling weight deflectometer (FWD) along the outer wheelpath and mid-lane.

3.5 Asphalt Concrete (AC)

- Obtain bulk samples of each asphalt cement used on the project prior to construction for laboratory testing.
- Obtain bulk samples of each aggregate used on the project (including RAP) prior to construction for laboratory testing.
- Obtain bulk samples of asphalt cement for each section to be used in preparation of laboratory specimens.
- Obtain bulk samples of combined aggregates for both intermediate and surface courses for each section to be used in preparation of laboratory specimens.
- Obtain bulk samples of uncompacted asphalt concrete from the paver or haul vehicle immediately prior to laydown. Samples from the intermediate course and the surface course are required.
- Conduct nuclear density tests on the compacted asphalt concrete intermediate course and the surface course.

- Conduct elevation measurements on final lift of both intermediate and surface courses.
- Obtain cores from asphalt concrete layer. The cores required for materials characterization are obtained immediately after construction.

3.6 Samples for Long Term Storage

- Obtain bulk samples from the plant of each type of asphalt cement used on the project.
- Obtain bulk samples from the plant of the combined coarse and fine aggregate for each aggregate combination used on the project.

3.7 Cores for Asphalt Testing

- The cores required for asphalt research are obtained at different time intervals. The first set of cores are obtained immediately after construction (0 months). The other sets of cores are obtained at intervals of 6, 12, 18, 24 and 48 months after construction.

The material sampling requirements for the test sections are summarized in tables 5A and 5B. Note the differences in quantities for asphalt concrete samples for section 18A902 as shown in table 5B. Table 5C gives the samples that are required for the LTPP Materials Reference Library. A summary of the field tests that are to be conducted on each layer is presented in table 6.

The detailed plan for sampling and field testing showing the sampling and field test locations, as well as the detailed laboratory testing plan which allocates samples for each laboratory test, will be described in the next sections.

4.0 OVERVIEW OF SAMPLING AND TESTING PLAN

As mentioned previously, table 4 gives an overview of the layer types and thicknesses in all sections. Figures 3 through 9 show the location and type of samples to be obtained and field tests to be performed on each layer. Elevation measurements shall be conducted on the cracked and seated JRCP, as well as on the final lift of intermediate and surface layers to determine layer thicknesses. FWD testing is to be conducted on the cracked and seated JRCP and on the surface layer. All sampling and field testing in each layer shall be completed before construction begins on the next

layer. Locations for field tests and sampling in these figures are specified according to the construction stationing.

5.0 SAMPLING AND TESTING FOR EACH LAYER

5.1 Introduction

Sampling, field tests, and laboratory tests for each pavement layer will be described in this section. Refer to figures 3 through 9 for detailed sampling and testing locations on each test section. All sampling and field tests shall be conducted according to the specified standards for sampling and testing. These standards are either AASHTO standards, ASTM standards, or methods specific to the SHRP program. All laboratory tests shall be conducted according to protocols developed for the SPS-9 experiment that are in appendix E.2 of the *SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing* (ref. 1).

The laboratory tests specified in this document shall be conducted by the Indiana DOT or an Indiana DOT designated laboratory and by the FHWA-LTPP Materials Testing Contractor. Sampling, field testing, and laboratory testing for each layer are described in the next sections. The offsets for sampling and testing locations in the tables in this sampling plan are given from the outside edge of the pavement.

5.2 Subgrade

Sampling and testing shall be conducted on the existing subgrade.

5.2.1 Sampling

Bulk samples and moisture samples from the existing subgrade shall be obtained from the test sections at the locations given in table 7. A-type auger sampling locations will be used to obtain bulk material samples from the auger cuttings. A-type sampling locations consist of a 150-mm diameter core through the bound layers and auguring of the underlying unbound base/subbase materials to a depth of 1.2 m below the top of the natural subgrade or fill embankment material directly beneath the base or subbase layers. The layers should be identified and recorded on Sampling Data Sheet 4-1. If rock, boulders, or other forms of dense materials are encountered within 1.2 m of the top of the natural subgrade or fill, another attempt for sampling shall be made at a different location with a longitudinal offset of 1.5 to 3.0 m. If refusal occurs at a second location, sampling shall be terminated. The sampling operation should be performed following the procedures contained in Section 3.5 of the *SHRP-LTPP Guide for Field Materials Sampling, Handling, and Testing* (ref. 2).

5.2.2 Field and Laboratory Tests

A summary of the field and laboratory test plan for the subgrade is shown in table 8. This table also gives the SHRP protocols that shall be followed when conducting these tests. The applicable procedures outlines in *SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing* (ref. 1) shall be followed prior to conducting any laboratory tests.

The following field tests shall be conducted on the subgrade.

1. *Auger Probes*. Auger probes to a depth of 6 m from the subgrade surface shall be performed on the shoulder at locations specified in table 9. These probes are conducted to determine if significantly dense layers exist within 6 m from the top of the subgrade. If refusal occurs prior to 6 m, the probe shall be continued at a nearby location 1.5 to 3.0 m away. If refusal occurs at the second location, the auger probe activity shall be terminated. If sufficient geological information can be obtained to determine the depth to a dense layer in the area, shoulder probes will not be necessary.

5.3 Aggregate Base/Subbase (Optional)

5.3.1 Sampling

Bulk samples and moisture samples from the existing aggregate base/subbase shall be obtained at the locations shown in table 7, if possible. A-type auger sampling locations will be used to obtain bulk material samples from the auger cuttings. A visual manual classification should be performed on the unbound base material during the augering process. The classification should be performed using the material codes and procedure from appendix C of the *SHRP-LTPP Guide for Field Materials Sampling, Handling, and Testing* (ref. 2).

5.3.2 Field and Laboratory Tests

A summary of the field and laboratory tests to be conducted on the aggregate base is shown in table 8. This table also gives the SHRP protocols that shall be followed when conducting these tests. The applicable procedure outlined in *SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing* (ref. 1) shall be followed prior to conducting any laboratory tests. The two samples for each section obtained should be combined to run the tests.

5.4 Existing Overlaid PCC

In each section, the existing overlaid PCC pavement shall be cored at the locations shown in figure 3 prior to milling and cracking and seating. Thickness measurements and visual damage assessment shall be performed on these cores. The core examination test for asphalt is AC01, and the test for PCC is PC06.

Elevation measurements and FWD testing shall be performed on the existing pavement after the milling and crack and seat operations have been completed.

Elevation Survey

Measurements should be performed at stations spaced at 8 m prior to and after the monitoring portion of each test section and at 15 m intervals from the start to the end of the monitoring portion of the test section. At each elevation survey station, measurements should be performed at offsets of 0, 0.9, 1.8, 2.8, and 3.6 m from the planned outside pavement edge at the location where the outside lane stripe will be placed. These offset locations roughly correspond to the outside lane edge, outside wheel path, lane center, inside wheel path, and inside lane edge of a 3.6-m wide lane. If the lane is greater than 3.6 m wide, the offsets should be adjusted so that measurements are performed in the wheel path locations. The locations at which the elevation measurements are to be performed are given in table 10. Each elevation measurement shall be measured with an accuracy within 0.01 feet.

A reproducible location referencing system must be established in the field so that once the elevation survey locations are established, they can be relocated for subsequent measurements on the surface of each new pavement layer placed.

FWD Testing

FWD testing will be performed on the cracked and seated JRCP prior to overlay. Locations for testing are shown in table 11. The purpose of this testing is to determine the strength and variability of the cracked and seated pavement. This testing will be performed by personnel from the LTPP North Central Region Coordination Office (NCRCO). Mr. Tom Wilson of the NCRCO should be contacted at 1-888-344-7477 approximately 2 weeks prior to completion of the crack and seat operation to coordinate this testing.

5.5 Asphalt Concrete (AC)

In each test section, two asphalt concrete mixes are used (intermediate course and surface course). Sampling and testing will be performed on each of the mixes as follows.

5.5.1 Mix Design Sampling

1. *Asphalt Cement.* Bulk samples of each of the asphalt cements used on the project shall be obtained during the mix design phase for laboratory testing on the asphalt cements. These tests are outlined in table 15. Approximately 3 liters of each asphalt cement is required for this testing. If a particular asphalt cement is used on more than one section, duplicate testing is not required.
2. *Aggregates.* Bulk samples of each of the aggregate combinations used on the project shall be obtained during the mix design phase for laboratory testing on the aggregates. These tests are also outlined in table 15. Approximately 50 kg of each aggregate combination used, including RAP, is required for this testing. If a particular aggregate combination is used on more than one section, duplicate testing is not required. Table 16 is a tracking table for aggregate and binder testing.
3. *Mix Design Tests.* Sufficient quantities of asphalt cement and combined aggregates should be obtained to perform the laboratory mix design tests as outlined in tables 17, 19, and 21. Tables 17 and 19 outline the mixture design tests to be performed on the binder and surface courses, respectively, for all sections except for 18A902. Considerably more testing will be performed on section 18A902 and, consequently, the bulk samples needed are much larger than for the other sections. Table 21 lists the mixture design and performance tests to be run for section 18A902, as well as the tests run on field samples from this section (see section 5.5.2). For all sections except for 18A902, approximately 10 liters of asphalt cement shall be obtained for mix design tests. Also, 100-kg samples of the combined aggregates for both the intermediate layer and surface layer shall be obtained. The resulting mixed samples made from these materials shall be tested according to tables 18 and 20 . For section 18A902, approximately 50 liters of asphalt cement shall be obtained for mix design tests. Also, 500-kg samples of the combined aggregates for both the intermediate layer and surface layer shall be obtained. The resulting mixed samples made from these materials shall be tested according to table 22A.

5.5.2 Field Sampling of Uncompacted Asphalt Concrete

Bulk samples of uncompacted asphalt concrete material shall be obtained from the paver or the haul vehicle from the mix that is to be placed approximately at the locations shown in table 14. At each location, samples shall be obtained from both asphalt concrete mixes (intermediate course and surface course). For all sections except 18A902, a total of 50 kg of uncompacted asphalt concrete shall be collected from each course to be used for quality control tests. For section 18A902, a total of 350 kg of uncompacted asphalt concrete shall be collected from each course to be used for quality

control tests and field performance tests. These samples shall be obtained in accordance with AASHTO T168, "Sampling Bituminous Paving Mixtures." For section 18A902, perform quality control and performance tests in accordance with tables 21 and 22B. For all sections except for 18A902, perform quality control tests in accordance with tables 25 through 28.

5.5.3 Cores of HMA Materials

Core samples of 152 mm diameter shall be obtained from the compacted asphalt concrete surface immediately after construction and at intervals of 6, 12, 18, 24 and 48 months after construction. Eight cores per test section are required at each time interval. Coring requirements are identical for all test sections. The locations from which the cores shall be obtained are given in figures 10 and 11.

Coring operations shall be performed in accordance with AASHTO T24-B6, "Obtaining and Testing Drilled Cores and Sawed Beams of Concrete." Carbide or diamond bit drilling is to be performed. Mist or air-cooled drilling is preferred as the best method to minimize water contamination of the underlying layers. If necessary, to obtain cores of suitable quality, the pavement may be cooled by dry-ice or other means prior to coring. Cores of multiple layers of asphalt concrete shall not be separated in the field. Plugs shall not be inserted in cores. Suction cups or wire pulls have been successfully used for core extraction. Care shall be taken to obtain cores at a 90-degree angle to the pavement surface and that the edges are straight, intact, smooth, and suitable for laboratory testing. Details on tolerance and quality control of the cores are included in Section 2.4.2 (ref. 3). The direction of traffic shall be marked on all cores using a waterproof marking material. All cores must be dried before packaging.

Tables 29 and 30 outline the laboratory tests to be performed on the asphalt concrete cores. The visual examination and determination of thickness of the cores shall be performed before conducting any laboratory tests on the cores. Binder and surface courses shall be separated in the laboratory and testing performed on each layer. Note that tests on recovered asphalt cement are run only on the surface course.

5.5.4 Field and Laboratory Tests

The field tests to be conducted on the compacted asphalt concrete surface are shown in table 6. This table also gives the SHRP protocols that are to be followed when conducting these tests. The following field tests are to be conducted on the prepared asphalt concrete surface.

1. *Nuclear Density Tests.* The locations for nuclear density tests are specified in table 12. Nuclear density tests shall be conducted after the placement of the final lift of intermediate course as well as after the placement of the surface course.

The density testing shall be performed at the specified locations using AASHTO T238-86, backscatter mode. Each testing location shall have four readings, with the density instrument rotated 90° between each reading.

- 2, *Elevation Measurements.* Measurements should be performed at stations spaced at 8 m prior to and after the monitoring portion of each test section and at 15 m intervals from the start to the end of the monitoring portion of the test section. At each elevation survey station, measurements should be performed at offsets of 0, 0.9, 1.8, 2.8, and 3.6 m from the planned outside pavement edge at the location where the outside lane stripe will be placed. These offset locations roughly correspond to the outside lane edge, outside wheel path, lane center, inside wheel path, and inside lane edge of a 3.6-m wide lane. If the lane is greater than 3.6 m wide, the offsets should be adjusted so that measurements are performed in the wheel path locations. The locations at which the elevation measurements are to be performed are given in table 10. Each elevation measurement shall be measured with an accuracy within 0.01 feet.

A reproducible location referencing system must be established in the field so that once the elevation survey locations are established, they can be relocated for subsequent measurements on the surface of each new pavement layer placed.

5.6 Samples for Long-Term Storage

The LTPP Materials Reference Library requires the following additional samples for long-term storage.

Asphalt Cement

One 10-liter pail of asphalt cement shall be collected for each binder used on the project. If the same binder is used in more than one mix, then only one sample of that binder should be obtained. These samples will be obtained from the plant following AASHTO T40, "Sampling Bituminous Materials," after the asphalt has been heated for mixing. For this experiment, samples of AC-20, PG 64-28, PG 58-28, PG 70-28, and PG 64-16 are required.

Aggregates

Ten 10-liter pails of combined coarse and fine aggregate shall be collected from the plant for each aggregate combination used on the project. This should be done in conformance with applicable portions of AASHTO T2, "Sampling Aggregates." For drum plants, the aggregates should be obtained from the charging (inclined) conveyor using the bypass chute, if possible. Otherwise, the sample should be taken from the belt on the charging conveyor. For batch plants, the aggregates can be sampled from

the inclined conveyor at the dryer. Six samples are required for this project: State mix (binder), State mix (surface), SUPERPAVE mix (binder), SUPERPAVE mix (surface), SUPERPAVE w/RAP (binder), and SUPERPAVE w/RAP (surface).

Containers for the storage and shipment of these samples will be provided to the participating State agencies by the LTPP Materials Reference Library (MRL) at no cost to the State. These containers are of special manufacture to accommodate long-term storage. It will be necessary that scheduling information be furnished to the MRL contractor as soon as this information is available. This information should, at the minimum, contain (1) date containers needed, (2) State agency contact name, (3) shipping address, and (4) telephone number. The contact person for the MRL is Mr. Rod Soule of Nichols Consulting Engineers Chtd. at 702-358-7574.

Shipping of samples to the MRL will be performed by a common carrier and the costs borne by the MRL contractor. The participating agency should contact the MRL office for coordination and shipping details.

A copy of Field Operations Information Form 1 (appendix B of ref. 3) should be completed and included with the shipment, and another copy of the form should be mailed separately. This will allow a trace of the shipment if it does not arrive in a timely manner.

If necessary, cores and compacted specimens for SPS-9A projects can also be shipped and stored at the MRL if the SUPERPAVE Regional Test Center is not yet able to test or store the material designated for it to test. The MRL should be contacted for shipping containers and instructions.

6.0 LOGS AND REPORTS

During field sampling operations, two types of forms must be completed. These are the Field Operations Information Forms and Sampling Data Sheets. Field Operations Information Forms are used to record general information concerning the pavement test sections and the materials samples. Sampling Data Sheets are used to record the actual information for each sampling area or sampling location. If these forms are completed by a person other than the LTPP representative, the data must be reviewed by the LTPP representative prior to forwarding the sheets to the appropriate personnel. Further details are given in Section 3.5 (ref. 3). Details on assembly and transmittal of data sheets are described in Section 3.6 (ref. 3).

7.0 HANDLING AND SHIPPING OF SAMPLES

Because of the research nature of this project, and because samples will be shipped over long distances, it is extremely important that the samples be packaged carefully. All samples shall be shipped within five days to the laboratory designated by the participating highway agency. Section 3.4 of reference 3 gives detailed guidelines on packaging and shipping of samples.

8.0 SAMPLE STORAGE

The guidelines for storing materials from the LTPP experiment are described in section 4.8 in reference 3.

9.0 LABORATORY TESTING

The protocols for laboratory testing on samples are described in the *SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing* (ref. 1). The applicable procedures for laboratory testing that are outlined in Section 4 of reference 3 shall also be followed when performing laboratory tests.

10.0 DOCUMENTATION

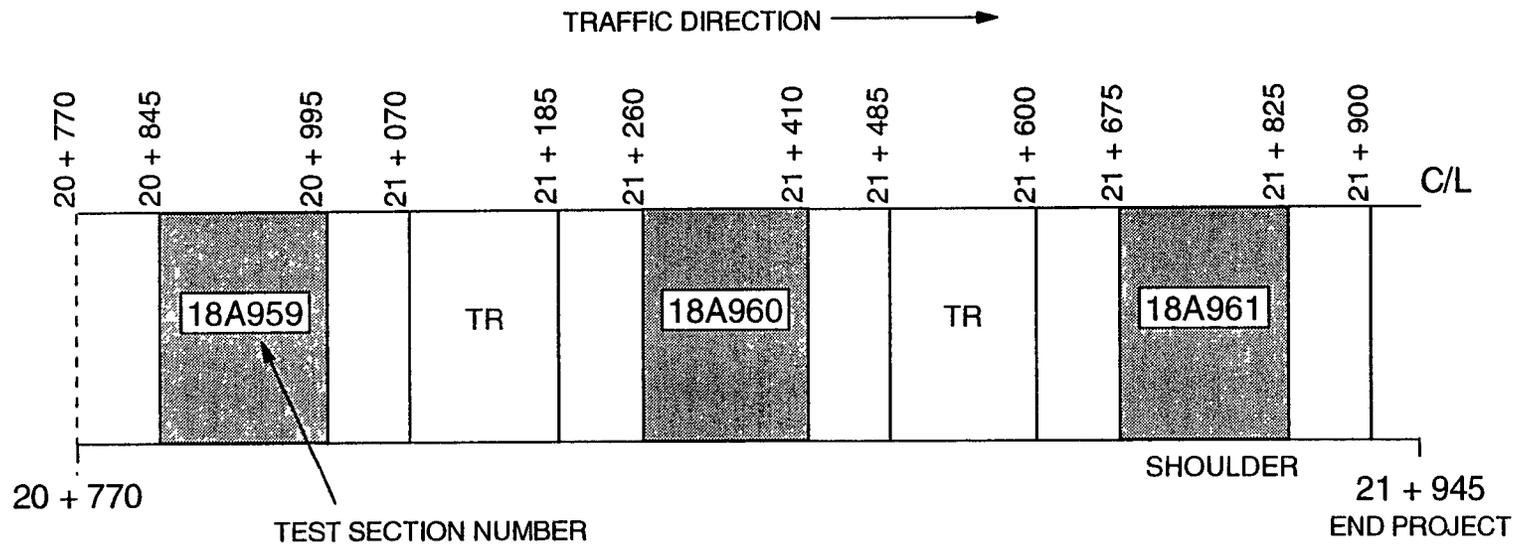
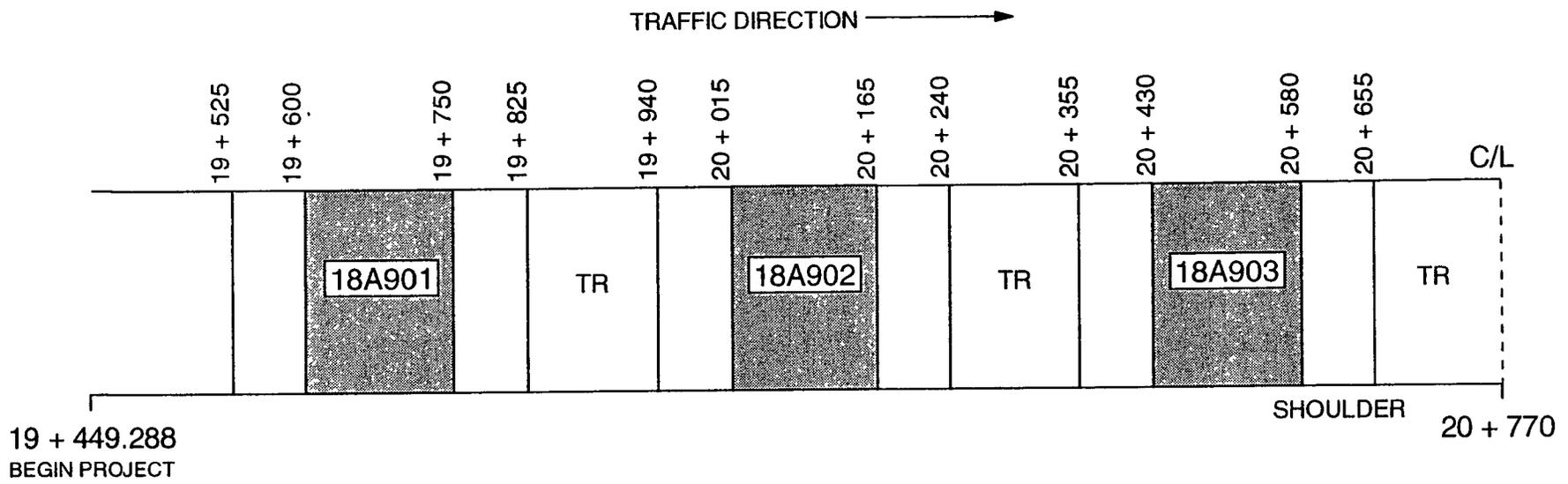
An extensive amount of documentation is required for SPS projects. It is essential that the State assign a person full-time who will be in charge of completing all necessary documentation for this project. This includes documentation related to inventory, construction, sampling, field testing, and laboratory testing.

11.0 REFERENCES

1. *SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing (PCC, Bituminous Materials, Aggregates and Soils)*, Operational Guide No. SHRP-LTPP-OG-004, Strategic Highway Research Program, Revised and Amended, July 1993.
2. *SHRP-LTPP Guide for Field Materials Sampling, Handling and Testing, Version 2.0*, Operational Guide No. SHRP-LTPP-OG-006, Strategic Highway Research Program, May 1990.
3. *Specific Pavement Studies, Materials Sampling and Testing Requirements, Experiment SPS-9A, SUPERPAVE Asphalt Binder Study*, February 1996.

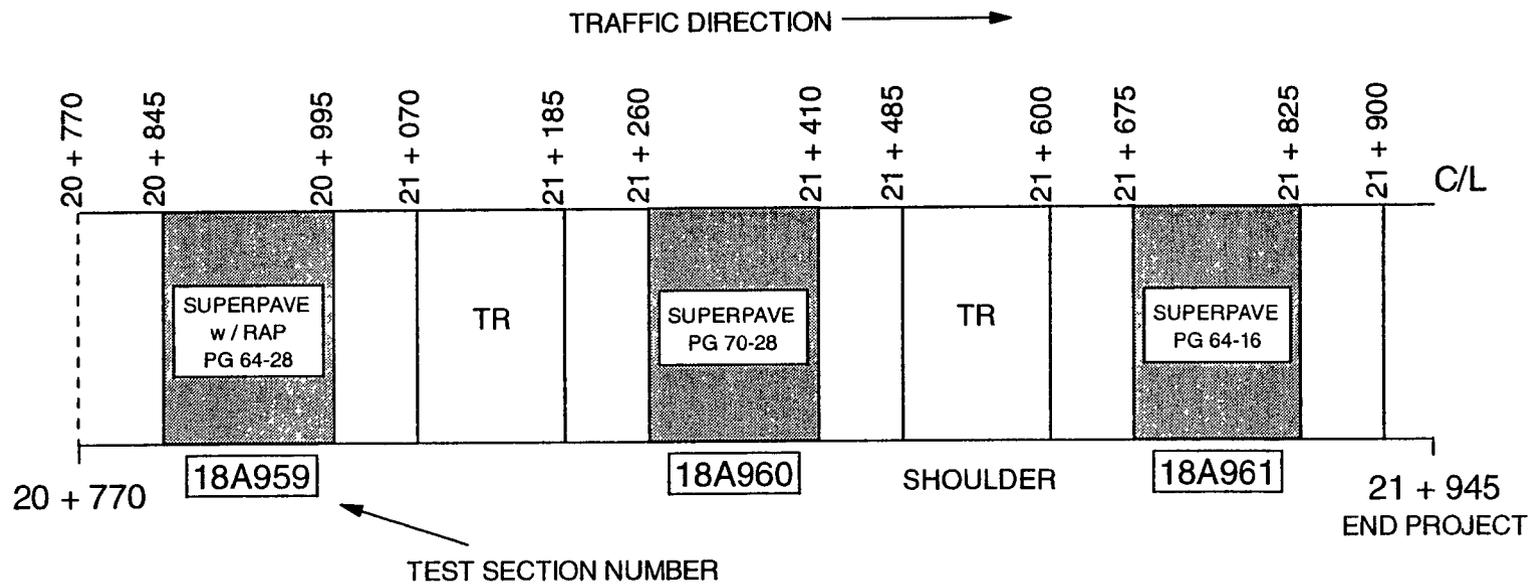
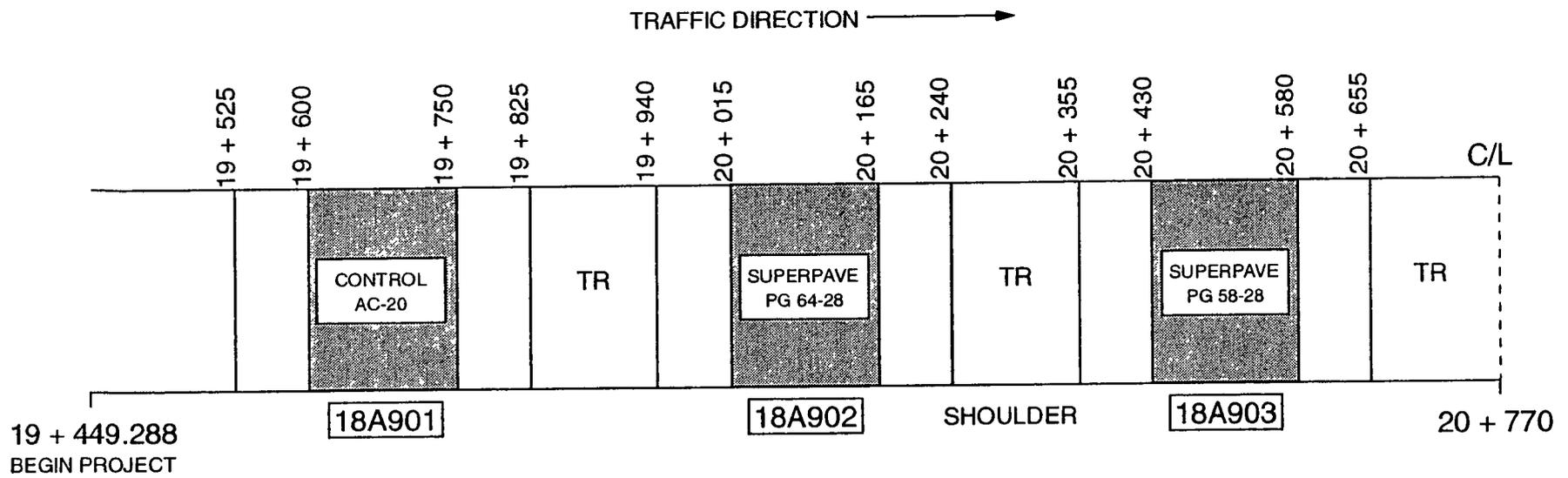
Appendix A

Figures



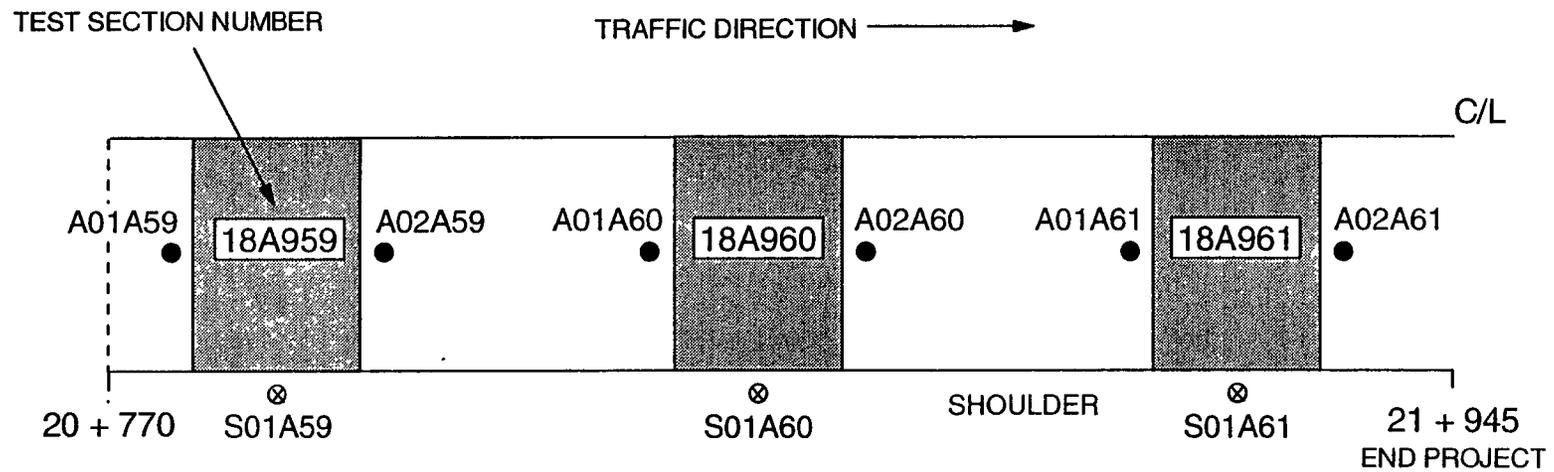
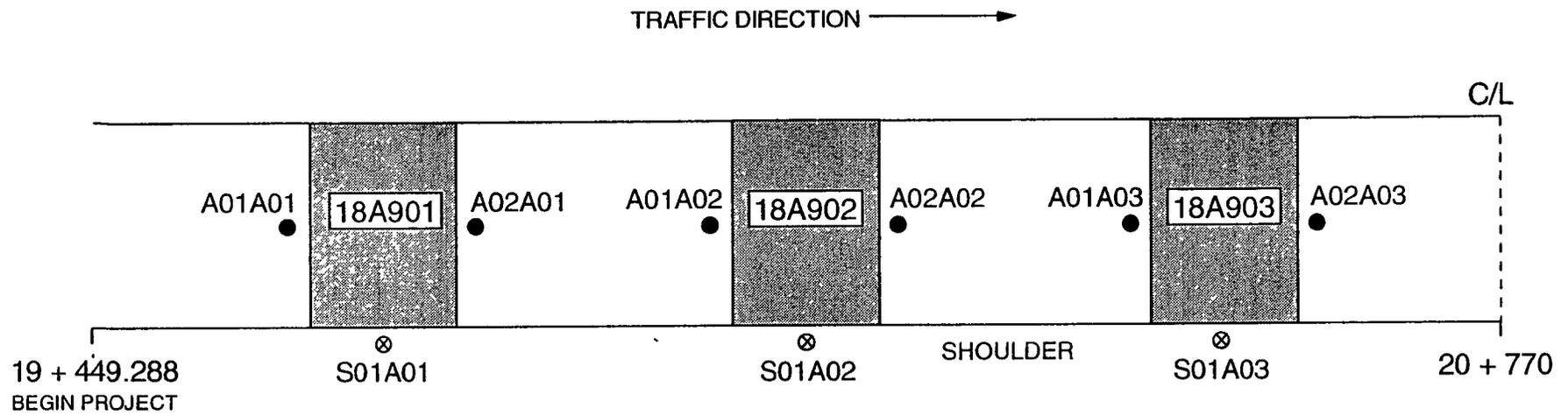
NOTE: SHADED AREA INDICATES 150 m MONITORING PORTION OF EACH 300 m TEST SECTION

Figure 1. Layout of Test Sections.



NOTE: SHADED AREA INDICATES 150 m MONITORING PORTION OF EACH 300 m TEST SECTION

Figure 2. Design Features of Test Sections.

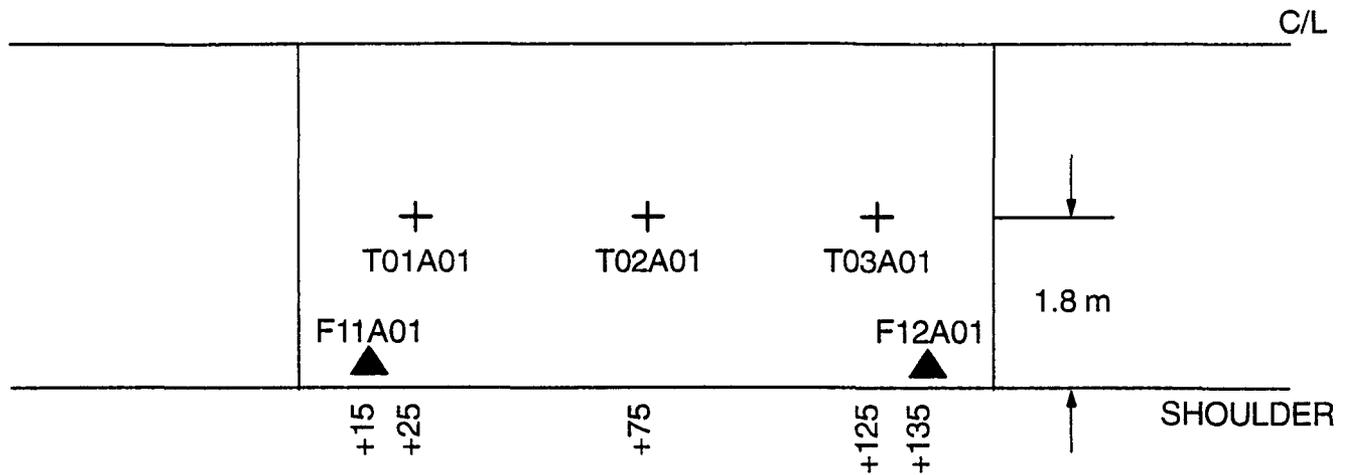


LEGEND

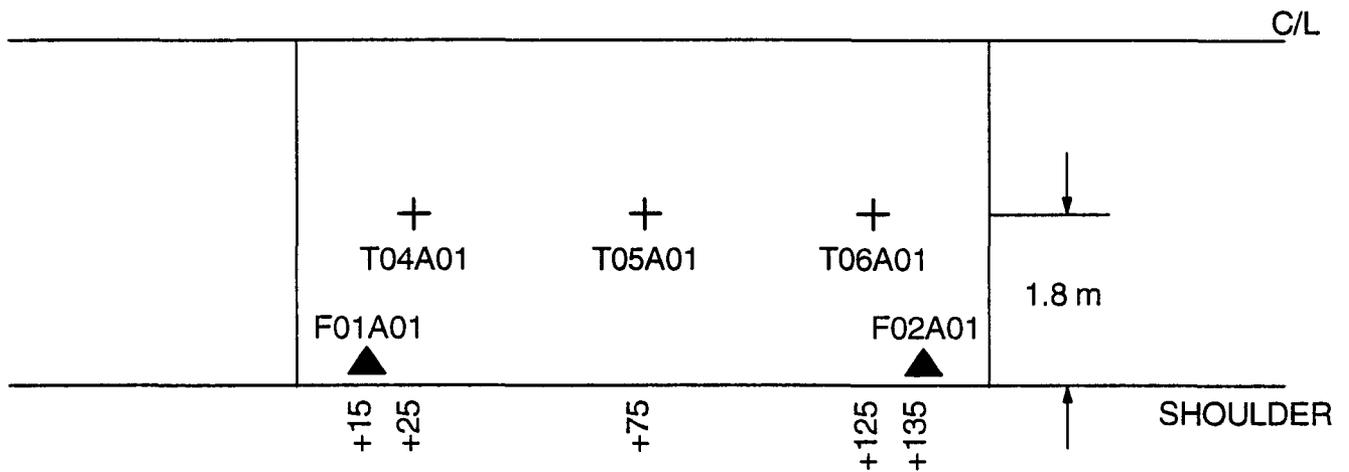
- A-TYPE CORE LOCATION - 152 mm DIA CORE OF PCC, AUGER SAMPLES OF BASE AND SUBGRADE
- ⊗ SHOULDER AUGER PROBE TO 6 m BELOW SURFACE

Figure 3. Pre-Construction Sampling.

BINDER COURSE



SURFACE COURSE



LEGEND

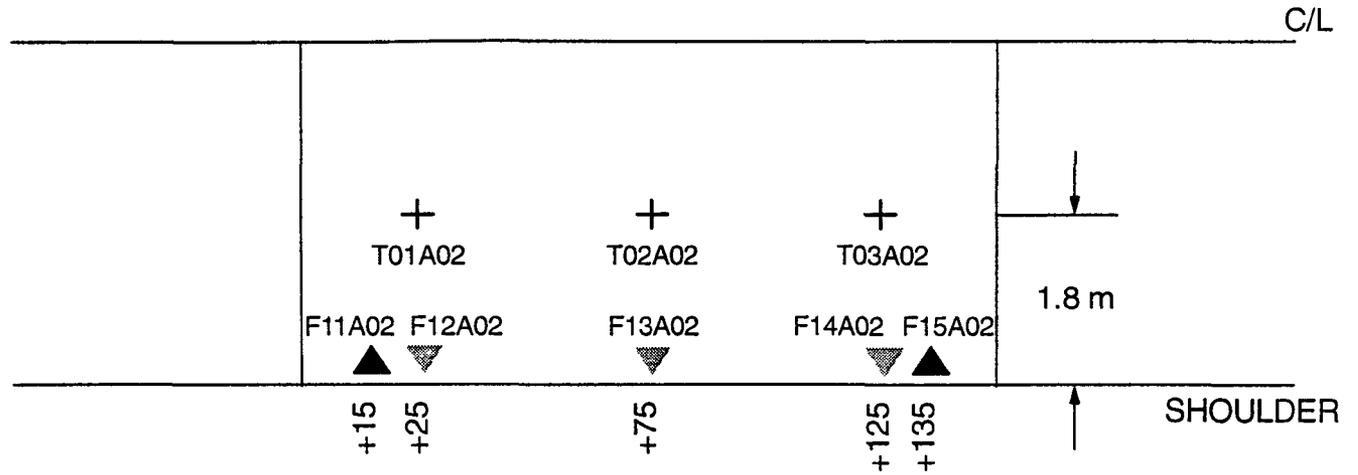
- ▲ BULK SAMPLE LOCATION (25 kg)
- + DENSITY TEST LOCATION

NOTES

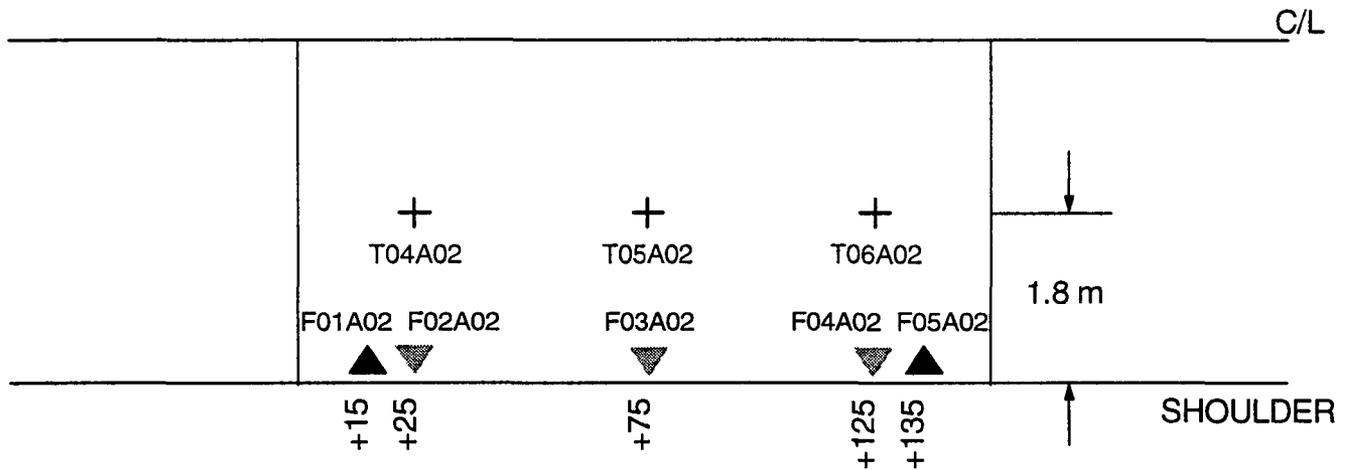
1. CONDUCT ELEVATION MEASUREMENTS ON CRACKED AND SEATED PCC SURFACE AND THE FINAL LIFT OF EACH COURSE.
2. CONDUCT DENSITY MEASUREMENTS ON FINAL LIFT OF EACH COURSE.
3. OBTAIN BULK SAMPLES ON FINAL LIFT OF EACH COURSE AT LOCATION SHOWN WITHIN STUDY LANE EITHER FROM HAUL VEHICLES OR AT THE PAVER.

Figure 4. Construction Sampling and Testing - 18A901.

BINDER COURSE



SURFACE COURSE



LEGEND

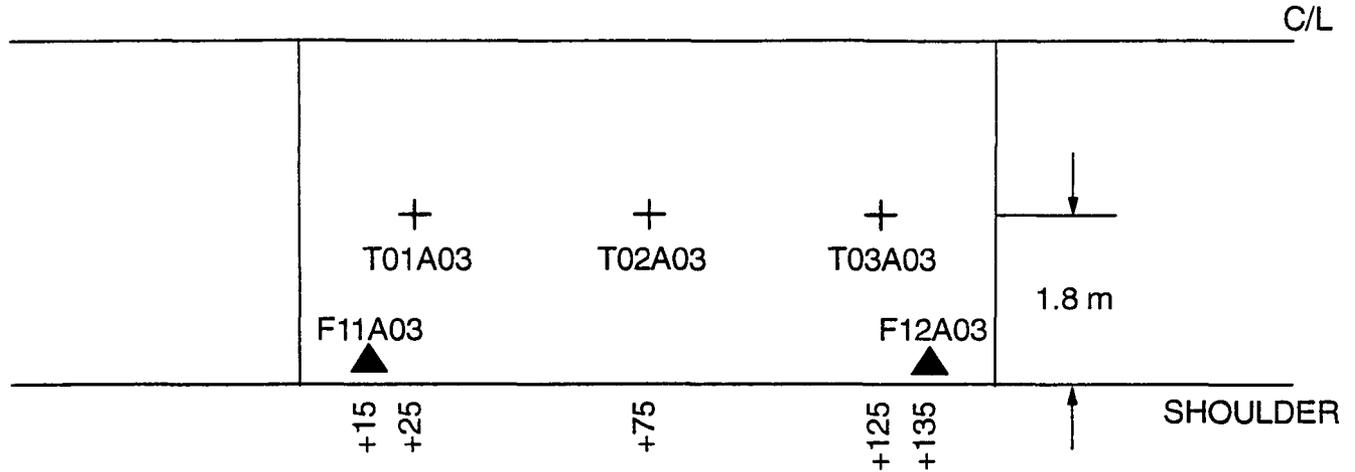
- ▲ BULK SAMPLE LOCATION (25 kg)
- ▼ BULK SAMPLE LOCATION (100 kg)
- + DENSITY TEST LOCATION

NOTES

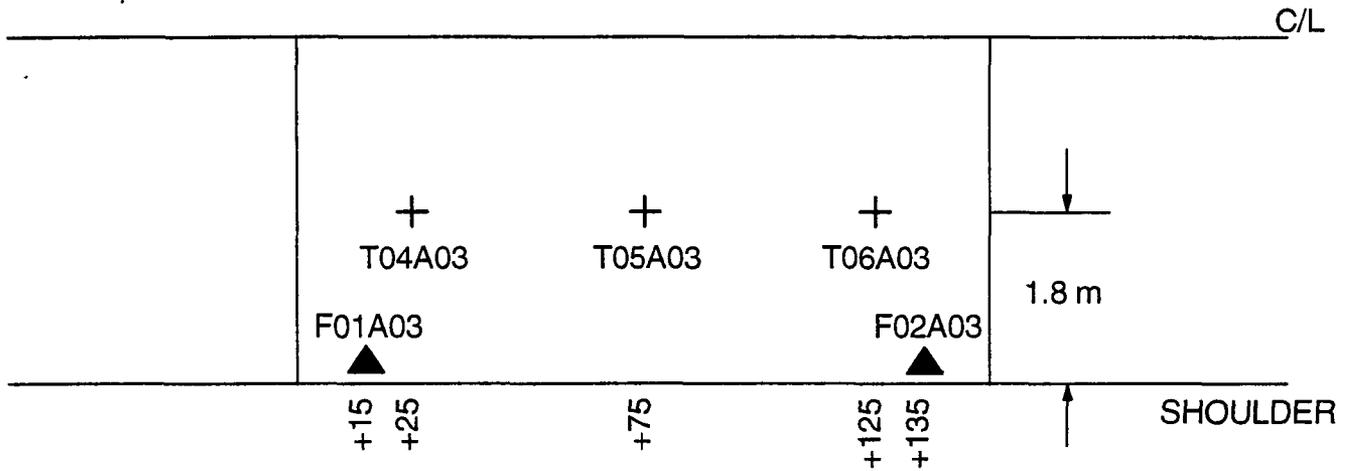
1. CONDUCT ELEVATION MEASUREMENTS ON CRACKED AND SEATED PCC SURFACE AND THE FINAL LIFT OF EACH COURSE.
2. CONDUCT DENSITY MEASUREMENTS ON FINAL LIFT OF EACH COURSE.
3. OBTAIN BULK SAMPLES ON FINAL LIFT OF EACH COURSE AT LOCATION SHOWN WITHIN STUDY LANE EITHER FROM HAUL VEHICLES OR AT THE PAVER.

Figure 5. Construction Sampling and Testing - 18A902.

BINDER COURSE



SURFACE COURSE



LEGEND

▲ BULK SAMPLE LOCATION (25 kg)

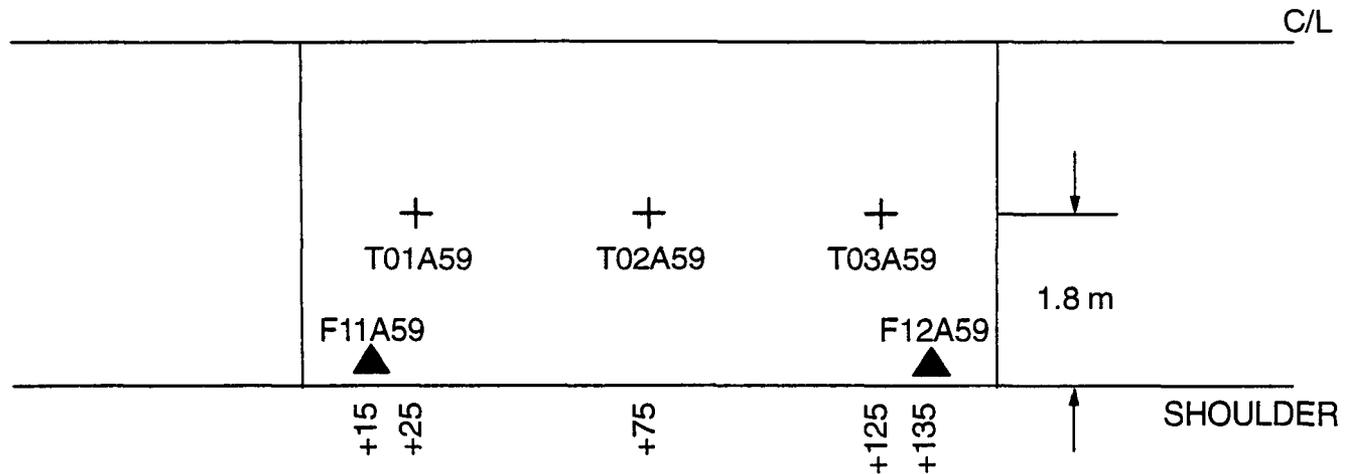
+ DENSITY TEST LOCATION

NOTES

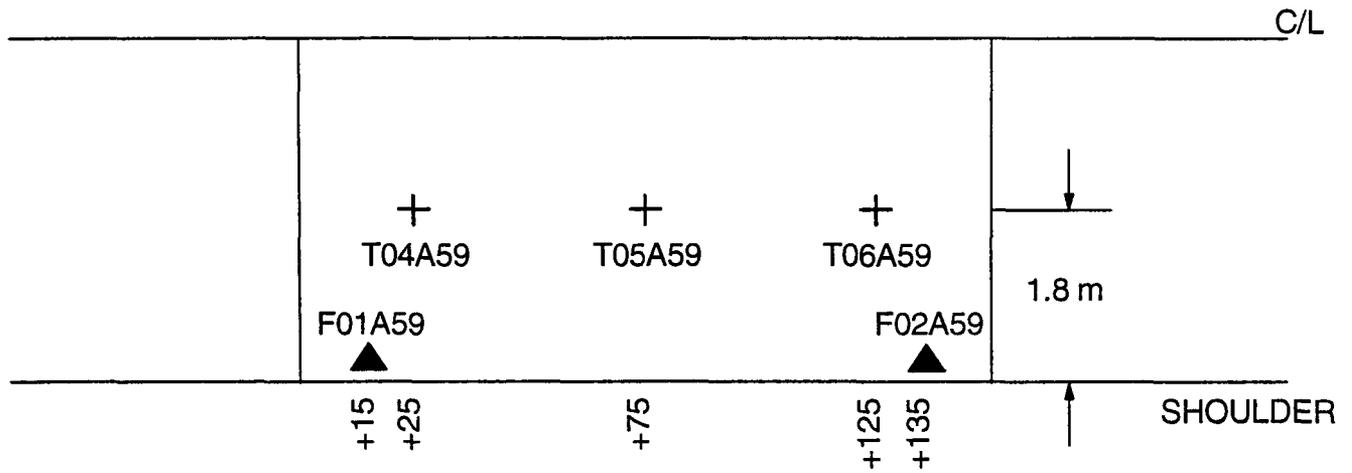
1. CONDUCT ELEVATION MEASUREMENTS ON CRACKED AND SEATED PCC SURFACE AND THE FINAL LIFT OF EACH COURSE.
2. CONDUCT DENSITY MEASUREMENTS ON FINAL LIFT OF EACH COURSE.
3. OBTAIN BULK SAMPLES ON FINAL LIFT OF EACH COURSE AT LOCATION SHOWN WITHIN STUDY LANE EITHER FROM HAUL VEHICLES OR AT THE PAVER.

Figure 6. Construction Sampling and Testing - 18A903.

BINDER COURSE



SURFACE COURSE



LEGEND

▲ BULK SAMPLE LOCATION (25 kg)

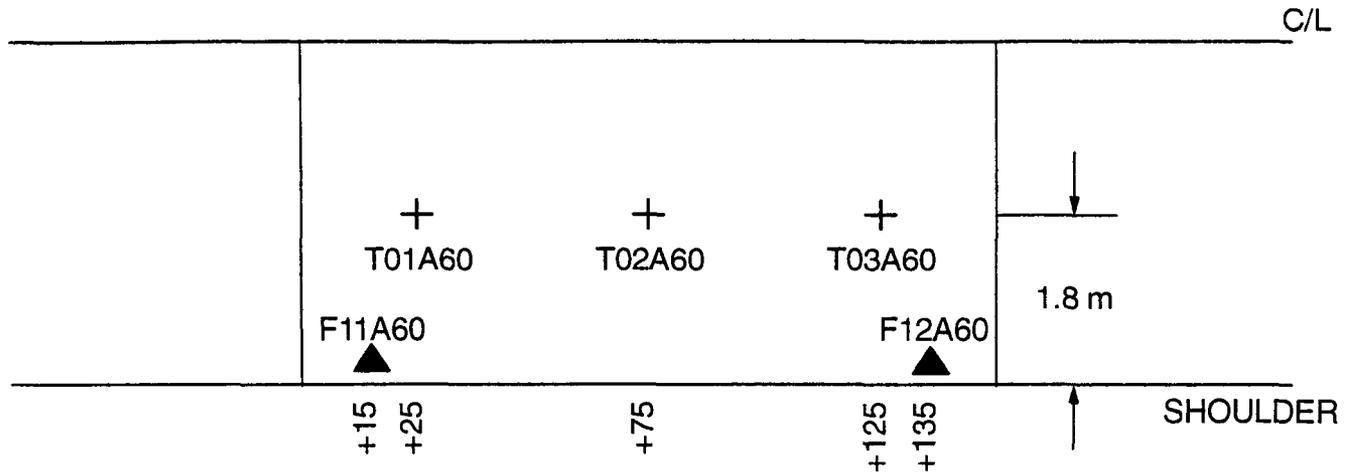
+ DENSITY TEST LOCATION

NOTES

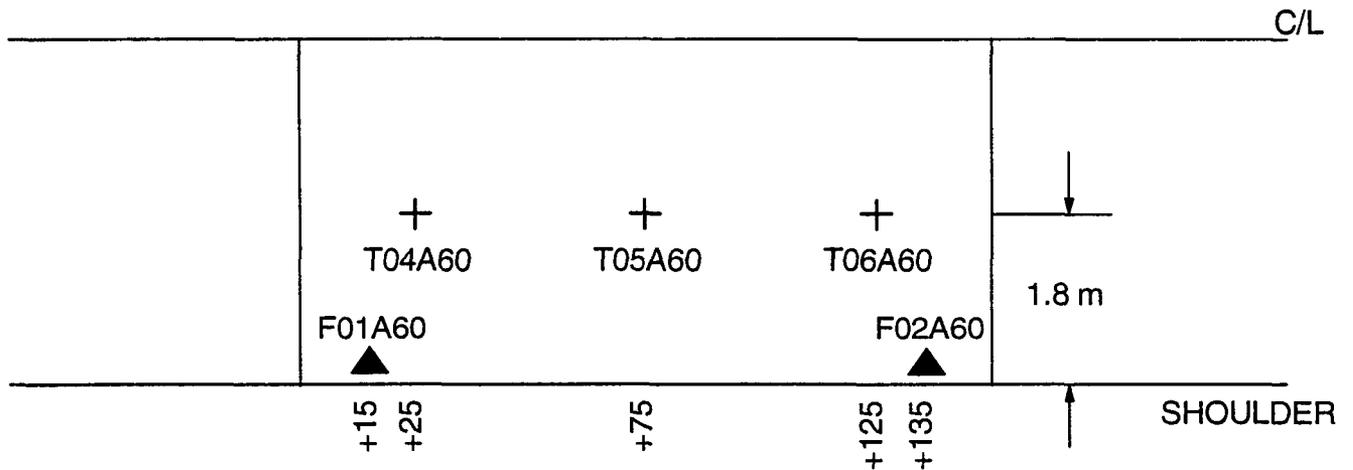
1. CONDUCT ELEVATION MEASUREMENTS ON CRACKED AND SEATED PCC SURFACE AND THE FINAL LIFT OF EACH COURSE.
2. CONDUCT DENSITY MEASUREMENTS ON FINAL LIFT OF EACH COURSE.
3. OBTAIN BULK SAMPLES ON FINAL LIFT OF EACH COURSE AT LOCATION SHOWN WITHIN STUDY LANE EITHER FROM HAUL VEHICLES OR AT THE PAVER.

Figure 7. Construction Sampling and Testing - 18A959.

BINDER COURSE



SURFACE COURSE



LEGEND

▲ BULK SAMPLE LOCATION (25 kg)

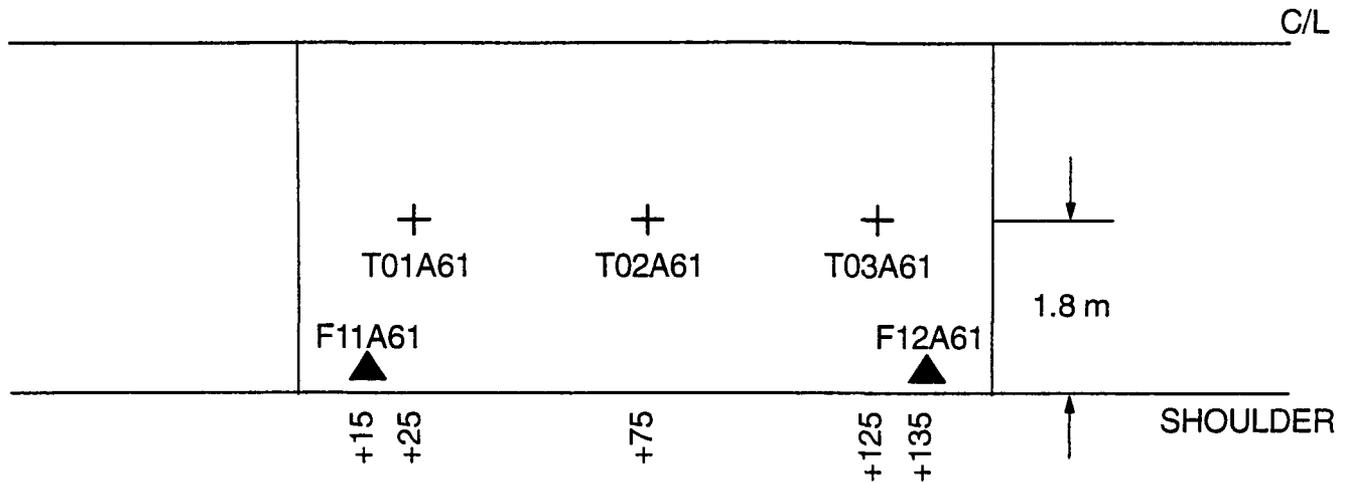
+ DENSITY TEST LOCATION

NOTES

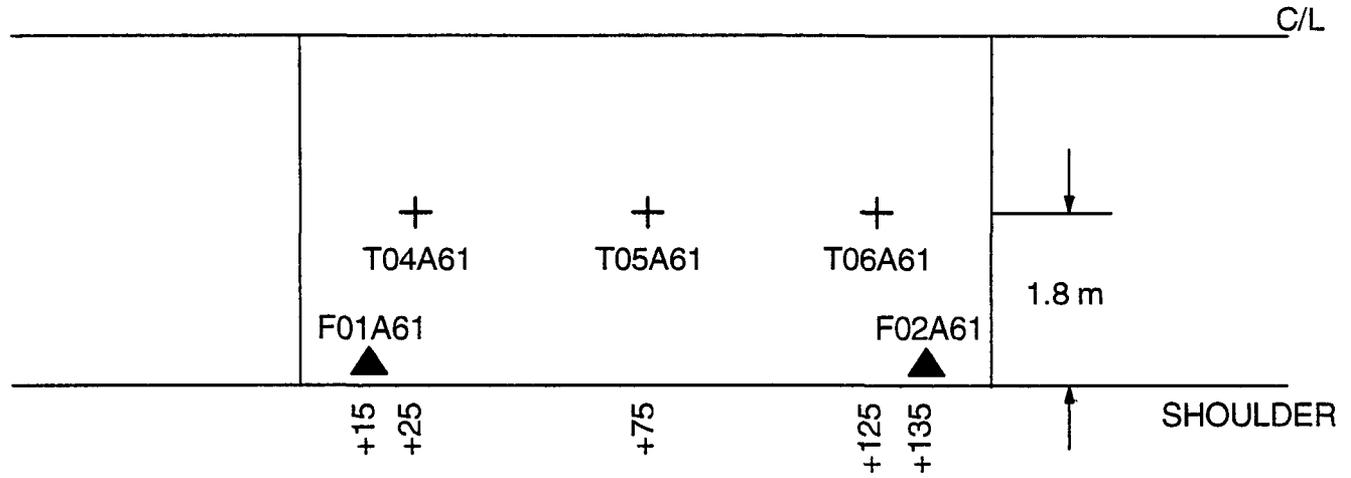
1. CONDUCT ELEVATION MEASUREMENTS ON CRACKED AND SEATED PCC SURFACE AND THE FINAL LIFT OF EACH COURSE.
2. CONDUCT DENSITY MEASUREMENTS ON FINAL LIFT OF EACH COURSE.
3. OBTAIN BULK SAMPLES ON FINAL LIFT OF EACH COURSE AT LOCATION SHOWN WITHIN STUDY LANE EITHER FROM HAUL VEHICLES OR AT THE PAVER.

Figure 8. Construction Sampling and Testing - 18A960.

BINDER COURSE



SURFACE COURSE



LEGEND

▲ BULK SAMPLE LOCATION (25 kg)

+ DENSITY TEST LOCATION

NOTES

1. CONDUCT ELEVATION MEASUREMENTS ON CRACKED AND SEATED PCC SURFACE AND THE FINAL LIFT OF EACH COURSE.
2. CONDUCT DENSITY MEASUREMENTS ON FINAL LIFT OF EACH COURSE.
3. OBTAIN BULK SAMPLES ON FINAL LIFT OF EACH COURSE AT LOCATION SHOWN WITHIN STUDY LANE EITHER FROM HAUL VEHICLES OR AT THE PAVER.

Figure 9. Construction Sampling and Testing - 18A961.

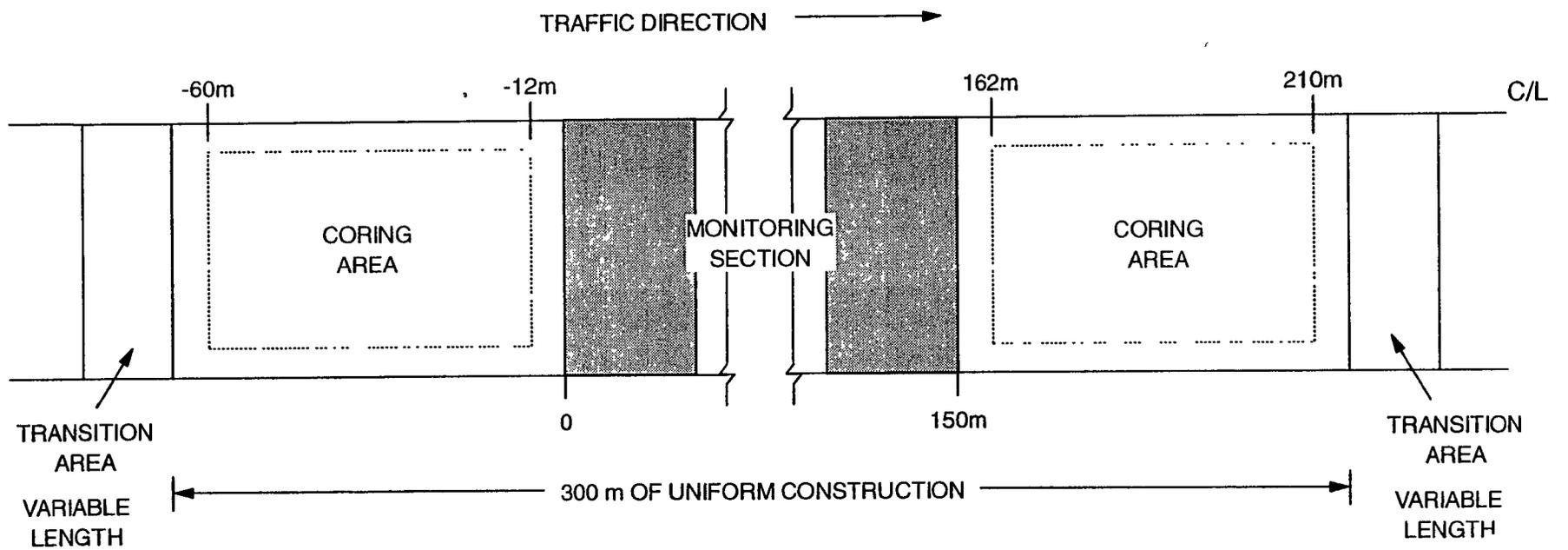
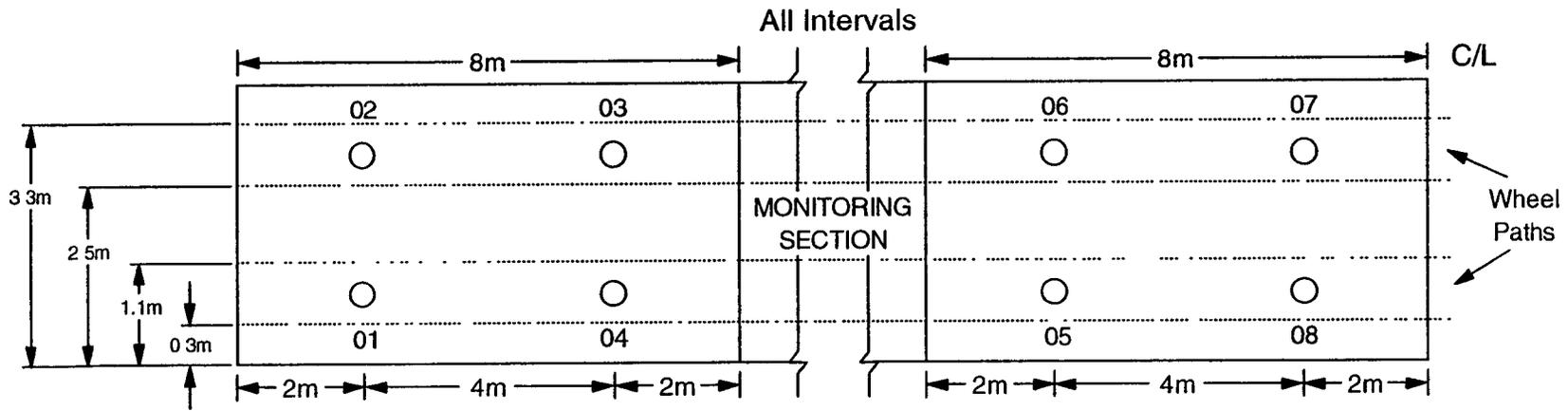
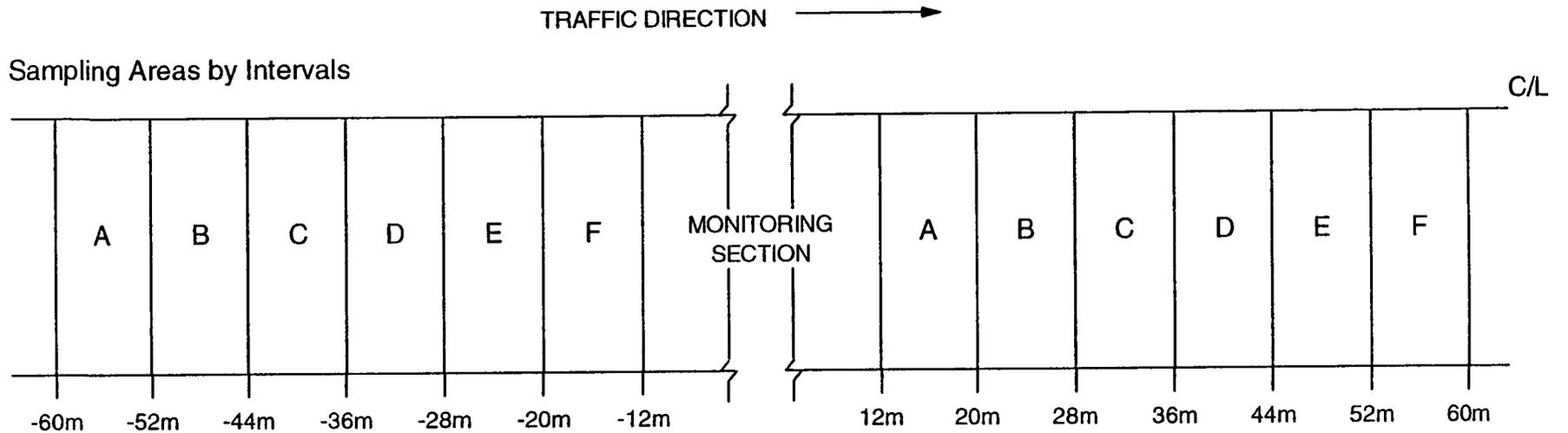


Figure 10. Coring Area for SPS-9A Test Sections.



NOT TO SCALE

Figure 11. Core Locations for SPS-9A Test Sections.

Appendix B

Tables

Table 1. Layer Coding - Indiana SPS-9A.

Project Layer Code	Material Code	Comments
A		Subgrade
B		Subbase
C	45	Cracked and Seated JRC
D	01	HMAC Binder Course (AC-20)
E	01	HMAC Binder Course (PG 64-28)
F	01	HMAC Binder Course (PG 58-28)
G	13	HMAC Binder Course (PG 64-28 w/RAP)
H	01	HMAC Binder Course (PG 70-28)
I	01	HMAC Binder Course (PG 64-16)
J	01	HMAC Surface Course (AC-20)
K	01	HMAC Surface Course (PG 64-28)
L	01	HMAC Surface Course (PG 58-28)
M	13	HMAC Surface Course (PG 64-28 w/RAP)
N	01	HMAC Surface Course (PG 70-28)
O	01	HMAC Surface Course (PG 64-16)

Table 2. Test Section Layer Numbering - Indiana SPS-9A.

Test Section	Layer Number	Project Layer Code	Layer Thickness	Material Code	Comments
18A901	1	A	N/A		Subgrade
	2	B			Subbase
	3	C	254	45	Cracked and Seated JRCP
	4	D	Varies ^a	01	HMAC Binder Course (State Mix)
	5	J	Varies ^b	01	HMAC Surface Course (State Mix)

Test Section	Layer Number	Project Layer Code	Layer Thickness	Material Code	Comments
18A902	1	A	N/A		Subgrade
	2	B			Subbase
	3	C	254	45	Cracked and Seated JRCP
	4	E	Varies	01	HMAC Binder Course (PG 64-28)
	5	K	Varies	01	HMAC Surface Course (PG 64-28)

Test Section	Layer Number	Project Layer Code	Layer Thickness	Material Code	Comments
18A903	1	A	N/A		Subgrade
	2	B			Subbase
	3	C	254	45	Cracked and Seated JRCP
	4	F	Varies	01	HMAC Binder Course (PG 58-28)
	5	L	Varies	01	HMAC Surface Course (PG 58-28)

Test Section	Layer Number	Project Layer Code	Layer Thickness	Material Code	Comments
18A959	1	A	N/A		Subgrade
	2	B			Subbase
	3	C	254	45	Cracked and Seated JRCP
	4	G	Varies	13	HMAC Binder Course (PG 64-28 w/RAP)
	5	M	Varies	13	HMAC Surface Course (PG 64-28 w/RAP)

Test Section	Layer Number	Project Layer Code	Layer Thickness	Material Code	Comments
18A960	1	A	N/A		Subgrade
	2	B			Subbase
	3	C	254	45	Cracked and Seated JRCP
	4	H	Varies	01	HMAC Binder Course (PG 70-28)
	5	N	Varies	01	HMAC Surface Course (PG 70-28)

Test Section	Layer Number	Project Layer Code	Layer Thickness	Material Code	Comments
18A961	1	A	N/A		Subgrade
	2	B			Subbase
	3	C	254	45	Cracked and Seated JRCP
	4	I	Varies	01	HMAC Binder Course (PG 64-16)
	5	O	Varies	01	HMAC Surface Course (PG 64-16)

Notes. ^a Thickness varies from 124mm at centerline to 107mm at pavement edge (placed in 2 lifts).

^b Thickness varies from 61mm at centerline to 53mm at pavement edge.

Table 3. Limits of Test Sections - Indiana SPS-9A.

Section Number	300 m Test Section		150 m Monitoring Area	
	Beginning	End	Beginning	End
18A901 (1)	19 + 525	19 + 825	19 + 600	19 + 750
18A902 (3)	19 + 940	20 + 240	20 + 015	20 + 165
18A903 (4)	20 + 355	20 + 655	20 + 430	20 + 580
18A959 (2)	20 + 770	21 + 070	20 + 845	20 + 995
18A960 (5)	21 + 185	21 + 485	21 + 260	21 + 410
18A961 (6)	21 + 600	21 + 900	21 + 675	21 + 825

Table 4. Design Features of Test Sections - Indiana SPS-9A.

Test Section (State #)	Asphalt Binder Used	Mix Design	*AC Thickness (mm) (Surface)	*AC Binder Thickness (mm) (Top Lift)	*AC Binder Thickness (mm) (Bottom Lift)
18A901 (1)	AC-20	INDOT	53 - 61	53 - 61	53 - 64
18A902 (3)	PG 64-28	SUPERPAVE	53 - 61	53 - 61	53 - 64
18A903 (4)	PG 58-28	SUPERPAVE	53 - 61	53 - 61	53 - 64
18A959 (2)	PG 64-28	SUPERPAVE w/RAP	53 - 61	53 - 61	53 - 64
18A960 (5)	PG 70-28	SUPERPAVE	53 - 61	53 - 61	53 - 64
18A961 (6)	PG 64-16	SUPERPAVE	53 - 61	53 - 61	53 - 64

NOTE:
AC - Asphalt Concrete
* Variable thickness (greater thickness is at centerline)

Table 5A. Materials Sampling Requirements
 - All Test Sections Except for 18A902.

Material Samples For Each Test Section (18A901, 18A903, 18A959, 18A960, 18A961)	Number of Samples
SUBGRADE	
Bulk Sample	2
Moisture Content Samples	4
AGGREGATE (SUB)BASE	
Bulk Sample	2
Moisture Content Samples	2
EXISTING JRCP	
Cores - 150 mm diameter	2
ASPHALT CONCRETE (BINDER AND SURFACE COURSES)	
Materials for Aggregate and Binder Tests	
Bulk sample of each asphalt cement used (3 liters)	1
Bulk sample of each aggregate combination used (including RAP) (50 kg)	1
Aggregates and Binder for Mix Design Tests	
Bulk sample of asphalt cement (10 liters)	1
Bulk sample of combined aggregates (for binder and surface) (100 kg)	2 (i)
Binder Course	
Bulk samples of hot-mix from field, uncompacted (25 kg)	2
Surface Course	
Bulk samples of hot-mix from field, uncompacted (25 kg)	2
All Layers	
Cores - 150 mm diameter (immediately after construction)	8
Cores - 150 mm diameter (time intervals B-F)	8

NOTE.

(i) One 100 kg sample for binder course and one 100 kg sample for surface course.

Table 5B. Materials Sampling Requirements - Section 18A902.

Material Samples For Test Section 18A902	Number of Samples
SUBGRADE	
Bulk Sample	2
Moisture Content Samples	4
AGGREGATE (SUB)BASE	
Bulk Sample	2
Moisture Content Samples	2
EXISTING JRCP	
Cores - 150 mm diameter	2
ASPHALT CONCRETE (BINDER AND SURFACE COURSES)	
Materials for Aggregate and Binder Tests	
Bulk sample of asphalt cement (3 liters)	1
Bulk sample of each aggregate combination used (50 kg)	1
Aggregates and Binder for Mix Design Tests	
Bulk sample of asphalt cement (50 liters)	1
Bulk sample of combined aggregates (for binder and surface) (500 kg)	2 (i)
Binder Course	
Bulk samples of hot-mix from field, uncompacted (25 kg)	2
Bulk samples of hot-mix from field, uncompacted (100 kg)	3
Surface Course	
Bulk samples of hot-mix from field, uncompacted (25 kg)	2
Bulk samples of hot-mix from field, uncompacted (100 kg)	3
All Layers	
Cores - 150 mm diameter (immediately after construction)	8
Cores - 150 mm diameter (time intervals B-F)	8

(i) One 500 kg sample for binder course and one 500 kg sample for surface course.

Table 5C. Samples for Materials Reference Library - SPS-9A.

Material Samples to Be Shipped to MRL for Storage	Number of Samples
Asphalt cement collected from plant in 10-liter pails (one sample for each type of binder used in project)	5 (total)
Combined coarse and fine aggregate obtained from plant in 10-liter pails (10 for each aggregate combination used in project)	6 (total)

Table 6. Summary of Field Tests - Each SPS-9A Section.

Layer and Test/Measurement	Number of Locations	SHRP Protocol
SUBGRADE		
Shoulder probes (6 m) to detect rigid layer.	1	SHRP-LTPP Guide for Field Materials Sampling, Handling, & Testing
EXISTING JRCP		
Cores of existing JRCP	2	
A-type auger to depth of 1.2 m below top of subgrade	2	
EXISTING JRCP (after crack-and-seat)		
Elevation measurements 15 m intervals, at 0, 0.9, 1.8, 2.7, and 3.6 m offsets from edge	65	Section 2.4.3 of SPS-9A Sampling and Testing Guide
Falling Weight Deflectometer (FWD) Testing	25	P59
ASPHALT CONCRETE (BINDER AND SURFACE COURSES)		
Density tests (nuclear gauge) Note: Performed on final lift of binder and surface courses.	6	Section 2.4.4 of SPS-9A Sampling and Testing Guide
Elevation measurements (on final lift of binder and surface) 15 m intervals, at 0, 0.9, 1.8, 2.7, and 3.6 m offsets from edge	130	Section 2.4.3 of SPS-9A Sampling and Testing Guide
Falling Weight Deflectometer (FWD) Testing Note: SHRP will perform on final surface lift.	25	P59

Table 7. Location and Designation of Samples of Existing Pavement.

Test Section	Pavement Layer	Sample Type	Sampling Location	Station	Sample Designation	
18A901	Overlaid PCC	Core	A01A01	0 - 008 m	CP01A01	
	Base	Bulk	A01A01	0 - 008 m	BG01A01	
		Moisture	A01A01	0 - 008 m	MG01A01	
	Subgrade	Bulk	A01A01	0 - 008 m	BS01A01	
		Moisture	A01A01	0 - 008 m	MS01A01, MS02A01	
	Overlaid PCC	Core	A02A01	0 + 158 m	CP02A01	
	Base	Bulk	A02A01	0 + 158 m	BG02A01	
		Moisture	A02A01	0 + 158 m	MG02A01	
	Subgrade	Bulk	A02A01	0 + 158 m	BS02A01	
		Moisture	A02A01	0 + 158 m	MS03A01, MS04A01	
	18A902	Overlaid PCC	Core	A01A02	0 - 008 m	CP01A02
		Base	Bulk	A01A02	0 - 008 m	BG01A02
Moisture			A01A02	0 - 008 m	MG01A02	
Subgrade		Bulk	A01A02	0 - 008 m	BS01A02	
		Moisture	A01A02	0 - 008 m	MS01A02, MS02A02	
Overlaid PCC		Core	A02A02	0 + 158 m	CP02A02	
Base		Bulk	A02A02	0 + 158 m	BG02A02	
		Moisture	A02A02	0 + 158 m	MG02A02	
Subgrade		Bulk	A02A02	0 + 158 m	BS02A02	
		Moisture	A02A02	0 + 158 m	MS03A02, MS04A02	
18A903		Overlaid PCC	Core	A01A03	0 - 008 m	CP01A03
		Base	Bulk	A01A03	0 - 008 m	BG01A03
	Moisture		A01A03	0 - 008 m	MG01A03	
	Subgrade	Bulk	A01A03	0 - 008 m	BS01A03	
		Moisture	A01A03	0 - 008 m	MS01A03, MS02A03	
	Overlaid PCC	Core	A02A03	0 + 158 m	CP02A03	
	Base	Bulk	A02A03	0 + 158 m	BG02A03	
		Moisture	A02A03	0 + 158 m	MG02A03	
	Subgrade	Bulk	A02A03	0 + 158 m	BS02A03	
		Moisture	A02A03	0 + 158 m	MS03A03, MS04A03	

Table 7. Location and Designation of Samples of Existing Pavement (continued).

Test Section	Pavement Layer	Sample Type	Sampling Location	Station	Sample Designation
18A959	Overlaid PCC	Core	A01A59	0 - 008 m	CP01A59
	Base	Bulk	A01A59	0 - 008 m	BG01A59
		Moisture	A01A59	0 - 008 m	MG01A59
	Subgrade	Bulk	A01A59	0 - 008 m	BS01A59
		Moisture	A01A59	0 - 008 m	MS01A59, MS02A59
	Overlaid PCC	Core	A02A59	0 + 158 m	CP02A59
	Base	Bulk	A02A59	0 + 158 m	BG02A59
		Moisture	A02A59	0 + 158 m	MG02A59
	Subgrade	Bulk	A02A59	0 + 158 m	BS02A59
		Moisture	A02A59	0 + 158 m	MS03A59, MS04A59
18A960	Overlaid PCC	Core	A01A60	0 - 008 m	CP01A60
	Base	Bulk	A01A60	0 - 008 m	BG01A60
		Moisture	A01A60	0 - 008 m	MG01A60
	Subgrade	Bulk	A01A60	0 - 008 m	BS01A60
		Moisture	A01A60	0 - 008 m	MS01A60, MS02A60
	Overlaid PCC	Core	A02A60	0 + 158 m	CP02A60
	Base	Bulk	A02A60	0 + 158 m	BG02A60
		Moisture	A02A60	0 + 158 m	MG02A60
	Subgrade	Bulk	A02A60	0 + 158 m	BS02A60
		Moisture	A02A60	0 + 158 m	MS03A60, MS04A60
18A961	Overlaid PCC	Core	A01A61	0 - 008 m	CP01A61
	Base	Bulk	A01A61	0 - 008 m	BG01A61
		Moisture	A01A61	0 - 008 m	MG01A61
	Subgrade	Bulk	A01A61	0 - 008 m	BS01A61
		Moisture	A01A61	0 - 008 m	MS01A61, MS02A61
	Overlaid PCC	Core	A02A61	0 + 158 m	CP02A61
	Base	Bulk	A02A61	0 + 158 m	BG02A61
		Moisture	A02A61	0 + 158 m	MG02A61
	Subgrade	Bulk	A02A61	0 + 158 m	BS02A61
		Moisture	A02A61	0 + 158 m	MS03A61, MS04A61

Table 8 Sampling and Testing of Existing Pavement Layers

Test Type	LTPP Designation	LTPP Protocol	No. of Tests	Sample Designation
EXISTING OVERLAID PCC				
Core Examination/Thickness	AC06/ PC06	P01/ P66	12	CP01A01, CP02A01, CP01A02, CP02A02, CP01A03, CP02A03, CP01A59, CP02A59, CP01A60, CP02A60, CP01A61, CP02A61
SUBBASE (OPTIONAL) (i)				
Sieve Analysis	UG01, UG02	P41	6	BG01A01+BG02A01, BG01A02+BG02A02, BG01A03+BG02A03, BG01A59+BG02A59, BG01A60+BG02A60, BG01A61+BG02A61
Natural Moisture Content	UG10	P49	12	MG01A01, MG02A01, MG01A02, MG02A02, MG01A03, MG02A03, MG01A59, MG02A59, MG01A60, MG02A60, MG01A61, MG02A61
Classification	UG08	P47	6	BG01A01+BG02A01, BG01A02+BG02A02, BG01A03+BG02A03, BG01A59+BG02A59, BG01A60+BG02A60, BG01A61+BG02A61
SUBGRADE				
Sieve Analysis	SS01	P51	12	BS01A01, BS02A01, BS01A02, BS02A02, BS01A03, BS02A03, BS01A59, BS02A59, BS01A60, BS02A60, BS01A61, BS02A61
Atterberg Limits	SS03	P43	12	BS01A01, BS02A01, BS01A02, BS02A02, BS01A03, BS02A03, BS01A59, BS02A59, BS01A60, BS02A60, BS01A61, BS02A61
Classification	SS04	P52	12	BS01A01, BS02A01, BS01A02, BS02A02, BS01A03, BS02A03, BS01A59, BS02A59, BS01A60, BS02A60, BS01A61, BS02A61
Natural Moisture Content	SS09	P49	24	MS01A01, MS02A01, MS03A01, MS04A01, MS01A02, MS02A02, MS03A02, MS04A02, MS01A03, MS02A03, MS03A03, MS04A03, MS01A59, MS02A59, MS03A59, MS04A59, MS01A60, MS02A60, MS03A60, MS04A60, MS01A61, MS02A61, MS03A61, MS04A61
Depth to Rigid Layer		(ii)	6	S01A01, S01A02, S01A03, S01A59, S01A60, S01A61

NOTES:

- (i) COMBINE SAMPLES SHOWN TO RUN THE TESTS
- (ii) FOLLOW PROCEDURES CONTAINED IN APP. C OF SHRP FIELD SAMPLING GUIDE

Table 9. Locations for Shoulder Probes.

Sample Location	Reference Monitoring Section	Sampling Location From Beginning of Monitoring Section
S01A01	18A901	0 + 075
S01A02	18A902	0 + 075
S01A03	18A903	0 + 075
S01A59	18A959	0 + 075
S01A60	18A960	0 + 075
S01A61	18A961	0 + 075

Table 10. Locations for Elevations Measurements.

Distance from Beginning of Monitoring Area	Distance from Edge of Pavement (m)				
	0	0.9	1.8	2.7	3.6
0 - 008	0	0.9	1.8	2.7	3.6
0 + 000	0	0.9	1.8	2.7	3.6
0 + 015	0	0.9	1.8	2.7	3.6
0 + 030	0	0.9	1.8	2.7	3.6
0 + 045	0	0.9	1.8	2.7	3.6
0 + 060	0	0.9	1.8	2.7	3.6
0 + 075	0	0.9	1.8	2.7	3.6
0 + 090	0	0.9	1.8	2.7	3.6
0 + 105	0	0.9	1.8	2.7	3.6
0 + 120	0	0.9	1.8	2.7	3.6
0 + 135	0	0.9	1.8	2.7	3.6
0 + 150	0	0.9	1.8	2.7	3.6
0 + 158	0	0.9	1.8	2.7	3.6

Table 11. Locations for FWD Tests.

Distances from Beginning of Monitoring Area	
0.8 +/- 0.15 m Offset from Edge (Outer Wheel Path)	1.8 +/- 0.15 m Offset from Edge (Mid lane)
0 - 008	0 - 008
0 + 000	0 + 008
0 + 015	0 + 023
0 + 030	0 + 038
0 + 045	0 + 053
0 + 060	0 + 068
0 + 075	0 + 083
0 + 090	0 + 098
0 + 105	0 + 013
0 + 120	0 + 128
0 + 135	0 + 143
0 + 150	0 + 158
0 + 158	-

Table 12. Locations for In-place Density Tests on Asphalt Concrete.

Test Section	Layer	Test Location Designation	Test Location (i)	Offset from Edge of Pavement (m)
18A901	Binder	T01A01	0 + 025	1.8
		T02A01	0 + 075	1.8
		T03A01	0 + 125	1.8
	Surface	T04A01	0 + 025	1.8
		T05A01	0 + 075	1.8
		T06A01	0 + 125	1.8
18A902	Binder	T01A02	0 + 025	1.8
		T02A02	0 + 075	1.8
		T03A02	0 + 125	1.8
	Surface	T04A02	0 + 025	1.8
		T05A02	0 + 075	1.8
		T06A02	0 + 125	1.8
18A903	Binder	T01A03	0 + 025	1.8
		T02A03	0 + 075	1.8
		T03A03	0 + 125	1.8
	Surface	T04A03	0 + 025	1.8
		T05A03	0 + 075	1.8
		T06A03	0 + 125	1.8
18A959	Binder	T01A59	0 + 025	1.8
		T02A59	0 + 075	1.8
		T03A59	0 + 125	1.8
	Surface	T04A59	0 + 025	1.8
		T05A59	0 + 075	1.8
		T06A59	0 + 125	1.8
18A960	Binder	T01A60	0 + 025	1.8
		T02A60	0 + 075	1.8
		T03A60	0 + 125	1.8
	Surface	T04A60	0 + 025	1.8
		T05A60	0 + 075	1.8
		T06A60	0 + 125	1.8
18A961	Binder	T01A61	0 + 025	1.8
		T02A61	0 + 075	1.8
		T03A61	0 + 125	1.8
	Surface	T04A61	0 + 025	1.8
		T05A61	0 + 075	1.8
		T06A61	0 + 125	1.8

NOTE:

(i) Referenced from the beginning of the monitoring portion of each test section.

Table 13. Materials Sources for Laboratory Testing.

Test Section	Layer	Material	Sample Location	Sample Designation
18A901	Binder	Bulk Combined Aggregate	Stockpile	BU01A01
	Surface	Bulk Combined Aggregate	Stockpile	BU02A01
	All	Asphalt Cement AC-20	Tanker	BC01A01
18A902	Binder	Bulk Combined Aggregate	Stockpile	BU01A02
	Surface	Bulk Combined Aggregate	Stockpile	BU02A02
	All	Asphalt Cement PG 64-28	Tanker	BC01A02
18A903	Binder	Bulk Combined Aggregate	Stockpile	BU01A03
	Surface	Bulk Combined Aggregate	Stockpile	BU02A03
	All	Asphalt Cement PG 58-28	Tanker	BC01A03
18A959	Binder	Bulk Combined Aggregate	Stockpile	BU01A59
	Surface	Bulk Combined Aggregate	Stockpile	BU02A59
	All	Asphalt Cement PG 64-28	Tanker	BC01A59
18A960	Binder	Bulk Combined Aggregate	Stockpile	BU01A60
	Surface	Bulk Combined Aggregate	Stockpile	BU02A60
	All	Asphalt Cement PG 70-28	Tanker	BC01A60
18A961	Binder	Bulk Combined Aggregate	Stockpile	BU01A61
	Surface	Bulk Combined Aggregate	Stockpile	BU02A61
	All	Asphalt Cement PG 64-16	Tanker	BC01A61

Table 14. Locations for Bulk Sampling of Asphalt Concrete in the Field.

Test Section	Layer (i)	Test Location Designation	Test Location (ii)	Sample Designations
18A901	Binder	F11A01	0 + 015	BA50A01 - BA55A01
		F12A01	0 + 135	
	Surface	F01A01	0 + 015	BA01A01 - BA06A01
		F02A01	0 + 135	
18A902	Binder	F11A02	0 + 015	BA50A02 - BA83A02
		F12A02	0 + 025	
		F13A02	0 + 075	
		F14A02	0 + 125	
		F15A02	0 + 135	
	Surface	F01A01	0 + 015	BA01A02 - BA34A02
		F02A02	0 + 025	
		F03A02	0 + 075	
		F04A02	0 + 125	
		F05A02	0 + 135	
18A903	Binder	F11A03	0 + 015	BA50A03 - BA55A03
		F12A03	0 + 135	
	Surface	F01A03	0 + 015	BA01A03 - BA06A03
		F02A03	0 + 135	
18A959	Binder	F11A59	0 + 015	BA50A59 - BA55A59
		F12A59	0 + 135	
	Surface	F01A59	0 + 015	BA01A59 - BA06A59
		F02A59	0 + 135	
18A960	Binder	F11A60	0 + 015	BA50A60 - BA55A60
		F12A60	0 + 135	
	Surface	F01A60	0 + 015	BA01A60 - BA06A60
		F02A60	0 + 135	
18A961	Binder	F11A61	0 + 015	BA50A61 - BA55A61
		F12A61	0 + 135	
	Surface	F01A61	0 + 015	BA01A61 - BA06A61
		F02A61	0 + 135	
<p>NOTES:</p> <p>(i) Obtain bulk samples on final lift of each course from haul vehicles or at the paver.</p> <p>(ii) Referenced from the beginning of the monitoring portion of each test section.</p>				

Table 15. SUPERPAVE Aggregate and Binder Tests to be Performed by Participating Highway Agency
on HMA Surface Layer Materials from All Test Sections - Pre-Construction

Test Name	Test Designation	Protocol	Number of Tests	Material Source (i)
AGGREGATE TESTS (ii)				
Aggregate Gradation	AG04	LTPP P14	6	BU01A01, BU02A01, BU01A02, BU02A02, BU01A59, BU02A59
Specific Gravity of Coarse Aggregate	AG01	LTPP P11	6	BU01A01, BU02A01, BU01A02, BU02A02, BU01A59, BU02A59
Specific Gravity of Fine Aggregate	AG02	LTPP P12	6	BU01A01, BU02A01, BU01A02, BU02A02, BU01A59, BU02A59
Specific Gravity of -200 material		AASHTO T100	6	BU01A01, BU02A01, BU01A02, BU02A02, BU01A59, BU02A59
Coarse Aggregate Angularity		Penn DOT TM 621	6	BU01A01, BU02A01, BU01A02, BU02A02, BU01A59, BU02A59
Fine Aggregate Angularity		ASTM C1252	6	BU01A01, BU02A01, BU01A02, BU02A02, BU01A59, BU02A59
Toughness		AASHTO T96	6	BU01A01, BU02A01, BU01A02, BU02A02, BU01A59, BU02A59
Soundness		AASHTO T104	6	BU01A01, BU02A01, BU01A02, BU02A02, BU01A59, BU02A59
Deleterious Materials		AASHTO 112	6	BU01A01, BU02A01, BU01A02, BU02A02, BU01A59, BU02A59
Clay Content		AASHTO T176	6	BU01A01, BU02A01, BU01A02, BU02A02, BU01A59, BU02A59
Thin, Elongated Particles		ASTM D 4791	6	BU01A01, BU02A01, BU01A02, BU02A02, BU01A59, BU02A59
ASPHALT CEMENT (iii)				
Penetration @ 5 C (iv)		AASHTO T49	5	BC01A01, BC01A02, BC01A03, BC01A60, BC01A61
Penetration @ 25 & 46 C (iv)	AE02	LTPP P22	5	BC01A01, BC01A02, BC01A03, BC01A60, BC01A61
Viscosity @ 60 and 135 C	AE05	LTPP P25	10	BC01A01, BC01A02, BC01A03, BC01A60, BC01A61
Specific Gravity @ 16 C	AE03	LTPP P23	10	BC01A01, BC01A02, BC01A03, BC01A60, BC01A61
Dynamic shear @ 3 temperatures (v)		AASHTO TP5	10	BC01A01, BC01A02, BC01A03, BC01A60, BC01A61
Brookfield Viscosity @ 135 & 165 C		ASTM D4402	5	BC01A01, BC01A02, BC01A03, BC01A60, BC01A61
Rolling Thin Film Oven (RTFOT)		AASHTO T240	(vi)	BC01A01, BC01A02, BC01A03, BC01A60, BC01A61
Dynamic Shear on RTFOT residue @ 3 temperatures (v)		AASHTO TP5	15	BC01A01, BC01A02, BC01A03, BC01A60, BC01A61
Pressure Aging (PAV) of RTFOT residue		AASHTO PP1	(vi)	BC01A01, BC01A02, BC01A03, BC01A60, BC01A61
Creep Stiffness of RTFOT-PAV residue @ 2 temperatures - 24 h conditioning (v, vii)		AASHTO TP1	10	BC01A01, BC01A02, BC01A03, BC01A60, BC01A61
Creep Stiffness of RTFOT-PAV residue @ 2 temperatures (v)		AASHTO TP1	10	BC01A01, BC01A02, BC01A03, BC01A60, BC01A61
Dynamic Shear on RTFOT-PAV residue @ 3 temperatures (v)		AASHTO TP5	10	BC01A01, BC01A02, BC01A03, BC01A60, BC01A61
Direct Tension on RTFOT-PAV residue @ 2 temperatures (v)		AASHTO TP3	10	BC01A01, BC01A02, BC01A03, BC01A60, BC01A61

Table 15. SUPERPAVE Aggregate and Binder Tests to be Performed by Participating Highway Agency on HMA Surface Layer Materials from All Test Sections - Pre-Construction (continued).

NOTES:

- i) Since the same aggregates are used in sections 18A902, 18A903, 18A960, and 18A961, only one test is needed.
- ii) Aggregate materials source designations are as follows:
 - BU01A01 = Bulk sample of aggregate from binder course from test section 18A901.
 - BU02A01 = Bulk sample of aggregate from surface course from test section 18A901.
 - BU01A02 = Bulk sample of aggregate from binder course from test section 18A902.
 - BU02A02 = Bulk sample of aggregate from surface course from test section 18A902.
 - BU01A59 = Bulk sample of aggregate from binder course from test section 18A959.
 - BU02A59 = Bulk sample of aggregate from surface course from test section 18A959.
- iii) Asphalt cement source designations are as follows:
 - BC01A01 = Bulk sample of asphalt cement from test section 18A901 (AC-20).
 - BC01A02 = Bulk sample of asphalt cement from test section 18A902 (PG 64-28).
 - BC01A03 = Bulk sample of asphalt cement from test section 18A903 (PG 58-28).
 - BC01A60 = Bulk sample of asphalt cement from test section 18A960 (PG 70-28).
 - BC01A61 = Bulk sample of asphalt cement from test section 18A961 (PG 64-16).
- iv) Three penetration values obtained from each test.
- v) See section 4.5.1.2 of SPS-9A MST Guide for temperature selection guidelines.
- vi) Sufficient material should be conditioned for the required tests.
- vii) Conditioning time should be 24 h + / - 10 min at 10 C above the minimum performance temperature.

Table 16. Tracking Table of Aggregate and Binder Testing to be Performed by State Agency on All Test Sections - Pre-Construction

Sample Location	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			
AGGREGATES										
18A901 Binder	BU01A01	3	AG04/P14	AG01/P11 AG02/P12 AASHTO T100	Penn DOT TM 621 ASTM C1252	AASHTO T96 AASHTO T104	AASHTO T112 AASHTO T176 ASTM D4791	Yes	(i)	No
18A901 Surface	BU02A01	3	AG04/P14	AG01/P11 AG02/P12 AASHTO T100	Penn DOT TM 621 ASTM C1252	AASHTO T96 AASHTO T104	AASHTO T112 AASHTO T176 ASTM D4791	Yes	(i)	No
18A902 Binder	BU01A02	3	AG04/P14	AG01/P11 AG02/P12 AASHTO T100	Penn DOT TM 621 ASTM C1252	AASHTO T96 AASHTO T104	AASHTO T112 AASHTO T176 ASTM D4791	Yes	(i)	No
18A902 Surface	BU02A02	3	AG04/P14	AG01/P11 AG02/P12 AASHTO T100	Penn DOT TM 621 ASTM C1252	AASHTO T96 AASHTO T104	AASHTO T112 AASHTO T176 ASTM D4791	Yes	(i)	No
18A959 Binder	BU01A59	3	AG04/P14	AG01/P11 AG02/P12 AASHTO T100	Penn DOT TM 621 ASTM C1252	AASHTO T96 AASHTO T104	AASHTO T112 AASHTO T176 ASTM D4791	Yes	(i)	No
18A959 Surface	BU02A59	3	AG04/P14	AG01/P11 AG02/P12 AASHTO T100	Penn DOT TM 621 ASTM C1252	AASHTO T96 AASHTO T104	AASHTO T112 AASHTO T176 ASTM D4791	Yes	(i)	No

Table 16 Tracking Table of Aggregate and Binder Testing to be Performed by State Agency on All Test Sections - Pre-Construction (continued)

Test Section	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			
BINDER										
18A901	BC01A01	3	AASHTO T49 (iii) AE02/P22 (iii) AE05/P25 AE03/P23	ASTM D 4402 AASHTO TP5 (iv,v)	AASHTO T240 AASHTO TP5 (iv,vi)	AASHTO PP1 AASHTO TP5 (iv,vii) AASHTO TP1 (iv) AASHTO TP1 (iv,viii)	AASHTO TP3 (iv)	Yes	(ii)	No
18A902	BC01A02	3	AASHTO T49 (iii) AE02/P22 (iii) AE05/P25 AE03/P23	ASTM D 4402 AASHTO TP5 (iv,v)	AASHTO T240 AASHTO TP5 (iv,vi)	AASHTO PP1 AASHTO TP5 (iv,vii) AASHTO TP1 (iv) AASHTO TP1 (iv,viii)	AASHTO TP3 (iv)	Yes	(ii)	No
18A903	BC01A03	3	AASHTO T49 (iii) AE02/P22 (iii) AE05/P25 AE03/P23	ASTM D 4402 AASHTO TP5 (iv,v)	AASHTO T240 AASHTO TP5 (iv,vi)	AASHTO PP1 AASHTO TP5 (iv,vii) AASHTO TP1 (iv) AASHTO TP1 (iv,viii)	AASHTO TP3 (iv)	Yes	(ii)	No
18A960	BC01A60	3	AASHTO T49 (iii) AE02/P22 (iii) AE05/P25 AE03/P23	ASTM D 4402 AASHTO TP5 (iv,v)	AASHTO T240 AASHTO TP5 (iv,vi)	AASHTO PP1 AASHTO TP5 (iv,vii) AASHTO TP1 (iv) AASHTO TP1 (iv,viii)	AASHTO TP3 (iv)	Yes	(ii)	No
18A961	BC01A61	3	AASHTO T49 (iii) AE02/P22 (iii) AE05/P25 AE03/P23	ASTM D 4402 AASHTO TP5 (iv,v)	AASHTO T240 AASHTO TP5 (iv,vi)	AASHTO PP1 AASHTO TP5 (iv,vii) AASHTO TP1 (iv) AASHTO TP1 (iv,viii)	AASHTO TP3 (iv)	Yes	(ii)	No

NOTES:

- i) Environmentally protected and controlled storeroom at 5 - 38 C.
- ii) Environmentally protected and controlled storeroom at 5 - 21 C.
- iii) Three penetration readings are taken for each test.
- iv) Temperature selection see section 4 of MST.
- v) Original (tank) binder
- vi) After RTFOT conditioning.
- vii) After RTFOT and PAV conditioning.
- viii) Conditioning time extended to 24 h +/- 10 min above the minimum performance temperature.

Table 17. SUPERPAVE Mixture Design Tests to be Performed by Participating Highway Agency on HMA Binder Course from Sections 18A901, 18A903, 18A959, 18A960 and 18A961 - Pre-Construction.

Test Name	Test Designation	Protocol	Number of Tests	Material Source (See Notes)
MIXED AND COMPACTED HMA				
Gyratory Compaction @ design asphalt content at N max		AASHTO M-002	3	BC01AXX BU01AXX
Gyratory Compaction @ 7% air voids		AASHTO M-002	6	BC01AXX BU01AXX
Bulk Specific Gravity	AC02	LTPP P02	3	LA50AXX-LA52AXX (i)
Maximum Specific Gravity	AC03	LTPP P03	1	NA50AXX (ii)
Moisture Susceptibility	AC05	LTPP P05	6	LA53AXX-LA58AXX
VOLUMETRIC CALCULATIONS (iii)				
Volume Percent of Air Voids		AASHTO PP19	3	LA50AXX-LA52AXX
Percent Voids in Mineral Aggregate		AASHTO PP19		
Voids Filled with Asphalt		AASHTO PP19		

NOTES:

- (i) LA??AXX is a laboratory compacted specimen produced from BC01AXX and BU01AXX.
- (ii) NA50AXX is laboratory mixed HMA combining BC01AXX and BU01AXX.
- (iii) Estimate the corrected bulk specific gravity from the gyratory compaction curves at N design and use this value for the volumetric calculations.

Table 18. Tracking Table of SUPERPAVE Mixture Design Testing to be Performed by State Agency on Binder Course from Sections 18A901, 18A903, 18A959, 18A960 and 18A961 - Pre-Construction

Test Section	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			
18A901	NA50A01	3	AC03/P03	-	-	NO	(i)	YES
18A903	NA50A03	3	AC03/P03	-	-	NO	(i)	YES
18A959	NA50A59	3	AC03/P03	-	-	NO	(i)	YES
18A960	NA50A60	3	AC03/P03	-	-	NO	(i)	YES
18A961	NA50A61	3	AC03/P03	-	-	NO	(i)	YES
18A901	LA50A01	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA51A01	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA52A01	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
18A903	LA50A03	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA51A03	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA52A03	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
18A959	LA50A59	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA51A59	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA52A59	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
18A960	LA50A60	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA51A60	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA52A60	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
18A961	LA50A61	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA51A61	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA52A61	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
18A901	LA53A01	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA54A01	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA55A01	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA56A01	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA57A01	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
18A903	LA58A01	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA53A03	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA54A03	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA55A03	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA56A03	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA57A03	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
18A959	LA58A03	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA53A59	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA54A59	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA55A59	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA56A59	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA57A59	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
18A960	LA58A59	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA53A60	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA54A60	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA55A60	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA56A60	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA57A60	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
18A961	LA58A60	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA53A61	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA54A61	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA55A61	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA56A61	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA57A61	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA58A61	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES

NOTES.

- i) Environmentally protected and controlled storeroom at 5-21 C.
- ii) Gyrotory compaction at N max
- iii) Gyrotory compaction at 7% air voids (number of gyrations estimated from the gyrotory compaction curve).
- iv) Estimate the corrected bulk density at N design for use in volumetric calculations.

Table 19 SUPERPAVE Mixture Design Tests to be Performed by Participating Highway Agency on HMA Surface Course from Sections 18A901, 18A903, 18A959, 18A960 and 18A961 - Pre-Construction.

Test Name	Test Designation	Protocol	Number of Tests	Material Source (See Notes)
MIXED AND COMPACTED HMA				
Gyratory Compaction @ design asphalt content at N max		AASHTO M-002	3	BC01AXX BU02AXX
Gyratory Compaction @ 7% air voids		AASHTO M-002	6	BC01AXX BU02AXX
Bulk Specific Gravity	AC02	LTPP P02	3	LA01AXX-LA03AXX (i)
Maximum Specific Gravity	AC03	LTPP P03	1	NA01AXX (ii)
Moisture Susceptibility	AC05	LTPP P05	6	LA04AXX-LA09AXX
VOLUMETRIC CALCULATIONS (iii)				
Volume Percent of Air Voids		AASHTO PP19	3	LA01AXX-LA03AXX
Percent Voids in Mineral Aggregate		AASHTO PP19		
Voids Filled with Asphalt		AASHTO PP19		

NOTES:

- (i) LA??AXX is a laboratory compacted specimen produced from BC01AXX and BU02AXX.
- (ii) NA01AXX is laboratory mixed HMA combining BC01AXX and BU02AXX.
- (iii) Estimate the corrected bulk specific gravity from the gyratory compaction curves at N design and use this value for the volumetric calculations.

Table 20 Tracking Table of SUPERPAVE Mixture Design Testing to be Performed by State Agency on Surface Course from Sections 18A901, 18A903, 18A959, 18A960 and 18A961 - Pre-Construction.

Test Section	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			
18A901	NA01A01	3	AC03/P03	-	-	NO	(i)	YES
18A903	NA01A03	3	AC03/P03	-	-	NO	(i)	YES
18A959	NA01A59	3	AC03/P03	-	-	NO	(i)	YES
18A960	NA01A60	3	AC03/P03	-	-	NO	(i)	YES
18A961	NA01A61	3	AC03/P03	-	-	NO	(i)	YES
18A901	LA01A01	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA02A01	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA03A01	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
18A903	LA01A03	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA02A03	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA03A03	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
18A959	LA01A59	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA02A59	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA03A59	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
18A960	LA01A60	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA02A60	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA03A60	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
18A961	LA01A61	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA02A61	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
	LA03A61	3	AASHTO M-002 (ii)	AC02/P02	AASHTO PP19 (iv)	NO	(i)	YES
18A901	LA04A01	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA05A01	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA06A01	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA07A01	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA08A01	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA09A01	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
18A903	LA04A03	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA05A03	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA06A03	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA07A03	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA08A03	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA09A03	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
18A959	LA04A59	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA05A59	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA06A59	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA07A59	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA08A59	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA09A59	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
18A960	LA04A60	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA05A60	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA06A60	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA07A60	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA08A60	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA09A60	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
18A961	LA04A61	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA05A61	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA06A61	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA07A61	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA08A61	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES
	LA09A61	3	AASHTO M-002 (iii)	AC05/P05	-	NO	(i)	YES

NOTES.

- i) Environmentally protected and controlled storeroom at 5 - 21 C.
- ii) Gyrotory compaction at N max
- iii) Gyrotory compaction at 7% air voids (number of gyrations estimated from the gyrotory compaction curve).
- iv) Estimate the corrected bulk density at N design for use in volumetric calculations.

Table 21. Tests on Compacted Bulk Samples of HMA from Section 18A902.

Test Name	Test Designation	Protocol	Number of Tests	Layer	Material Source (See Notes)
HMA SPECIMEN COMPACTION BY PARTICIPATING HIGHWAY AGENCY					
Gyratory Compaction @ N max (lab samples)		AASHTO M-002	6	Binder	NA50A02 - NA55A02 (i)
			6	Surface	NA01A02 - NA06A02 (i)
Gyratory Compaction @ 3% air voids (lab samples)		AASHTO M-002	2	Binder	NA56A02, NA57A02 (i)
			2	Surface	NA07A02, NA08A02 (i)
Gyratory Compaction @ 7% air voids (lab samples)		AASHTO M-002	32	Binder	NA58A02 - NA89A02 (i)
			32	Surface	NA09A02 - NA40A02 (i)
Gyratory Compaction @ 3% air voids (field samples)		AASHTO M-002	2	Binder	BA50A02, BA83A02 (i)
			2	Surface	BA01A02, BA34A02 (i)
Gyratory Compaction @ N max (field samples)		AASHTO M-002	6	Binder	BA51A02 - BA53A02, BA80A02 - BA82A02 (i)
			6	Surface	BA02A02 - BA04A02, BA31A02 - BA33A02 (i)
Gyratory Compaction @ 7% air voids (field samples)		AASHTO M-002	26	Binder	BA54A02 - BA79A02 (i)
			26	Surface	BA05A02 - BA30A02 (i)
MIX AND COMPACTED HMA TESTS BY PARTICIPATING HIGHWAY AGENCY					
Bulk Specific Gravity	AC02	LTPP P02	18	Binder	LA50A02 - LA56A02, LA64A02, LA87A02, DA51A02 - DA53A02 DA55A02, DA65A02, DA71A02, DA80A02 - DA82A02
				Surface	LA01A02 - LA07A02, LA15A02, LA38A02, DA02A02 - DA04A02 DA06A02, DA16A02, DA22A02, DA31A02 - DA33A02
			18		
Asphalt Content (Extraction) (Uncompacted material)	AC04	LTPP P04	6	Binder	BA50A02, BA55A02, BA60A02, BA65A02, BA71A02, BA83A02
			6	Surface	BA01A02, BA06A02, BA11A02, BA16A02, BA22A02, BA34A02
Aggregate Gradation (Extracted Aggregate)	AG04	LTPP P14	2	Binder	BA55A02, BA71A02
			2	Surface	BA06A02, BA22A02
Maximum Specific Gravity (on uncompacted lab and field samples)	AC03	LTPP P03	3	Binder	NA64A02, BA55A02, BA71A02
			3	Surface	NA15A02, BA06A02, BA22A02
Moisture Susceptibility	AC05	LTPP P05	6	Binder	LA58A02 - LA63A02
			6	Surface	LA09A02 - LA14A02
VOLUMETRIC CALCULATIONS					
Volume Percent of Air Voids		AASHTO PP19	12 (iv)	Binder	LA50A02 - LA55A02, DA51A02 - DA53A02, DA80A02 - DA82A02
			12 (iv)	Surface	LA01A02 - LA06A02, DA02A02 - DA04A02, DA31A02 - DA33A02
Percent Voids in Mineral Aggregate		AASHTO PP19	12 (iv)	Binder	LA50A02 - LA55A02, DA51A02 - DA53A02, DA80A02 - DA82A02
			12 (iv)	Surface	LA01A02 - LA06A02, DA02A02 - DA04A02, DA31A02 - DA33A02
Voids Filled with Asphalt		AASHTO PP19	12 (iv)	Binder	LA50A02 - LA55A02, DA51A02 - DA53A02, DA80A02 - DA82A02
			12 (iv)	Surface	LA01A02 - LA06A02, DA02A02 - DA04A02, DA31A02 - DA33A02

Table 21 Tests on Compacted Bulk Samples of HMA from Section 18A902 (continued).

Test Name	Test Designation	Protocol	Number of Tests	Layer	Material Source (See Notes)
LTPP PERFORMANCE TESTS BY LTPP CONTRACT LABORATORY					
Indirect Tensile Strength (vi)	AC07	LTPP P07	2 (iii)	Binder	LA64A02, DA58A02
			2 (iii)	Surface	LA15A02, DA09A02
Resilient Modulus (vi)	AC07	LTPP P07	2 (ii, iii)	Binder	LA65A02 - LA67A02, DA54A02, DA66A02, DA78A02
			2 (ii, iii)	Surface	LA16A02 - LA18A02, DA05A02, DA17A02, DA29A02
Creep Compliance (vi)	AC06	LTPP P06	8 (iii)	Binder	LA68A02 - LA71A02, DA64A02, DA65A02, DA67A02, DA79A02
			8 (iii)	Surface	LA19A02 - LA22A02, DA15A02, DA16A02, DA18A02, DA30A02
SUPERPAVE SHEAR TESTER PERFORMANCE TESTS BY SUPERPAVE REGIONAL CENTER					
Frequency Sweep at Constant Height & Simple Shear at Constant Height (vi)	SST-1	AASHTO M-003, P-005	6	Binder	LA73A02 - LA75A02, DA59A02, DA73A02, DA77A02
			2(v)	Binder	LA72A02, DA55A02
			6	Surface	LA24A02 - LA26A02, DA10A02, DA24A02, DA28A02
			2(v)	Surface	LA23A02, DA06A02
Volumetric Test & Uniaxial Strain (vi)	SST-2	AASHTO M-003, P-005	6	Binder	LA77A02 - LA79A02, DA60A02, DA72A02, DA76A02
			2(v)	Binder	LA76A02, DA56A02
			6	Surface	LA28A02 - LA30A02, DA11A02, DA23A02, DA27A02
			2(v)	Surface	LA27A02, DA07A02
Repeated Shear at Constant Stress Ratio (vi)	SST-3	AASHTO M-003, P-005	4	Binder	LA56A02, LA57A02, DA50A02, DA83A02
			4	Surface	LA07A02, LA08A02, DA01A02, DA34A02
SUPERPAVE INDIRECT TENSILE TESTS BY SUPERPAVE REGIONAL TEST CENTER					
Indirect Tensile Creep Compliance & Indirect Tensile Strength (vi)	SP-IT	AASHTO M-005	18	Binder	LA81A02 - LA89A02, DA61A02 - DA63A02, DA68A02 - DA71A02
					DA74A02 - DA75A02
			2(v)	Binder	LA80A02, DA57A02
			18	Surface	LA32A02 - LA40A02, DA12A02 - DA14A02, DA19A02 - DA22A02
				DA25A02 - DA26A02	
			2(v)	Surface	LA31A02, DA08A02

NOTES:

- (i) For the purposes of this table, a single specimen is compacted from each bulk sample. Test specimen DA01A02 is produced from BA01A02 and LA01A02 is produced from NA01A02, etc. Up to three specimens can be produced from the sample depending on its size
- (ii) Three specimens are needed for one test
- (iii) Test specimen of 100 mm diameter will be cored from compacted 150 mm specimens produced by the gyratory compactor.
- (iv) The corrected bulk density at N design shall be estimated from the gyratory compaction curves for calculation of the volumetric properties
- (v) Spare specimens (one laboratory and one field compacted sample)
- (vi) By protocol, bulk specific gravities are run on all samples to be tested in addition to named test

Table 22A. Tracking Table of Laboratory Prepared Asphalt Concrete Samples from Section 18A902.

Layer	Sample Number	Air Voids	Height (mm)	Steps in Handling and Testing Specimens			Extra Sample	Sample Storage	Sample Disposed
				First (iii, iv)	Second (iii, iv)	Third (iii, iv)			
TESTS ON UNCOMPACTED MIX									
BINDER	NA64A02	N/A	N/A	P03			NO	(i)	YES
SURFACE	NA15A02	N/A	N/A	P03			NO	(i)	YES
TESTS ON COMPACTED SPECIMENS									
BINDER	LA50A02	N MAX	115	P02	PP19 (ii)		NO	(i)	YES
BINDER	LA51A02	N MAX	115	P02	PP19 (ii)		NO	(i)	YES
BINDER	LA52A02	N MAX	115	P02	PP19 (ii)		NO	(i)	YES
BINDER	LA53A02	N MAX	115	P02	PP19 (ii)		NO	(i)	YES
BINDER	LA54A02	N MAX	115	P02	PP19 (ii)		NO	(i)	YES
BINDER	LA55A02	N MAX	115	P02	PP19 (ii)		NO	(i)	YES
BINDER	LA56A02	3	140	P02	SRTC		NO	(i)	NO
BINDER	LA57A02	3	140	SRTC			NO	(i)	NO
BINDER	LA58A02	7	140	P05 (v)			NO	(i)	YES
BINDER	LA59A02	7	140	P05 (v)			NO	(i)	YES
BINDER	LA60A02	7	140	P05 (v)			NO	(i)	YES
BINDER	LA61A02	7	140	P05 (v)			NO	(i)	YES
BINDER	LA62A02	7	140	P05 (v)			NO	(i)	YES
BINDER	LA63A02	7	140	P05 (v)			NO	(i)	YES
BINDER	LA64A02	7	140	P02	LCL		NO	(i)	NO
BINDER	LA65A02	7	140	LCL			NO	(i)	NO
BINDER	LA66A02	7	140	LCL			NO	(i)	NO
BINDER	LA67A02	7	140	LCL			NO	(i)	NO
BINDER	LA68A02	7	140	LCL			NO	(i)	NO
BINDER	LA69A02	7	140	LCL			NO	(i)	NO
BINDER	LA70A02	7	140	LCL			NO	(i)	NO
BINDER	LA71A02	7	140	LCL			NO	(i)	NO
BINDER	LA72A02	7	140	SRTC			YES	(i)	NO
BINDER	LA73A02	7	140	SRTC			NO	(i)	NO
BINDER	LA74A02	7	140	SRTC			NO	(i)	NO
BINDER	LA75A02	7	140	SRTC			NO	(i)	NO
BINDER	LA76A02	7	140	SRTC			YES	(i)	NO
BINDER	LA77A02	7	140	SRTC			NO	(i)	NO
BINDER	LA78A02	7	140	SRTC			NO	(i)	NO
BINDER	LA79A02	7	140	SRTC			NO	(i)	NO
BINDER	LA80A02	7	140	SRTC			YES	(i)	NO
BINDER	LA81A02	7	140	SRTC			NO	(i)	NO
BINDER	LA82A02	7	140	SRTC			NO	(i)	NO
BINDER	LA83A02	7	140	SRTC			NO	(i)	NO
BINDER	LA84A02	7	140	SRTC			NO	(i)	NO
BINDER	LA85A02	7	140	SRTC			NO	(i)	NO
BINDER	LA86A02	7	140	SRTC			NO	(i)	NO
BINDER	LA87A02	7	140	P02	SRTC		NO	(i)	NO
BINDER	LA88A02	7	140	SRTC			NO	(i)	NO
BINDER	LA89A02	7	140	SRTC			NO	(i)	NO

Table 22A Tracking Table of Laboratory Prepared Asphalt Concrete Samples from Section 18A902 (continued).

Layer	Sample Number	Air Voids	Height (mm)	Steps in Handling and Testing Specimens			Extra Sample	Sample Storage	Sample Disposed
				First (iii, iv)	Second (iii, iv)	Third (iii, iv)			
TESTS ON COMPACTED SPECIMENS									
SURFACE	LA01A02	N MAX	115	P02	PP19 (ii)		NO	(i)	YES
SURFACE	LA02A02	N MAX	115	P02	PP19 (ii)		NO	(i)	YES
SURFACE	LA03A02	N MAX	115	P02	PP19 (ii)		NO	(i)	YES
SURFACE	LA04A02	N MAX	115	P02	PP19 (ii)		NO	(i)	YES
SURFACE	LA05A02	N MAX	115	P02	PP19 (ii)		NO	(i)	YES
SURFACE	LA06A02	N MAX	115	P02	PP19 (ii)		NO	(i)	YES
SURFACE	LA07A02	3	140	P02	SRTC		NO	(i)	NO
SURFACE	LA08A02	3	140	SRTC			NO	(i)	NO
SURFACE	LA09A02	7	140	P05 (v)			NO	(i)	YES
SURFACE	LA10A02	7	140	P05 (v)			NO	(i)	YES
SURFACE	LA11A02	7	140	P05 (v)			NO	(i)	YES
SURFACE	LA12A02	7	140	P05 (v)			NO	(i)	YES
SURFACE	LA13A02	7	140	P05 (v)			NO	(i)	YES
SURFACE	LA14A02	7	140	P05 (v)			NO	(i)	YES
SURFACE	LA15A02	7	140	P02	LCL		NO	(i)	NO
SURFACE	LA16A02	7	140	LCL			NO	(i)	NO
SURFACE	LA17A02	7	140	LCL			NO	(i)	NO
SURFACE	LA18A02	7	140	LCL			NO	(i)	NO
SURFACE	LA19A02	7	140	LCL			NO	(i)	NO
SURFACE	LA20A02	7	140	LCL			NO	(i)	NO
SURFACE	LA21A02	7	140	LCL			NO	(i)	NO
SURFACE	LA22A02	7	140	LCL			NO	(i)	NO
SURFACE	LA23A02	7	140	SRTC			YES	(i)	NO
SURFACE	LA24A02	7	140	SRTC			NO	(i)	NO
SURFACE	LA25A02	7	140	SRTC			NO	(i)	NO
SURFACE	LA26A02	7	140	SRTC			NO	(i)	NO
SURFACE	LA27A02	7	140	SRTC			YES	(i)	NO
SURFACE	LA28A02	7	140	SRTC			NO	(i)	NO
SURFACE	LA29A02	7	140	SRTC			NO	(i)	NO
SURFACE	LA30A02	7	140	SRTC			NO	(i)	NO
SURFACE	LA31A02	7	140	SRTC			YES	(i)	NO
SURFACE	LA32A02	7	140	SRTC			NO	(i)	NO
SURFACE	LA33A02	7	140	SRTC			NO	(i)	NO
SURFACE	LA34A02	7	140	SRTC			NO	(i)	NO
SURFACE	LA35A02	7	140	SRTC			NO	(i)	NO
SURFACE	LA36A02	7	140	SRTC			NO	(i)	NO
SURFACE	LA37A02	7	140	SRTC			NO	(i)	NO
SURFACE	LA38A02	7	140	P02	SRTC		NO	(i)	NO
SURFACE	LA39A02	7	140	SRTC			NO	(i)	NO
SURFACE	LA40A02	7	140	SRTC			NO	(i)	NO

NOTES:

- (i). Environmentally protected in controlled storeroom at 5 - 21 C (40 - 70 F).
- (ii). Determine the corrected bulk density from the gyratory compaction curves at N design for use in volumetric calculations.
- (iii). LCL = package and ship to LTPP contract lab, SRTC = ship sample to SUPERPAVE Regional Test Center.
- (iv). Label the sample and mark the top of the specimen with a "T".
- (v). Trim 140 mm sample to proper height

Table 22B Tracking Table of Asphalt Concrete Samples Prepared from Field Samples from Section 18A902

Layer	Sample Number	Air Voids	Height (mm)	Steps in Handling and Testing Specimens			Extra Sample	Sample Storage	Sample Disposed
				First (iii, iv)	Second (ii, iv)	Third (iii, iv)			
TESTS ON UNCOMPACTED MIX									
BINDER	BA50A02	N/A	N/A	P04			NO	(ii)	YES
BINDER	BA55A02	N/A	N/A	P03	P04	P14	NO	(ii)	YES
BINDER	BA60A02	N/A	N/A	P04			NO	(ii)	YES
BINDER	BA65A02	N/A	N/A	P04			NO	(ii)	YES
BINDER	BA71A02	N/A	N/A	P03	P04	P14	NO	(ii)	YES
BINDER	BA83A02	N/A	N/A	P04			NO	(ii)	YES
SURFACE	BA01A02	N/A	N/A	P04			NO	(ii)	YES
SURFACE	BA06A02	N/A	N/A	P03	P04	P14	NO	(ii)	YES
SURFACE	BA11A02	N/A	N/A	P04			NO	(ii)	YES
SURFACE	BA16A02	N/A	N/A	P04			NO	(ii)	YES
SURFACE	BA22A02	N/A	N/A	P03	P04	P14	NO	(ii)	YES
SURFACE	BA34A02	N/A	N/A	P04			NO	(ii)	YES
TESTS ON COMPACTED SPECIMENS									
BINDER	DA50A02	3	140	SRTC			NO	(i)	NO
BINDER	DA51A02	N MAX	115	P02	PP19 (v)		NO	(i)	YES
BINDER	DA52A02	N MAX	115	P02	PP19 (v)		NO	(i)	YES
BINDER	DA53A02	N MAX	115	P02	PP19 (v)		NO	(i)	YES
BINDER	DA54A02	7	140	LCL			NO	(i)	NO
BINDER	DA55A02	7	140	P02	SRTC		NO	(i)	NO
BINDER	DA56A02	7	140	SRTC			NO	(i)	NO
BINDER	DA57A02	7	140	SRTC			NO	(i)	NO
BINDER	DA58A02	7	140	LCL			NO	(i)	NO
BINDER	DA59A02	7	140	SRTC			NO	(i)	NO
BINDER	DA60A02	7	140	SRTC			NO	(i)	NO
BINDER	DA61A02	7	140	SRTC			NO	(i)	NO
BINDER	DA62A02	7	140	SRTC			NO	(i)	NO
BINDER	DA63A02	7	140	SRTC			NO	(i)	NO
BINDER	DA64A02	7	140	LCL			NO	(i)	NO
BINDER	DA65A02	7	140	P02	LCL		NO	(i)	NO
BINDER	DA66A02	7	140	LCL			NO	(i)	NO
BINDER	DA67A02	7	140	LCL			NO	(i)	NO
BINDER	DA68A02	7	140	SRTC			NO	(i)	NO
BINDER	DA69A02	7	140	SRTC			NO	(i)	NO
BINDER	DA70A02	7	140	SRTC			NO	(i)	NO
BINDER	DA71A02	7	140	P02	SRTC		NO	(i)	NO
BINDER	DA72A02	7	140	SRTC			NO	(i)	NO
BINDER	DA73A02	7	140	SRTC			NO	(i)	NO
BINDER	DA74A02	7	140	SRTC			NO	(i)	NO
BINDER	DA75A02	7	140	SRTC			NO	(i)	NO
BINDER	DA76A02	7	140	SRTC			NO	(i)	NO
BINDER	DA77A02	7	140	SRTC			NO	(i)	NO
BINDER	DA78A02	7	140	LCL			NO	(i)	NO
BINDER	DA79A02	7	140	LCL			NO	(i)	NO
BINDER	DA80A02	N MAX	115	P02	PP19 (v)		NO	(i)	YES
BINDER	DA81A02	N MAX	115	P02	PP19 (v)		NO	(i)	YES
BINDER	DA82A02	N MAX	115	P02	PP19 (v)		NO	(i)	YES
BINDER	DA83A02	3	140	SRTC			NO	(i)	NO

Table 22B Tracking Table of Asphalt Concrete Samples Prepared from Field Samples from Section 18A902 (continued)

Layer	Sample Number	Air Voids	Height (mm)	Steps in Handling and Testing Specimens			Extra Sample	Sample Storage	Sample Disposed
				First (iii, iv)	Second (iii, iv)	Third (iii, iv)			
TESTS ON COMPACTED SPECIMENS									
SURFACE	DA01A02	3	140	SRTC			NO	(i)	NO
SURFACE	DA02A02	N MAX	115	P02	PP19 (v)		NO	(i)	YES
SURFACE	DA03A02	N MAX	115	P02	PP19 (v)		NO	(i)	YES
SURFACE	DA04A02	N MAX	115	P02	PP19 (v)		NO	(i)	YES
SURFACE	DA05A02	7	140	LCL			NO	(i)	NO
SURFACE	DA06A02	7	140	P02	SRTC		NO	(i)	NO
SURFACE	DA07A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA08A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA09A02	7	140	LCL			NO	(i)	NO
SURFACE	DA10A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA11A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA12A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA13A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA14A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA15A02	7	140	LCL			NO	(i)	NO
SURFACE	DA16A02	7	140	P02	LCL		NO	(i)	NO
SURFACE	DA17A02	7	140	LCL			NO	(i)	NO
SURFACE	DA18A02	7	140	LCL			NO	(i)	NO
SURFACE	DA19A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA20A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA21A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA22A02	7	140	P02	SRTC		NO	(i)	NO
SURFACE	DA23A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA24A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA25A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA26A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA27A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA28A02	7	140	SRTC			NO	(i)	NO
SURFACE	DA29A02	7	140	LCL			NO	(i)	NO
SURFACE	DA30A02	7	140	LCL			NO	(i)	NO
SURFACE	DA31A02	N MAX	115	P02	PP19 (v)		NO	(i)	YES
SURFACE	DA32A02	N MAX	115	P02	PP19 (v)		NO	(i)	YES
SURFACE	DA33A02	N MAX	115	P02	PP19 (v)		NO	(i)	YES
SURFACE	DA34A02	3	140	SRTC			NO	(i)	NO

NOTES.

- (i) Environmentally protected in controlled storeroom at 5 - 21 C (40 - 70 F).
- (ii) Environmentally protected in controlled storeroom at 5 - 38 C (40 - 100 F).
- (iii) LCL = package and ship to LTPP contract lab, SRTC = ship sample to SUPERPAVE Regional Test Center.
- (iv) Label the sample and mark the top of the specimen with a "T".
- (v) Determine the corrected bulk density from the gyratory compaction curves at N design for use in volumetric calculations

Table 23A. Tracking Table of Tests on Compacted Laboratory Asphalt Concrete Specimens from Test Section 18A902 to be Performed by the SUPERPAVE Regional Test Center

Layer	Sample Number	Tests		Extra Sample	Sample Storage	Sample Disposed
		First	Second (I, II, III)			
BINDER	LA56A02	P02	SST-3		(v)	YES
BINDER	LA57A02	P02	SST-3		(v)	YES
BINDER	LA72A02	P02	SST-1	YES (iv)	(v)	NO
BINDER	LA73A02	P02	SST-1		(v)	YES
BINDER	LA74A02	P02	SST-1		(v)	YES
BINDER	LA75A02	P02	SST-1		(v)	YES
BINDER	LA76A02	P02	SST-2	YES (iv)	(v)	NO
BINDER	LA77A02	P02	SST-2		(v)	YES
BINDER	LA78A02	P02	SST-2		(v)	YES
BINDER	LA79A02	P02	SST-2		(v)	YES
BINDER	LA80A02	P02	SP-IT	YES (iv)	(v)	NO
BINDER	LA81A02	P02	SP-IT		(v)	YES
BINDER	LA82A02	P02	SP-IT		(v)	YES
BINDER	LA83A02	P02	SP-IT		(v)	YES
BINDER	LA84A02	P02	SP-IT		(v)	YES
BINDER	LA85A02	P02	SP-IT		(v)	YES
BINDER	LA86A02	P02	SP-IT		(v)	YES
BINDER	LA87A02	P02	SP-IT		(v)	YES
BINDER	LA88A02	P02	SP-IT		(v)	YES
BINDER	LA89A02	P02	SP-IT		(v)	YES
SURFACE	LA07A02	P02	SST-3		(v)	YES
SURFACE	LA08A02	P02	SST-3		(v)	YES
SURFACE	LA23A02	P02	SST-1	YES (iv)	(v)	NO
SURFACE	LA24A02	P02	SST-1		(v)	YES
SURFACE	LA25A02	P02	SST-1		(v)	YES
SURFACE	LA26A02	P02	SST-1		(v)	YES
SURFACE	LA27A02	P02	SST-2	YES (iv)	(v)	NO
SURFACE	LA28A02	P02	SST-2		(v)	YES
SURFACE	LA29A02	P02	SST-2		(v)	YES
SURFACE	LA30A02	P02	SST-2		(v)	YES
SURFACE	LA31A02	P02	SP-IT	YES (iv)	(v)	NO
SURFACE	LA32A02	P02	SP-IT		(v)	YES
SURFACE	LA33A02	P02	SP-IT		(v)	YES
SURFACE	LA34A02	P02	SP-IT		(v)	YES
SURFACE	LA35A02	P02	SP-IT		(v)	YES
SURFACE	LA36A02	P02	SP-IT		(v)	YES
SURFACE	LA37A02	P02	SP-IT		(v)	YES
SURFACE	LA38A02	P02	SP-IT		(v)	YES
SURFACE	LA39A02	P02	SP-IT		(v)	YES
SURFACE	LA40A02	P02	SP-IT		(v)	YES

NOTES

- (i) The test designations in the table are keyed as follows:
 - SST-1 - SUPERPAVE Shear Tester Frequency Sweep and Simple Shear
 - SST-2 - SUPERPAVE Shear Tester Volumetric and Uniaxial Strain.
 - SST-3 - SUPERPAVE Shear Tester Repeated Stress.
 - SP-IT - Indirect Tensile Strength and Creep Compliance.
- (ii) The 140 mm cylinders are to be cut into two replicate samples and labeled "A" for the top and "B" for the base of the specimen.
- (iii) For the "A" specimen, the base of the sample is to be mounted to the movable top platten while the top of "B" specimen shall be mounted to the movable platten.
- (iv) Specimens are to be used to replace possible damaged or suspect specimens.
- (v) Environmentally protected in controlled storeroom at 5 - 21 C (40 - 70 F).

Table 23B. Tracking Table of Tests on Compacted Field Asphalt Concrete Specimens from Test Section 18A902 to be Performed by the SUPERPAVE Regional Test Center

Layer	Sample Number	Tests		Extra Sample	Sample Storage	Sample Disposed
		First	Second (i, ii, iii)			
BINDER	DA50A02	P02	SST-3		(v)	YES
BINDER	DA55A02	P02	SST-1	YES (iv)	(v)	NO
BINDER	DA56A02	P02	SST-2	YES (iv)	(v)	NO
BINDER	DA57A02	P02	SP-IT	YES (iv)	(v)	NO
BINDER	DA59A02	P02	SST-1		(v)	YES
BINDER	DA60A02	P02	SST-2		(v)	YES
BINDER	DA61A02	P02	SP-IT		(v)	YES
BINDER	DA62A02	P02	SP-IT		(v)	YES
BINDER	DA63A02	P02	SP-IT		(v)	YES
BINDER	DA68A02	P02	SP-IT		(v)	YES
BINDER	DA69A02	P02	SP-IT		(v)	YES
BINDER	DA70A02	P02	SP-IT		(v)	YES
BINDER	DA71A02	P02	SP-IT		(v)	YES
BINDER	DA72A02	P02	SST-2		(v)	YES
BINDER	DA73A02	P02	SST-1		(v)	YES
BINDER	DA74A02	P02	SP-IT		(v)	YES
BINDER	DA75A02	P02	SP-IT		(v)	YES
BINDER	DA76A02	P02	SST-2		(v)	YES
BINDER	DA77A02	P02	SST-1		(v)	YES
BINDER	DA83A02	P02	SST-3		(v)	YES
SURFACE	DA01A02	P02	SST-3		(v)	YES
SURFACE	DA06A02	P02	SST-1	YES (iv)	(v)	NO
SURFACE	DA07A02	P02	SST-2	YES (iv)	(v)	NO
SURFACE	DA08A02	P02	SP-IT	YES (iv)	(v)	NO
SURFACE	DA10A02	P02	SST-1		(v)	YES
SURFACE	DA11A02	P02	SST-2		(v)	YES
SURFACE	DA12A02	P02	SP-IT		(v)	YES
SURFACE	DA13A02	P02	SP-IT		(v)	YES
SURFACE	DA14A02	P02	SP-IT		(v)	YES
SURFACE	DA19A02	P02	SP-IT		(v)	YES
SURFACE	DA20A02	P02	SP-IT		(v)	YES
SURFACE	DA21A02	P02	SP-IT		(v)	YES
SURFACE	DA22A02	P02	SP-IT		(v)	YES
SURFACE	DA23A02	P02	SST-2		(v)	YES
SURFACE	DA24A02	P02	SST-1		(v)	YES
SURFACE	DA25A02	P02	SP-IT		(v)	YES
SURFACE	DA26A02	P02	SP-IT		(v)	YES
SURFACE	DA27A02	P02	SST-2		(v)	YES
SURFACE	DA28A02	P02	SST-1		(v)	YES
SURFACE	DA34A02	P02	SST-3		(v)	YES

NOTES

- (i). The test designations in the table are keyed as follows:
SST-1 - SUPERPAVE Shear Tester Frequency Sweep and Simple Shear
SST-2 - SUPERPAVE Shear Tester Volumetric and Uniaxial Strain.
SST-3 - SUPERPAVE Shear Tester Repeated Stress.
SP-IT - Indirect Tensile Strength and Creep Compliance.
- (ii) The 140 mm cylinders are to be cut into two replicate samples and labeled "A" for the top and "B" for the base of the specimen.
- (iii). For the "A" specimen, the base of the sample is to be mounted to the movable top platten while the top of "B" specimen shall be mounted to the movable platten
- (iv) Specimens are to be used to replace possible damaged or suspect specimens.
- (v) Environmentally protected in controlled storeroom at 5 - 21 C (40 - 70 F)

Table 24. Tracking Table of Compacted Asphalt Concrete Testing to be Performed by LTPP Contract Laboratory.

Layer	Sample Number	First	Second (ii)	Extra Sample	Sample Storage	Sample Disposed
COMPACTED SPECIMENS FROM LABORATORY MATERIALS						
BINDER	LA64A02	P02	P07 - ITS	NO	(i)	YES
BINDER	LA65A02	P02	P07	NO	(i)	YES
BINDER	LA66A02	P02	P07	NO	(i)	YES
BINDER	LA67A02	P02	P07	NO	(i)	YES
BINDER	LA68A02	P02	P06	NO	(i)	YES
BINDER	LA69A02	P02	P06	NO	(i)	YES
BINDER	LA70A02	P02	P06	NO	(i)	YES
BINDER	LA71A02	P02	P06	NO	(i)	YES
SURFACE	LA15A02	P02	P07 - ITS	NO	(i)	YES
SURFACE	LA16A02	P02	P07	NO	(i)	YES
SURFACE	LA17A02	P02	P07	NO	(i)	YES
SURFACE	LA18A02	P02	P07	NO	(i)	YES
SURFACE	LA19A02	P02	P06	NO	(i)	YES
SURFACE	LA20A02	P02	P06	NO	(i)	YES
SURFACE	LA21A02	P02	P06	NO	(i)	YES
SURFACE	LA22A02	P02	P06	NO	(i)	YES
COMPACTED SPECIMENS FROM FIELD SAMPLES						
BINDER	DA54A02	P02	P07	NO	(i)	YES
BINDER	DA58A02	P02	P07 - ITS	NO	(i)	YES
BINDER	DA64A02	P02	P06	NO	(i)	YES
BINDER	DA65A02	P02	P06	NO	(i)	YES
BINDER	DA66A02	P02	P07	NO	(i)	YES
BINDER	DA67A02	P02	P06	NO	(i)	YES
BINDER	DA78A02	P02	P07	NO	(i)	YES
BINDER	DA79A02	P02	P06	NO	(i)	YES
SURFACE	DA05A02	P02	P07	NO	(i)	YES
SURFACE	DA09A02	P02	P07 - ITS	NO	(i)	YES
SURFACE	DA15A02	P02	P06	NO	(i)	YES
SURFACE	DA16A02	P02	P06	NO	(i)	YES
SURFACE	DA17A02	P02	P07	NO	(i)	YES
SURFACE	DA18A02	P02	P06	NO	(i)	YES
SURFACE	DA29A02	P02	P07	NO	(i)	YES
SURFACE	DA30A02	P02	P06	NO	(i)	YES

NOTES:

- (i). Environmentally protected in controlled storeroom at 5 - 21 C (40 - 70 F).
- (ii). Trim the 150 mm diameter, 140 mm height specimens to 100 mm diameter and 65 mm height.
ITS = indirect tensile strength.

Table 25. Quality Control-Related Tests on Compacted Specimens of Binder Course from Test Sections 18A901, 18A903, 18A959, 18A960, and 18A961 to be Performed by Participating Highway Agency.

Test Name	Test Designation	Protocol	No. of Tests	Material Source
HMA SPECIMEN COMPACTION				
Gyratory Compaction @ N max		AASHTO M-002	6	BA50AXX - BA55AXX (i)
VOLUMETRIC TESTS				
Bulk Specific Gravity	AC02	LTPP P02	6	DA50AXX - DA55AXX
Asphalt Content (Extraction)	AC04	LTPP P04	2	BA51AXX, BA53AXX
Aggregate Gradation (Extracted Aggregate)	AG04	LTPP P14	2	BA51AXX, BA53AXX
Maximum Specific Gravity	AC03	LTPP P03	2	BA51AXX, BA53AXX
VOLUMETRIC CALCULATIONS (ii)				
Volume Percent of Air Voids		AASHTO PP19	6	DA50AXX - DA55AXX
Percent Voids in Mineral Aggregate		AASHTO PP19	6	DA50AXX - DA55AXX
Voids Filled with Asphalt		AASHTO PP19	6	DA50AXX - DA55AXX

NOTES:

- (i) A single test specimen is produced from each bulk HMA mix sample. Test specimen DA01AXX is produced from sample BA01AXX, etc.
- (ii) Estimate the corrected bulk specific gravity from the gyratory compaction curves at N_{design} and use this value for the volumetric computations.

Table 26. Tracking Table for Quality Control Tests on Binder Course from 18A901, 18A903, 18A959, 18A960, and 18A961 (state/province laboratory or their designee).

Sample Number	Lab Test No.	Steps in Handling and Testing			Extra Sample	Sample Storage	Sample Disposed
		First	Second	Third			
TESTING ON BULK ASPHALT CONCRETE SAMPLES PRIOR TO COMPACTION							
BA51AXX	3	AC03/P03	AC04/P04	AG04/P14	NO	(i)	YES
BA53AXX	3	AC03/P03	AC04/P04	AG04/P14	NO	(i)	YES
TESTING ON COMPACTED SPECIMENS							
DA50AXX	3	AC02/P02	PP19		NO	(i)	YES
DA51AXX	3	AC02/P02	PP19		NO	(i)	YES
DA52AXX	3	AC02/P02	PP19		NO	(i)	YES
DA53AXX	3	AC02/P02	PP19		NO	(i)	YES
DA54AXX	3	AC02/P02	PP19		NO	(i)	YES
DA55AXX	3	AC02/P02	PP19		NO	(i)	YES

NOTES:

- (i). Environmentally protected in controlled storeroom at 5 - 21 C (40 - 70 F).

Table 27. Quality Control-Related Tests on Compacted Specimens of Surface Course from Test Sections 18A901, 18A903, 18A959, 18A960, and 18A961 to be Performed by Participating Highway Agency.

Test Name	Test Designation	Protocol	No. of Tests	Material Source
HMA SPECIMEN COMPACTION				
Gyratory Compaction @ N max		AASHTO M-002	6	BA01AXX - BA06AXX (i)
VOLUMETRIC TESTS				
Bulk Specific Gravity	AC02	LTPP P02	6	DA01AXX - DA06AXX
Asphalt Content (Extraction)	AC04	LTPP P04	2	BA02AXX, BA04AXX
Aggregate Gradation (Extracted Aggregate)	AG04	LTPP P14	2	BA02AXX, BA04AXX
Maximum Specific Gravity	AC03	LTPP P03	2	BA02AXX, BA04AXX
VOLUMETRIC CALCULATIONS (ii)				
Volume Percent of Air Voids		AASHTO PP19	6	DA01AXX - DA06AXX
Percent Voids in Mineral Aggregate		AASHTO PP19	6	DA01AXX - DA06AXX
Voids Filled with Asphalt		AASHTO PP19	6	DA01AXX - DA06AXX

NOTES:

- (i) A single test specimen is produced from each bulk HMA mix sample. Test specimen DA01AXX is produced from sample BA01AXX, etc.
- (ii) Estimate the corrected bulk specific gravity from the gyratory compaction curves at N_{design} and use this value for the volumetric computations.

Table 28. Tracking Table for Quality Control Tests on Surface Course from 18A901, 18A903, 18A959, 18A960, and 18A961 (state/province laboratory or their designee).

Sample Number	Lab Test No.	Steps in Handling and Testing			Extra Sample	Sample Storage	Sample Disposed
		First	Second	Third			
TESTING ON BULK ASPHALT CONCRETE SAMPLES PRIOR TO COMPACTION							
BA02AXX	3	AC03/P03	AC04/P04	AG04/P14	NO	(i)	YES
BA04AXX	3	AC03/P03	AC04/P04	AG04/P14	NO	(i)	YES
TESTING ON COMPACTED SPECIMENS							
DA01AXX	3	AC02/P02	PP19		NO	(i)	YES
DA02AXX	3	AC02/P02	PP19		NO	(i)	YES
DA03AXX	3	AC02/P02	PP19		NO	(i)	YES
DA04AXX	3	AC02/P02	PP19		NO	(i)	YES
DA05AXX	3	AC02/P02	PP19		NO	(i)	YES
DA06AXX	3	AC02/P02	PP19		NO	(i)	YES

NOTES:

- (i). Environmentally protected in controlled storeroom at 5 - 21 C (40 - 70 F).

Table 29. Laboratory Tests by the Participating Highway Agency on Cores from All Test Sections at All Time Intervals (Binder and Surface Courses).

Test Name	Test Designation	Protocol	No. of Tests	Material Source (ii)
Core Examination/Thickness	AC01	LTPP P01	8	All Cores
VOLUMETRIC ANALYSIS				
Bulk Specific Gravity	AC02	LTPP P02	8	All Cores
Asphalt Content (Extraction)	AC04	LTPP P04	8	All Cores
Aggregate Gradation (Extracted Aggregate)	AG04	LTPP P14	2	CA01tXX, CA08tXX
VOLUMETRIC CALCULATIONS (i)				
Volume percent of air voids		AASHTO PP19	2	CA01tXX, CA08tXX
Percent Voids in Mineral Aggregate		AASHTO PP19	2	CA01tXX, CA08tXX
Voids filled with Asphalt		AASHTO PP19	2	CA01tXX, CA08tXX
RECOVERED ASPHALT CEMENT (v)				
Abson Recovery	AE01	LTPP P21	8	CA01tXX - CA08tXX
Penetration @ 5° C		AASHTO T49	1 (iv)	
Penetration @ 25° & 46° C	AE02	LTPP P22	1 (iv)	
Viscosity @ 60° & 135° C	AE05	LTPP P25	2	
Specific Gravity @ 16° C	AE03	LTPP P23	2	
Dynamic Shear @ 3 temperatures (iii)		AASHTO TP5	2	
Creep Stiffness @ 2 temperatures (iii)		AASHTO TP1	2	
Direct Tension @ 2 temperatures (iii)		AASHTO TP3	2	

NOTES:

- (i). Estimate the maximum theoretical specific gravity using the extracted AC content and aggregate effective specific gravity determined during construction.
- (ii) The cores shown in this table are for each test section to be tested at each designated testing time interval t, where t represents the sampling time interval after construction as follows:
 - t = A at time 0 immediately following construction
 - t = B at 6 months after construction
 - t = C at 12 months after construction
 - t = D at 18 months after construction
 - t = E at 24 months after construction
 - t = F at 48 months after construction

For example, core CA01E03 is obtained and tested 24 months after construction from Section 03.
- (iii) The test temperatures should be the same as those used for the tests on the RTFOT-PAV conditioned samples performed during initial binder grading.
- (iv) Three penetration readings required from a single container.
- (v) Recovered asphalt cement tests are performed only on surface course. Other tests are performed on both binder and surface courses.

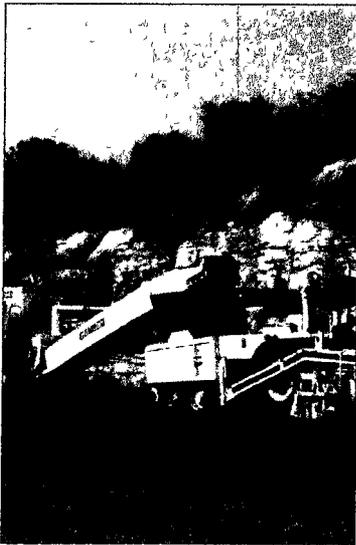
Table 30. Tracking Table of Asphalt Concrete Cores from All Test Sections at All Time Intervals (Binder and Surface Courses).

(State/Province Laboratory or their designee)

Sample Location Number	Sample Number	Lab Test No	Steps Involved in Laboratory Handling and Testing Sequence											
			Required Laboratory Tests Per Layer									Extra Sample	Sample Storage	Sample Disposed
			1st (i)	Layer	2nd	3rd	4th	5th	6th	7th	8th			
C01tXX	CA01tXX	1	P01	Binder	P02	P04	P14	PP19 (ii)				NO	(iii)	YES
				Surface	P02	P04	P21	P14	PP19 (ii)	(iv)	(v)	NO	(iii)	YES
C02tXX	CA02tXX	1	P01	Binder	P02	P04						NO	(iii)	YES
				Surface	P02	P04	P21			(iv)	(v)	NO	(iii)	YES
C03tXX	CA03tXX	1	P01	Binder	P02	P04						NO	(iii)	YES
				Surface	P02	P04	P21			(iv)	(v)	NO	(iii)	YES
C04tXX	CA04tXX	1	P01	Binder	P02	P04						NO	(iii)	YES
				Surface	P02	P04	P21			(iv)	(v)	NO	(iii)	YES
C05tXX	CA05tXX	2	P01	Binder	P02	P04						NO	(iii)	YES
				Surface	P02	P04	P21			(iv)	(v)	NO	(iii)	YES
C06tXX	CA06tXX	2	P01	Binder	P02	P04						NO	(iii)	YES
				Surface	P02	P04	P21			(iv)	(v)	NO	(iii)	YES
C07tXX	CA07tXX	2	P01	Binder	P02	P04						NO	(iii)	YES
				Surface	P02	P04	P21			(iv)	(v)	NO	(iii)	YES
C08tXX	CA08tXX	2	P01	Binder	P02	P04	P14	PP19 (ii)				NO	(iii)	YES
				Surface	P02	P04	P21	P14	PP19 (ii)	(iv)	(v)	NO	(iii)	YES

NOTES:

- (i) Perform core examination/thickness on all layers of cores.
- (ii) AASHTO specification.
- (iii) Environmentally protected in controlled storeroom at 5 - 21 C (40 - 70 F).
- (iv) Blend recovered asphalt cement for binder testing.
- (v) Run the following tests on recovered asphalt cement from surface layer only: T49, P22, P25, TP5, TP1, TP3, P23 (Use asphalt cement from penetration tins if not enough asphalt cement is available).



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Submitted by

ERES
CONSULTANTS, INC.

505 West University Avenue

Champaign, IL 61820-3915

Phone: (217) 356-4500

Fax: (217) 356-3088

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