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STRATEGIC HIGHWAY RESEARCH PROGRAM

SPECIFIC PAVEMENT STUDIES
DATA COLLECTION GUIDELINES
FOR EXPERIMENT SPS-7
BONDED PORTLAND CEMENT CONCRETE OVERLAYS

STRATEGIC HIGHWAY RESEARCH PROGRAM
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SPECIFIC PAVEMENT STUDIES
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BONDED PORTLAND CEMENT CONCRETE OVERLAYS

INTRODUCTION

This report provides guidelines and instructions for collection of data for the Specific Pavement Studies SPS-7 experiment, Bonded Portland Cement Concrete Overlays. Forms for recording and reporting this data are also included.

This report should be used in conjunction with the following reports:

- Operational Memorandum No. SHRP-LTPP-OM-016, "Specific Pavement Studies: Construction Guidelines for Experiment SPS-7, Bonded Portland Cement Concrete Overlays", December 1990

- Operational Memorandum No. SHRP-LTPP-OM-020, "Specific Pavement Studies: Materials Sampling and Testing Requirements for Experiment SPS-7, Bonded Portland Cement Concrete Overlays", January 1991

- Operational Guide No. SHRP-LTPP-OG-001, "Data Collection Guidelines for the Long Term Pavement Performance Studies"

- Operational Guide No. SHRP-LTPP-OG-006, "SHRP-LTPP Guide for Field Materials Sampling, Testing, and Handling", May 1990

- Operational Guide No. SHRP-LTPP-OG-004, "SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing", February 1991

- Other SHRP-related guides and operational memoranda

Data elements that will be collected for this experiment are classified into the following groups:

Inventory and Historical Maintenance
Test Section Location Reference Table
Construction
Field Materials Sampling and Testing
Laboratory Materials Testing
Deflection
Profile
Distress
Skid Resistance
Traffic
Climatic
Maintenance
Rehabilitation

The data collection and reporting process for SPS test sites requires the completion of specific data sheets from the Data Collection Guide for Long-Term Pavement Performance Studies which was developed for the General Pavement Studies (GPS) and data sheets developed specifically for the Specific Pavement Studies' experiments (SPS). The SPS project-specific data sheets address construction data and some aspects of the materials sampling and testing activities.

This report addresses the data to be collected during site construction. Data obtained from monitoring activities performed after construction will be reported on data forms similar to those used for the GPS test sections.

PROJECT VERSUS SITE SPECIFIC DATA

In contrast to the General Pavement Studies test sections, each SPS site includes several test sections. Several data items including traffic, climate and some inventory data elements will be applicable to all test sections of an SPS site. Also some construction data items such as surface preparation technique and overlay thickness will apply to more than one test section.

However, a large portion of the data elements will be specific to each test section. Data items common to all test sections will be referred to as "project level data" while data items specific to each test section will be referred to as "section specific data."

SPS TEST SECTION NUMBERING SCHEME

The structure of the SPS test section numbering scheme will differ from that used for the GPS test sections to help identify project and test section specific data. Each GPS test section is identified with a six digit code consisting of a two digit STATE CODE and a four digit SHRP SECTION ID number. Also, each SPS test section will be identified with a six digit code that will consist of a two digit STATE CODE and a four digit SHRP SECTION ID number. However, this SHRP SECTION ID number will consist of a two digit SPS PROJECT CODE and a two digit TEST SECTION NUMBER.

The far left two digits are the STATE CODE designator. The same STATE CODE used for GPS test sections will be used for the SPS experiments. Table A.1 of the LTPP Data Collection Guide lists the STATE CODE for all states and provinces, District of Columbia, and Puerto Rico.

The middle two digits are the SPS PROJECT CODE. The first digit of this code is the multiple site designator to distinguish between multiple sites of the same SPS experiment constructed in the same state or province. A zero "0" is assigned to the first site of a specific SPS experiment constructed in a state or province. An "A", "B", "C", etc. is assigned to the second, third, fourth, etc. project of the same SPS experiment constructed in the same state or province. The second digit of this code designates the SPS experiment number, i.e., "7" for SPS-7 test sites.

The far right two digits are the TEST SECTION NUMBER. This is the two digit number for each test section on a test site. The test section numbers for the SPS-7 test sections are specified in Operational Memorandum No. SHRP-LTPP-OM-016, "Specific Pavement Studies: Construction Guidelines for Experiment SPS-7, Bonded Portland Cement Concrete Overlays", December 1990. Test sections

numbers for supplemental test sections on the SPS project should be specified by the SHRP regional office in coordination with the participating highway agency.

Thus, the combination of the STATE CODE and SPS PROJECT CODE uniquely identifies each SPS test site. For "section specific data", the assigned TEST SECTION NUMBER in combination with the state (or province) and SPS project code numbers will be used. However, for "project level data" "00" will be used as the TEST SECTION NUMBER to differentiate these data from the "section specific data", for which a test section number (01 through 9 or higher for supplementary test sections) should be used.

INVENTORY AND HISTORICAL MAINTENANCE DATA

It is essential that the data sheets contained in Chapter 2, Inventory Data Collection for LTPP, of the LTPP Data Collection Guide be completed for the project site. Also, Sheet 1 of Chapter 6, Maintenance Data Collection, of the Guide should be completed as appropriate to report historical maintenance treatments on the project.

Table 1 lists the inventory and maintenance data sheets that should be completed for SPS-7 test sites.

Since the inventory data reported on these forms are primarily project level data, i.e. related to all test sections on a project, "00" should be used for the last two digits (furthest to the right) of the SHRP SECTION ID number on these forms. The two digits, furthest to the left, of the SHRP SECTION ID number on the GPS data forms should be the SPS PROJECT CODE. However, when test section-specific information is reported, the appropriate test section number should be entered on the data sheet.

The following inventory data sheets shall be completed, if applicable, following the guidelines stipulated for GPS test sections except as noted.

Sheet 1 PROJECT AND SECTION IDENTIFICATION. All location information should be referenced to the starting point (station 0+00) of the first test section encountered in the direction of travel on the project.

Sheet 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION

Sheet 3 LAYER DESCRIPTIONS. Complete a separate layer table for each test section. See note below on project level layering method.

Sheet 4 AGE AND MAJOR PAVEMENT IMPROVEMENTS

Sheet 5 PORTLAND CEMENT CONCRETE LAYERS JOINT DATA

Sheet 6 PORTLAND CEMENT CONCRETE LAYERS JOINT DATA (CONTINUED)

Sheet 7 PORTLAND CEMENT CONCRETE LAYERS REINFORCING STEEL DATA

Sheet 8 PORTLAND CEMENT CONCRETE LAYERS MIXTURE DATA

Table 1. Guide to completion of Inventory and Maintenance data sheets for activities prior to overlay construction.

SECTION	INVENTORY DATA SHEETS																					MAINT
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	1
PROJECT	✓	✓		H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	
1			✓																				H
2			✓																				H
3			✓																				H
4			✓																				H
5			✓																				H
6			✓																				H
7			✓																				H
8			✓																				H

✓ Always complete indicated data sheet for this section.
H Complete from historical data as available.

Sheet 9 PORTLAND CEMENT CONCRETE LAYERS MIXTURE DATA (CONTINUED)

Sheet 10 PORTLAND CEMENT CONCRETE LAYERS MIXTURE DATA (CONTINUED)

Sheet 11 PORTLAND CEMENT CONCRETE LAYERS STRENGTH DATA

Sheet 12 PLANT MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES

Sheet 13 PLANT MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES (CONTINUED)

Sheet 14 PLANT MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES

Sheet 15 PLANT MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES (CONTINUED)

Sheet 16 PLANT MIXED ASPHALT BOUND LAYERS ORIGINAL MIXTURE PROPERTIES

Sheet 17 PLANT MIXED ASPHALT BOUND LAYERS ORIGINAL MIXTURE PROPERTIES (CONTINUED)

Sheet 18 PLANT MIXED ASPHALT BOUND LAYERS CONSTRUCTION DATA

Sheet 19 UNBOUND OR STABILIZED BASE OR SUBBASE MATERIAL DESCRIPTION

Sheet 20 UNBOUND OR STABILIZED BASE OR SUBBASE MATERIAL DESCRIPTION (CONTINUED)

Sheet 21 SUBGRADE DATA

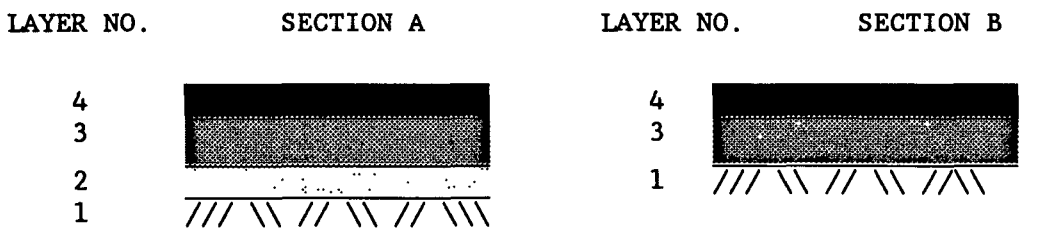
Sheet 22 SUBGRADE DATA (CONTINUED). On sheets 21 and 22, enter the properties of the most predominant subgrade type, i.e. subgrade upon which the majority of test sections are located. In cases where a variation in the subgrade along the project is known, these data sheets should be completed as "section specific data" for each test section.

A layer description table should be completed for each test section to note differences in the layer structure and thicknesses. A project level layering structure should be developed in which a unique layer number is assigned to every layer present on the project. The layer number for each material must be kept the same across all test sections. This is needed since the detailed inventory materials information is keyed to layer number. For those test sections located uniformly on cut or fill, the same layer structure should exist for all test sections, with differences between test sections due to embankment thicknesses or layer thicknesses. For test sites in which some sections are located in cut and others on fill (embankment), the project layer structure should include an embankment (fill) layer. The thickness of this layer would be coded as zero for the test sections which are located in cut.

The project layering concept is illustrated in Figure 1 for two hypothetical test sections (Sections A and B) located on the same project. Section A is located on a 4-foot deep fill (embankment) and Section B is located in a cut. To keep the layer number for each material the same across all test sections, the embankment layer is shown in the layer structure for Section B with a zero thickness. In this manner, all material data sheets (Sheets 12-22) can generally be completed only once using "00" as the last two digits of the test section number and the unique layer number corresponding to each material. It will not be necessary to complete a set of inventory data sheets for each section on the test site since pavement structure and materials should be uniform for all test sections.

Sheet 1, HISTORICAL MAINTENANCE INFORMATION, from Chapter 6, Maintenance Data Collection, of the LTPP Data Collection Guide should be completed to the extent possible by the participating highway agency, and if possible, a separate sheet should be completed for each test section on the project. The SPS PROJECT CODE and TEST SECTION NUMBER should be used as the SHRP SECTION ID number on this data sheet. If available historical maintenance information does not specifically address maintenance of each test section, then Sheet 1 should be completed to the extent possible using a "00" code for the last two digits of the SHRP SECTION ID number to indicate that the information represents project level data. As complete history of the maintenance activity on each test section is of importance, every effort should be made to obtain this information.

Detailed information on maintenance activities performed prior to the start of construction on the SPS test sections, if available, should be reported on other pertinent data sheets contained in Chapter 6 of the LTPP Data Collection Guide.



EXAMPLE LAYER STRUCTURE CODING FOR SECTION A

LAYER NO.	LAYER DESCRIPTION	MATERIAL TYPE CLASS	THICKNESS
1	SUBGRADE (7)	52 - SANDY CLAY	N A
2	11 - EMBANKMENT	26 - SOIL-AGG MIX	48.0
3	05 - BASE LAYER	23 - CRUSHED STONE	6.0
4	03 - ORIG SURFACE	05 - PCC (JRCP)	8.5

EXAMPLE LAYER STRUCTURE CODING FOR SECTION B

LAYER NO.	LAYER DESCRIPTION	MATERIAL TYPE CLASS	THICKNESS
1	SUBGRADE (7)	52 - SANDY CLAY	N A
2	11- EMBANKMENT	26 - SOIL - AGG MIX	0
3	05 - BASE LAYER	23 - CRUSHED STONE	6.0
4	03 - ORIG SURFACE	05 - PCC (JRCP)	8.5

Figure 1. Example of project layering scheme for coding test section layer tables.

FIELD MATERIALS SAMPLING AND TESTING

Field materials sampling and testing shall be performed following the guidelines outlined in Operational Memorandum No. SHRP-LTPP-OM-020, "Specific Pavement Studies: Materials Sampling and Testing Requirements for Experiment SPS-7, Bonded Portland Cement Concrete Overlays," January 1991. This operational memorandum incorporates by reference the material included in Operational Guide No. SHRP-LTPP-OG-006, "Field Materials Sampling, Testing, and Handling" which was developed for the General Pavement Studies. This Guide will form the basis for the conduct of a substantial portion of the field materials sampling and testing activity for the SPS-7 experiment. The operational memorandum for the SPS-7 experiment includes revised field data forms and new data sheets for sampling of fresh concrete materials during construction.

REVISED FIELD DATA FORMS

As the requirements for sampling SPS projects differ from those for GPS sections, the field materials sampling and testing data forms used in the GPS program were modified. The primary changes common to each form relate to test section number, sampling location referencing, and sampling area number.

Test Section Number. The six digit test section identification numbers on the data forms have been subdivided into three, two digit fields representing the state code, SPS project code, and test section number. The structure of this number is described under SPS Test Section Numbering Scheme of this report.

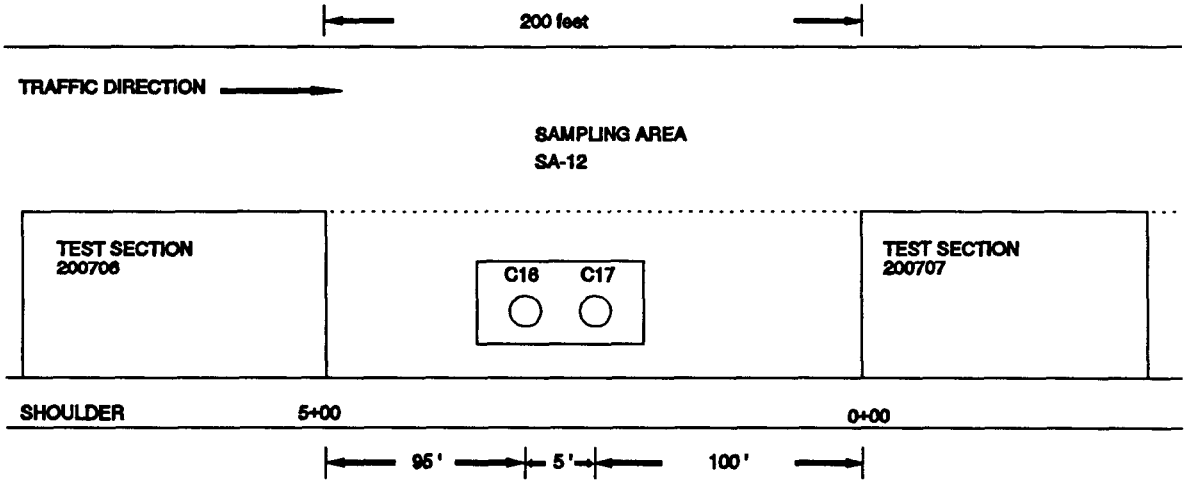
Sample Location Reference System. All material sampling and field testing data forms which reference the location of a sample or test use a station, offset and sampling area number. The sampling area number is a two digit number used to reference all of the samples taken from one area of the project. These sampling numbers are developed as part of the materials sampling plan for the test site and should run in sequential order in the direction of traffic.

The station to be specified on these data forms is referenced from either the beginning or end of the test sections adjacent to the sampling area. For expediency in the field, the station number designated on the form is relative to the test section number designated on the data form. Thus, if the sampling area occurs after the referenced test section, the station number should be greater than 5+00. If the sampling area occurs in front of the designated test section, the station number should be negative. This station number should not be the reference project station number, as outlined in the section entitled, “Construction Data” of this report, i.e. the relative test section station number and the reference project station number will be the same only on the first test section of a project, since the beginning point of the first test section is defined as the project station 0+00. The offset distance is measured from the joint between the outside edge of the test section lane and the outside shoulder, to the core location.

Figure 2 illustrates the location referencing system to be used for SPS material samples. In this example, designated sampling area SA-12 is situated between sections 200706 and 200707. In sampling area SA-12, two 4-inch diameter C-Type cores, Cl6 and C17, are located 5 feet apart and three feet from the edge of the lane. The location of these two cores can be specified relative to either test section 200706 (alternative I) or test section 200707 (alternative 2). In alternative 1, the station number of core Cl6 is 5+95 since it is 95 feet past the end of section 200706. Core Cl7 is located at station 6+00. In alternative 2, the station numbers of cores Cl6 and Cl7 are -1+05 and -1+00, respectively since they occur in advance of test section 200707. Thus when specifying the sampling locations on the field data form, the station number written on the form must correspond to the test section.

LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING DATA SHEETS

Most of the LTPP-SPS Material Sampling and Field Testing data sheets use the same top block of information related to the test section and project.



	Alternative 1 Location referenced to test section 200706	Alternative 2 Location referenced to test section 200707
CORE C16 LOCATION		
STATE CODE	20	20
SPS PROJECT CODE	07	07
TEST SECTION NO	06	07
STATION	5+95	-1+05
OFFSET	03	03
CORE C17 LOCATION		
STATE CODE	20	20
SPS PROJECT CODE	07	07
TEST SECTION NO	06	07
STATION	6+00	-1+00
OFFSET	03	03

In this example of the location referencing system, designated sampling area SA-12 is situated between sections 200706 and 200707. In SA-12, two 4" C-type cores are specified, C16 and C17, to be 5 feet apart and three feet from the edge of the lane. The location of these two cores can be specified relative to either test section 200706 (alternative 1) or test section 200707 (alternative 2). In alternative 1, the station number of core C16 is 5+95 since it is 95 feet past the end of section 200706. Core C17 is at station 6+00. In alternative 2, the station number of core C16 is -1+05 and C17 is -1+00 since they occur in advance of test section 200707. Thus, when specifying the sampling locations on the field data form, the station number written on the form must correspond to the test section indicated on the form.

Figure 2. Illustration of Location Referencing System

SHEET NUMBER. Since several data sheets will be required to record the samples and test data from each sampling areas on the project, room is provided on all data forms to sequentially number the data sheets. The first field is the sequential number of the data sheet and the second field is the total number of data sheets submitted.

SHRP REGION. Indicate the SHRP-LTPP region in which the state or province is located, i.e. North Atlantic, North Central, Southern, or Western.

STATE. Indicate the name of the state, District of Columbia, Puerto Rico, or the Canadian Province in which the project is located. Alternatively, use the two letter abbreviation shown in Table A.1.

STATE CODE. Enter the two-digit numeric code corresponding to the state or province as shown in Table A.1.

SPS PROJECT CODE. The two digit SPS project code. The first digit (from the left) of this code should either be a 0 (zero) for the first SPS-7 project constructed in a state, or a letter starting with A, B, etc. for the second, third, etc. project of the same SPS project constructed in the same state. The second digit corresponds to the SPS experiment number.

TEST SECTION NO. The two digit number assigned to the test section assigned to the test section (refer to Operational Memorandum No. SHRP-LTPP-OM-016).

SPS EXPERIMENT NO. The SPS experiment number for the project. This should be "7" for projects in the SPS-7 experiment, "Bonded Portland Cement Concrete Overlays".

ROUTE/HIGHWAY. Record the designation for the route or highway the project is located upon.

Lane. Record a "1" if sampling occurs on the outside lane and a "2" if sampling occurs on the inside lane. Drilling and sampling shall always occur on the outside lane for the SPS program.

Direction. Record the direction of travel at the project site. Use the following abbreviations:

E for eastbound traffic direction
W for westbound traffic direction
N for northbound traffic direction
S for southbound traffic direction

SAMPLE/TEST LOCATION. Check "Before Section" if the sampling location is before the beginning of the test section indicated under TEST SECTION NUMBER on the form (station 0-). Check "After Section" if the sampling location is after the end of the test section indicated on the form (station 5+). Check "Within Section" for testing locations within the test sections, such as density testing and auger probes in the shoulder.

FIELD SET NO. The field set number is a sequentially assigned number to indicate the different time periods in which material samples and field testing were conducted on the project. These time periods usually refer to different stages in the pavement life, such as prior to overlay construction, after overlay construction, end of test, etc. A field set number can apply to more than one day since sampling of the test site usually requires more than one day. As a general rule, the same field set number should be applied to all material samples and field tests conducted in a continuous 30-day period, unless a construction event occurs between the two sampling sessions. Enter 1 for the first material sampling and field testing activity conducted on the test site. Enter 2, 3, etc. for the second, third and subsequent sampling and field testing activities conducted on the site. For SPS-7 projects, the first sampling should occur prior to any surface preparation treatment.

The following Sampling Data Sheets must be completed for SPS-7 test sections:

SAMPLING DATA SHEET 1. LOG OF PAVEMENT CORE AT BORE HOLE LOCATIONS
SAMPLING DATA SHEET 2. PAVEMENT CORE LOG AT C-TYPE CORE LOCATIONS
SAMPLING DATA SHEET 4. A-TYPE BORE HOLE LOG
SAMPLING DATA SHEET 5. BA-TYPE BORE HOLE LOG
SAMPLING DATA SHEET 6. TEST PIT LOG
SAMPLING DATA SHEET 7. TEST PIT SKETCH
SAMPLING DATA SHEET 8. IN SITU DENSITY AND MOISTURE TESTS
SAMPLING DATA SHEET 9. SHOULDER PROBE LOG
SAMPLING DATA SHEET 11. SAMPLING FRESH PORTLAND CEMENT CONCRETE

Also, the following Field Operation Information Forms must be completed:

FIELD OPERATION INFORMATION FORM 1. LABORATORY SHIPMENT SAMPLES INVENTORY
FIELD OPERATION INFORMATION FORM 2. SUMMARY OF MATERIAL SAMPLES SENT TO EACH LABORATORY
FIELD OPERATION INFORMATION FORM 3. LABORATORY SHIPMENT SAMPLES INVENTORY - MOLDED CONCRETE

A description of items to be entered in each sampling data sheet and information form follows.

SAMPLING DATA SHEET 1. LOG OF PAVEMENT CORE AT BORE HOLE LOCATIONS

This form is similar to Form S01 used for GPS test sections. This data sheet is used to log data for pavement cores taken at the bore hole locations (either A-Type 6 inch diameter cores or BA-Type 12 inch diameter cores). Use the core sample coding system given in the sampling plan developed for the project to designate the core number requested on the data forms. Depth should be measured from the pavement surface to the bottom of the core of each layer and recorded to the nearest tenth of an inch.

OPERATOR. Record the coring equipment operator's name.

EQUIPMENT USED. Indicate the generic type of the coring equipment used.

CORING DATE. Record the month, date, and year the core was taken.

SAMPLING AREA NO. The sampling area number is a two digit number used to reference all of the samples taken from one area of the project. It has the form SA-##. This number is developed as part of the materials sampling plan for the project.

LOCATION: STATION. This is the station number of the core relative to the test section specified under TEST SECTION NO. This number should be greater than 5+00 for sampling locations that occur after the test section and less than 0+00 for sampling locations which occur before the test section (see discussion in section entitled "Sample Location Reference System" of this report).

LOCATION: OFFSET. This is the distance from the interface of the pavement lane and the outside shoulder to the center of the core location (generally measured from the edge of the pavement slab). This distance should be indicated to the nearest 0.1 foot.

CORE HOLE NO. Enter the core hole sample location number following the sample location coding system specified in the material sampling plan developed for the project. Core hole numbers designated with either an A- or a BA- should be entered on this sheet.

CORE BARREL SIZE. Record the rated inside diameter of the core barrel to the nearest 0.1 inch.

COOLING MEDIUM. Record the material used for cooling during the coring operation.

DEPTH. Under the depth column, draw horizontal lines to designate the approximate depths of changes in the bound materials. Also write the depths in this column to the nearest 0.1 inch. All depths should be referenced from the

pavement surface. The total cored depth should be indicated in this column even if a useable sample was not recovered.

CORE RECOVERED. Record the thickness of the recovered core. This should be the thickness of the testable (intact) portion of the core. This thickness may be less than the depth recorded in the depth column due to breakage of the material. On pavement sections with bound base layers that do not separate from the PCC surface during coring and retrieval, thicknesses of the base layers in the core should be indicated separate of the PCC surface layer. The approximate average thickness of the core, or portion of the core should be recorded, to the nearest 0.1 inch.

CORE SAMPLE NO. Record the core sample number for the recovered core. Separate sample numbers should be assigned to PCC and bound base layers from the same core, even if the bound base layer adheres to the PCC surface layer.

MATERIAL DESCRIPTION. Enter the appropriate material description based on the generic material type. These material descriptions are contained in Table C.2, Appendix C, of the SHRP-LTPP Guide For Field Materials Sampling, Testing and Handling.

MATERIAL CODE. Enter the appropriate material code number from Table C.2 of the SHRP-LTPP Guide for Field Materials Sampling, Testing and Handling corresponding to described type of material.

SAMPLING DATA SHEET 2. PAVEMENT CORE LOG AT C-TYPE CORE LOCATIONS

This form is similar to Form S01A used for GPS test sections. It is used to log data for 4-inch and 6-inch diameter pavement cores extracted from C-Type core locations.

Each sheet can be used to record data for cores taken from six different core hole locations in one sampling area. Separate sheets should be used for recording data for cores from each sampling location. Space is provided in each column to record data for cores containing up to 4 layers from one core hole.

The pavement surface layer core should be recorded first, followed by other layers in the column. The first column from the left should always start with the lowest numbered core hole in the sampling area.

OPERATOR. Record the coring equipment operator's name.

EQUIPMENT USED. Indicate the generic type of the coring equipment used.

CORING DATE. Record the month, date, and year the core was taken.

SAMPLING AREA NO. The sampling area number is a two digit number used to reference all of the samples taken from one area of the project. It has the form SA-##. This number is developed as part of the materials sampling plan for the project.

CORE BARREL SIZE. Record the rated inside diameter of the core barrel to the nearest 0.1 inch.

COOLING MEDIUM. Record the material used for cooling during the coring operation.

CORE HOLE NO. Enter the core hole location number specified in the materials sampling plan developed for the project.

LOCATION: STATION. This is the station number of the core relative to the test section specified under TEST SECTION NO. This number should be greater than 5+00 for sampling locations that occur after the test section specified, and less than 0+00 for sampling locations which occur before the test section specified (see discussion in section entitled "Sample Location Reference System" of this report).

LOCATION: OFFSET. This is the distance from the interface of the pavement lane and the outside shoulder to the center of the core location (generally measured from the edge of the pavement slab). This distance should be indicated to the nearest 0.1 foot.

CORE RECOVERED. Circle the appropriate response to indicate if an intact and suitable core was recovered from the indicated core hole.

REPLACEMENT CORE HOLE NO. Record the sample number of the core that will replace a core which was deemed unacceptable during field sampling operations. This entry should only be used when a "No" was recorded in the "Core Recovered" data entry space of this form.

CORE SAMPLE NO. Record the core sample number for the recovered core. Separate sample numbers should be assigned to PCC and bound base layers from the same core hole, even if the bound base layer adheres to the PCC surface layer.

DEPTH. Depth should be measured from the pavement surface to the bottom of the material interface in the core and entered to the nearest 0.1 inch.

MATERIAL DESCRIPTION. Enter the appropriate material description based on the generic material type. These material descriptions are contained in Table C.2, Appendix C, of the SHRP-LTPP Guide for Field Materials Sampling, Handling and Testing.

MATERIAL CODE. Enter the appropriate material code number from Table C.2 of the SHRP-LTPP Guide for Field Materials Sampling, Handling and Testing corresponding to described type of material.

SAMPLING DATA SHEET 4. A-Type BORE HOLE LOG

This form is similar to Form S02A used for GPS test sections. It is designed to record data for A-Type bore holes and any other similar type sampling areas. The following data is recorded on this form.

OPERATOR. Record the boring equipment operator's name.

EQUIPMENT USED. Indicate the generic type of the drilling equipment used.

BORING DATE. Record the month, date, and year the operation was performed.

SAMPLING AREA NO. The sampling area number is a two digit number used to reference all of the samples taken from one area of the project. It has the form SA-##. This number is developed as part of the materials sampling plan for the project.

LOCATION: STATION. This is the station number of the bore relative to the test section specified under TEST SECTION NO. This number should be greater than 5+00 for sampling locations that occur after the test section and less than 0+00 for sampling locations which occur before the test section (see discussion in section entitled "Sample Location Reference System" of this report).

LOCATION: OFFSET. This is the distance from the interface of the pavement lane and the outside shoulder to the center of the bore location (generally measured from the edge of the pavement slab). This distance should be indicated to the nearest 0.1 foot.

BORE HOLE NO. Enter the bore hole sample location number following the sample location coding system specified in the material sampling plan developed for the project.

BORE HOLE SIZE. Record the bore hole size (diameter) to the nearest 0.1 inch.

STRATA CHANGE. Record the depth of strata changes to the nearest 0.1 inch. The depth of strata changes should always be measured from the top of the pavement surface. Draw a horizontal line across the form which indicates the depth of each strata change.

Also, record the depth of sampling for each sample taken. For example, if a thin-walled tube sample was obtained at a depth from 18 inches to 36 inches, a line should be drawn at the 18 inch mark and the 36 inch mark along with the appropriate sample code number, material description, etc. For clarification,

refer to example data sheets in the SHRP-LTPP Guide for Field Materials Sampling, Testing and Handling.

SAMPLE NUMBER. Record the sample number for thin-walled tube samples or splitspoon samples (if thin-walled samples cannot be obtained) obtained from the subgrade.

BLOWS. The next four columns (# Blows, Refusal?, DLR (Driving Length to refusal, IOP (Inches of Penetration)) shall be used only if a splitspoon sample recovery was attempted. Standard practice for recording the blow count for splitspoon samples requires the following format: A - B - C, where:

A = number of blows for first 6 inches of penetration by the splitspoon sampler. This is considered a seating drive.

B = number of blows for second 6 inches of penetration by the splitspoon sampler.

C = number of blows for third 6 inches of penetration by the splitspoon sampler.

Record the blow count from the first 6 inches of seating penetration by the splitspoon sampler in the left most column under number of blows ("A" from above example of blow count record). Record the blow count from the second 6 inches of penetration by the splitspoon sampler in the middle column under number of blows ("B" from above example of blow count record). Record the blow count from the third 6 inches of penetration by the splitspoon sampler in the right most column under number of blows ("C" from above example of blow count record).

Refusal of the splitspoon sampler is defined as having advanced less than one inch with 100 blows (or no observed advance of the sampler during the application of 10 blows) or the test is aborted at the discretion of the SHRP Representative to avoid damage to the splitspoon sampler.

If refusal of the splitspoon sampler occurs in the first 6 inches, indicate the blow count to refusal in the left most column, place a "Y" in the "Refusal?" column and indicate in the "DLR" (Driving Length to Refusal) column, the distance, measured to the nearest 0.1 inch, from the top of the pavement surface to refusal. Also, record the penetration depth of the splitspoon sampler in the "IOP" column (distance penetrated in "A").

If refusal of the splitspoon sampler occurs during the second 6 inches of penetration, indicate the blow count to refusal in the middle column, place a "Y" in the "Refusal?" column and indicate in the "DLR" column the distance, measured to the nearest 0.1 inch, from the top of the pavement surface to refusal. Also, record the penetration depth of the splitspoon sampler in the "IOP" column (distance penetrated in "A" + "B").

If the total blow count ("A" + "B") reaches 100 before penetrating deeper than 12 inches, the splitspoon sampling procedure should be stopped and the blow count for the second 6 inch increment should be recorded in the middle column and the total depth of penetration recorded under the "IOP" column (the depth of penetration shall be measured from the beginning of penetration of the splitspoon sampler.)

In the case of refusal during the third 6 inch increment, the same instructions outlined for the left and middle columns will be followed. The penetration depth of the splitspoon sampler will be recorded in the "IOP" column (distance penetrated in "B" + "C").

If the second and third 6 inch increment blow count ("B" + "C" only) reaches 100 before prior to penetrating 18 inches, the splitspoon sampling procedure should be stopped and the blow count for the third 6 inch increment recorded in under number of blows. The total depth of penetration ("B" + "C" only) should be recorded under the "IOP" column (measured from the beginning of penetration of the splitspoon sampler minus the 6 inch seating drive).

(REF)USAL. Record a "Y" if splitspoon sampler is refused (see explanation under "# Blows" above). Record a "N" if the full 18 inch sample is recovered

and the splitspoon is not refused. This column is only used if a splitspoon sampler is utilized.

Refusal is defined as occurring when the splitspoon sampler advances less than one inch in 100 blows (or no observed advance of the sampler during the application of 10 blows) or when the test is aborted at the discretion of the SHRP Representative to avoid damage to the splitspoon sampler.

DLR. Driving Length to Refusal - Record the penetration of the splitspoon sampler to refusal to the nearest 0.1 inch. This value is measured from the top of the pavement surface. This column is only used if a splitspoon sampler is utilized and refused. In the case of refusal, an entry is made in the "DLR" and "IOP" columns.

IOP. Inches of Penetration - Record the distance of penetration of the splitspoon sampler after 100 blows is reached in the first 6 inches ("A"), the first and second 6 inches of penetration ("A" and "B") or the second and third 6 inches of penetration ("B" and "C") (See explanation under "# Blows" above). This column is only used if a splitspoon sampler is utilized.

MATERIAL DESCRIPTION. Enter the appropriate material description for each stratum based on the generic material type. These material descriptions are contained in Table C.2, Appendix C, of the SHRP-LTPP Guide for Field Materials Sampling, Testing and Handling.

MATERIAL CODE. Enter the appropriate material code number for each stratum from Table C.2 of the SHRP-LTPP Guide for Field Materials Sampling, Testing and Handling corresponding to the described type of material.

SAMPLING DATA SHEET 5. BA-Type BORE HOLE LOG

This form is similar to Form S02B used for GPS test sections. It is designed to record data for BA-Type bore holes and any other similar type sampling areas. The following information is recorded on this form:

OPERATOR. Record the boring equipment operator's name.

EQUIPMENT USED. Indicate the generic type of the drilling equipment used.

BORING DATE. Record the month, date, and year the operation was performed.

SAMPLING AREA NO. The sampling area number is a two digit number used to reference all of the samples taken from one area of the project. It has the form SA-##. This number is developed as part of the materials sampling plan for the project.

LOCATION: STATION. This is the station number of the bore, relative to the test section specified under TEST SECTION NO. This number should be greater than 5+00 for sampling locations that occur after the test section and less than 0+00 for sampling locations which occur before the test section (see discussion in section entitled "Sample Location Reference System" of this report).

LOCATION: OFFSET. This is the distance from the interface of the pavement lane and the outside shoulder to the center of the bore location (generally measured from the edge of the pavement slab). This distance should be indicated to the nearest 0.1 foot.

BORE HOLE NO. Enter the bore hole sample location number following the sample location coding system specified in the material sampling plan developed for the project.

BORE HOLE SIZE. Record the bore hole size (diameter) in inches to the nearest 0.1 inch.

STRATA CHANGE. Record the depth of strata changes to the nearest 0.1 inch. The depth of strata changes should always be measured from the top of the pavement surface. Draw a horizontal line across the form which indicates the depth of each strata change.

SAMPLE NUMBER. Record the sample number for the bulk samples obtained from unbound layers.

MOISTURE SAMPLE NUMBER. Record the sample numbers for samples taken from unbound base, subbase and subgrade for moisture content testing.

MATERIAL DESCRIPTION. Enter the appropriate material description for each stratum based on the generic material type. These material descriptions are contained in Table C.2, Appendix C, of the SHRP-LTPP Guide for Field Materials Sampling, Handling and Testing.

MATERIAL CODE. Enter the appropriate material code number for each stratum from Table C.2 of the SHRP-LTPP Guide for Field Material Sampling, Handling and Testing corresponding to the described type of material.

SAMPLING DATA SHEET 6. TEST PIT LOG

This form is similar to Form S03 used for GPS test sections. It is designed to record data from the field sampling and field testing from test pits. The following data is recorded on this form:

TECHNICIAN. Record the name of the technician who retrieves the samples and records the information on the data form.

EQUIPMENT USED. Indicate the generic type of the equipment used to cut and excavate the test pit.

EXPLORATION DATE. Record the month, date, and year the operation was performed.

SAMPLING AREA NO. The sampling area number is a two digit number used to reference all of the samples taken from one area of the project. It has the form SA-##. This number is developed as part of the materials sampling plan for the project.

LOCATION: STATION. This is the station number of the test pit relative to the test section specified under TEST SECTION NO. This number should be greater than 5+00 for sampling locations that occur after the test section and less than 0+00 for sampling locations which occur before the test section (see discussion in section entitled "Sample Location Reference System" of this report).

LOCATION: OFFSET. This is the distance from the interface of the pavement lane and the outside shoulder to the outside edge of the test pit (generally measured from the edge of the pavement slab). This distance should be indicated to the nearest 0.1 foot.

TEST PIT NUMBER. Enter the test pit code number following the sample coding system specified in the material sampling plan developed for the project.

TEST PIT SIZE. Record the length and width of test pit to the nearest 0.5 foot.

STRATA CHANGE. Record the depth of strata changes to the nearest 0.1 inch. The depth of strata changes should always be measured from the top of the pavement surface. Draw a line across the form to indicate strata changes.

MOISTURE SAMPLE NUMBER. Record the sample numbers for samples taken from unbound base, subbase and subgrade for moisture content testing.

BULK SAMPLE NUMBER. Record the sample numbers for bulk samples taken from the unbound pavement layers and the subgrade.

MATERIAL DESCRIPTION. Enter the appropriate material description for each stratum based on the generic material type. These material descriptions are contained in Table C.2, Appendix C, of the SHRP-LTPP Guide for Field Materials Sampling, Handling and Testing.

MATERIAL CODE. Enter the appropriate material code number for each stratum from Table C.2 of the SHRP-LTPP Guide for Field Materials Sampling, Handling and Testing corresponding to the described type of material.

SAMPLING DATA SHEET 7. TEST PIT SKETCH

This sheet is similar to Form S03A used for GPS test sections. It is designed to allow the field sampling personnel to record any sketches of the excavation of the test pit that may be appropriate. This sketch should at least include: (a) dimensions of the test pit; (b) depth of each layer in the test pit; (c) material type of each layer and (d) the direction of traffic. All of the other information requested on this form is the same as that provided on Sampling Data Sheet 6. For clarification, refer to the completed example field data packet contained in Appendix E of the SHRP-LTPP Guide for Field Materials Sampling, Handling and Testing.

SAMPLING DATA SHEET 8. IN SITU DENSITY AND MOISTURE TESTS

This sheet is similar to Form S04 used for GPS test sections. It is designed to record data from the in situ density and moisture tests performed on all unbound layers in the test pits with a nuclear moisture and density gauge. The following data is recorded on this form.

OPERATOR. Record nuclear density gauge operator's name.

NUCLEAR DENSITY GAUGE I.D.. Record the identification number of the nuclear density gauge.

TEST DATE. Record the month, date, and year the test was performed.

SAMPLING AREA NO. The sampling area number is a two digit number used to reference all of the samples taken from one area of the project. It has the form SA-##. This number is developed as part of the materials sampling plan for the project.

LOCATION: STATION. This is the station number of the test pit, relative to the test section specified under TEST SECTION NO. This number should be greater than 5+00 for sampling locations that occur after the test section and less than 0+00 for sampling locations which occur before the test section (see discussion in section entitled "Sample Location Reference System" of this report).

LOCATION: OFFSET. This is the distance from the interface of the pavement lane and the outside shoulder to the location the test was performed (generally measured from the edge of the pavement slab). This distance should be indicated to the nearest 0.1 foot.

TEST PIT NUMBER. Enter the test pit location number following the sample location coding system specified in the material sampling plan developed for the project.

DATE OF LAST MAJOR CALIBRATION. Record the date of the last major calibration of the nuclear density gauge. All dates should be recorded as mm-dd-yy. A major calibration is defined as a calibration/verification performed as directed in Section 4 of the SHRP-LTPP Guide for Field Materials Sampling, Handling and Testing. Daily calibrations performed in the field do not constitute a major calibration.

DEPTH FROM SURFACE TO THE TOP OF THE LAYER. This information is obtained from Sampling Data Sheet 5 for each unbound granular layer. The depth should be recorded to the nearest 0.1 inch and measured from the top of the pavement surface for each test performed.

LAYER DESCRIPTION. Write in the generic description of the type of layer tested, such as BASE, SUBBASE, or SUBGRADE.

MATERIAL TYPE. Report a "G" if the material is unbound (granular); record "T" if the material is other than unbound (treated). In practice, all entries should be a "G" since nuclear density testing is not required on bound materials.

IN SITU DENSITY. For each unbound layer, record four nuclear density gauge results. These measurements should be taken at the top of each unbound layer using the direct transmission test method if possible. Record test data to one decimal place in pounds per cubic foot (pcf).

AVERAGE. Calculate and record the average in situ densities for each unbound layer. Record data to one decimal place.

METHOD (A,B,or C). Record the test method used to perform the in situ density test as per AASHTO T238-86, "A" - Backscatter, "B" - Direct Transmission, or "C" - Air Gap. The direct transmission method ("B") should almost always be used. However, there may be some extenuating circumstances necessitating the use of methods "A" or "C".

ROD DEPTH. Record the depth of the nuclear density gauge probe to the nearest 0.1 inch.

IN SITU MOISTURE CONTENT. For each unbound layer, record four in situ moisture content test results. These tests should be conducted at the top of each layer. Record the moisture content as a percentage to one decimal place. The backscatter method should always be used for this measurement.

AVERAGE. Calculate and record the average of the four in situ moisture content test results for each unbound layer. Record test results to one decimal place.

SAMPLING DATA SHEET 9. SHOULDER PROBE LOG

This data sheet is similar to Form S05 used for the GPS test sections. It is used to record the results of the shoulder auger probe to determine the depth to a rigid layer.

OPERATOR. Record the augering equipment operator's name.

EQUIPMENT USED. Indicate the generic type of the auguring equipment used.

AUGERING DATE. Record the month, date, and year the operation was performed.

SAMPLING AREA NO. The sampling area number is a two digit number used to reference all of the samples taken from one area of the project. It has the form SA-##. This number is developed as part of the materials sampling plan for the project.

LOCATION: STATION. This is the station number of the bore relative to the test section specified under TEST SECTION NO. This number should be greater than 5+00 for sampling locations that occur after the test section and less than 0+00 for sampling locations which occur before the test section (see discussion in section entitled "Sample Location Reference System" of this report).

LOCATION: OFFSET. This is the distance from the edge of the pavement lane and the outside shoulder to the auger location (generally measured from the edge of the pavement slab). For shoulder probes, this distance will be measured toward the outside edge of the shoulder. This distance should be indicated to the nearest 0.1 foot.

AUGER PROBE NUMBER. Record the auger probe number; an S1 for the first auger and increasing numbers for subsequent auger probes.

TOP OF ROCK BASED ON. Enter "Auger Refusal" if auger is refused. If the top of rock is based on some other observation, indicate the type of observation.

DEPTH FROM SURFACE. Record the depths of strata changes to the nearest 0.1 foot.

MATERIAL DESCRIPTION. Enter the appropriate material description for each strata based on the generic material type. These material descriptions are contained in Table C.2, Appendix C, of the SHRP-LTPP Guide for Field Materials Sampling, Handling and Testing.

MATERIAL CODE. Enter the appropriate material code number for each strata from Table C.2 of the SHRP-LTPP Guide for Field Materials Sampling, Handling and Testing corresponding to described type of material.

REFUSAL WITHIN 20 FEET (Y/N). Record a "yes" or a "no" as appropriate to indicate if a rigid layer was encountered within 20 feet from the pavement surface.

DEPTH TO REFUSAL. Record the depth to refusal to the nearest 0.1 foot if the auger refused.

SAMPLING DATA SHEET 11. SAMPLING FRESH PORTLAND CEMENT CONCRETE

This data sheet is used to record information concerning sampling of fresh portland cement concrete for testing purposes. Sampling shall be performed according to AASHTO T-141, "Sampling Fresh Concrete." A separate sheet should be completed for each concrete batch.

PERSON PERFORMING SAMPLING. Record the name, title and affiliation of the person performing the sampling.

SAMPLING LOCATION. Enter the code corresponding to the location from which the sample was taken.

SAMPLE NUMBER. This is a 4 digit code starting with the letters FC (Bulk Portland Cement Concrete) and followed with a sequentially assigned two digit number, which uniquely designates each bulk portland cement concrete sample.

PCC MIX TEMPERATURE WHEN SAMPLED. Enter the temperature in degrees Fahrenheit of the sampled PCC mix.

AMBIENT TEMPERATURE WHEN SAMPLED. Enter the ambient temperature in degrees Fahrenheit at the time when the material sample was obtained.

TIME SAMPLED. Enter the time of day when the specimen was formed, military format.

DATE SAMPLED. Enter the date the specimens were formed, mm-dd-yy.

SLUMP. Enter the slump test results of the material sampled, to the nearest 0.1 inch, if tested.

AIR CONTENT. Enter the air content of the material sampled to the nearest 0.1 percent, if tested.

SPECIMEN NUMBER. This is a 4-digit code starting with the letter F or G for formed portland cement concrete beams or cylinders, respectively, followed by the letter X, Y, or Z for 14, 28, or 365 day curing, respectively, followed by a sequentially assigned two-digit number which uniquely designates each concrete beam or cylinder specimen.

LABORATORY ID CODE. Enter the code number of the laboratory to which specimens were shipped.

DATE SHIPPED. Enter the date the material was shipped to the laboratory indicated on the form.

GENERAL REMARKS. Provide any general remarks concerning the representativeness of the obtained sample, comments concerning the quality or uniformity of the mix, or any other pertinent observations.

FIELD OPERATION INFORMATION FORM 1. LABORATORY SHIPMENT SAMPLES INVENTORY

This form is not a data form and therefore information from this form will not be included in the data base. The form provides information on where each sample was shipped for testing. This form is similar to Form S06 used for GPS test sections to provide a detailed inventory of material samples shipped to each materials testing laboratory. At least one form should be completed for each sampling area on the test site. The inventory should be made in the following sequence of sample location numbers, starting from the pavement surface layer in each case:

1. Samples from C-Type locations, starting with cores of pavement surface layers.
2. Samples from A-Type bore holes and other similar bore holes.
3. Samples from BA-Type bore holes and other similar bore holes.
4. Samples from the test pit.

Sample location numbers and sample numbers should be obtained from the appropriate Sampling Data Sheets. "Sample size" should be used to record the number of bags of bulk samples or the number of jar samples bearing a single sample number in each case. The bulk sample from one layer can be placed in more than one bag, if necessary. In this case, the same sample number should be indicated on all bags together with an indication of the number of bags on the labels and in the column of the "Sample size." For core samples, record only diameter of the core in the "Sample size" column in inches.

Enter core, bulk, moisture, tube or splitspoon in the "Sample type" column as appropriate. Enter PCC, Base, Subbase or Subgrade in the "Sample material" column as appropriate. The "Sample condition" should indicate a brief description as to the overall quality of the sample (cores: good, poor, fractured; bulk samples: satisfactory, wet, insufficient quantity, contaminated). Since more than one laboratory may be used to perform testing on samples obtained from each sampling area, room is provided on this form to indicate up to three laboratories. For each sample, enter a laboratory number and define it at the bottom of the form.

Generally, the following samples will be reported on this form:

- All PCC cores from C-Type and A-Type locations.
- All treated base/subbase cores (including ATB, CTB and econocrete) of 4 inch diameter from C-Type locations.
- Bulk samples and jar samples of granular (untreated) layers and subgrade from BA-Type locations and test pits.
- Thin-walled tube samples and splitspoon samples from the subgrade.

FIELD OPERATION INFORMATION FORM 2. SUMMARY OF MATERIAL SAMPLES SENT TO EACH LABORATORY

This form provides a summary of the information included on Field Operations Information Form 1 concerning shipment of samples to testing laboratories. It is similar to Form S06A used for GPS test sections. A separate form should be completed for each set of samples sent to each laboratory.

This form requires that the layer from which samples are obtained be identified with a layer number. The layer numbers are assigned in a sequential order starting with the subgrade and increasing upwards to the pavement surface. Enter the layer number in the left hand column, starting with "1" for the subgrade and increasing by one for each additional layer. The last layer number should be assigned to the pavement surface layer. A description of the pavement layer material and sample type is provided in the next column on the right, followed by the total number of samples by each sample type.

FIELD OPERATION INFORMATION FORM 3. LABORATORY SHIPMENT SAMPLES INVENTORY - MOLDED CONCRETE

This form is intended to provide a record of the field activity related to fresh PCC sampling and molding of PCC test specimens. No information from this form will be included in the data base. The form provides a detailed inventory of PCC samples shipped to the materials testing laboratories. One form should be completed for all fresh PCC sampling at the test site. Sample location, sample numbers and sampling area numbers should be obtained from Sampling Data Sheet 11.

The bottom portion of this form "MOLDED PCC SPECIMENS SENT TO LABORATORY" provides for the total number of molded cylinder and beams. This form requires that the samples be listed according the layer number of their source. A description of the specimen type is provided in the next column on the right, followed by the total number of samples by sample type.

CONSTRUCTION DATA

Construction data for the SPS-7 experiment include primarily items related to local repair, surface preparation and concrete overlay material as appropriate. In addition, this data includes material properties determined as part of concrete mix design and construction quality control operations.

A number of data sheet sources must be used for construction data. A set of twenty nine SPS Construction Data Sheets were developed for the SPS-7 experiment. In addition, data forms from the GPS Rehabilitation and Maintenance chapters of the Data Collection Guide must also be completed as needed. Table 2 lists the construction related data sheets that should be completed for the different test sections. Supplemental sections constructed at the SPS-7 site may require completion of additional GPS maintenance and rehabilitation data sheets, since a variety of treatments may be used. The GPS maintenance and rehabilitation data sheets listed in Table 2 are included in this report for convenience. Other data sheets needed to describe the supplemental test section should be obtained from the LTPP Data Collection Guide.

LTPP-SPS CONSTRUCTION DATA SHEETS

The following LTPP-SPS construction data sheets should be completed as appropriate for the SPS-7 experiment.

CONSTRUCTION DATA SHEET 1.	REFERENCE PROJECT STATION TABLE
CONSTRUCTION DATA SHEET 2.	REVISED LAYER DESCRIPTIONS
CONSTRUCTION DATA SHEET 3.	PRE-OVERLAY SURFACE PREPARATION SKETCH
CONSTRUCTION DATA SHEET 9.	CONSTRUCTION QUALITY CONTROL MEASUREMENTS
CONSTRUCTION DATA SHEET 10-1.	LAYER THICKNESS MEASUREMENTS
CONSTRUCTION DATA SHEET 11.	MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS
CONSTRUCTION DATA SHEET 12.	PARTIAL DEPTH PATCHING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES

Table 2. Guide to completion of data forms for construction of SPS-7 test sections

	Test Section									Project
	1	2	3	4	5	6	7	8	9	
SPS Construction Data Sheets										
1										✓
2		✓	✓	✓	✓	✓	✓	✓	✓	
3		✓	✓	✓	✓	✓	✓	✓	✓	
9		A	A	A	A	A	A	A	A	
10-1		✓	✓	✓	✓	✓	✓	✓	✓	
11	N	N	N	N	N	N	N	N	N	N
12, 13 & 14	*	*	*	*	*	*	*	*	*	
15 & 16	*	*	*	*	*	*	*	*	*	
17 & 18	*	*	*	*	*	*	*	*	*	
20, 21, 22 & 23	*	*	*	*	*	*	*	*	*	
24 & 25	*	*	*	*	*	*	*	*	*	
26 & 27-1	*	*	*	*	*	*	*	*	*	
28	*	*	*	*	*	*	*	*	*	
31		*	*	*	*	*	*	*	*	
32		✓	✓					✓	✓	
33		✓	✓	✓	✓	✓	✓	✓	✓	
34		✓	✓	✓	✓	✓	✓	✓	✓	
35		✓	✓	✓	✓	✓	✓	✓	✓	
36		✓	✓	✓	✓	✓	✓	✓	✓	
37		✓	✓	✓	✓	✓	✓	✓	✓	
Rehabilitation Data Sheets (from GPS)										
39		✓	✓	✓	✓	✓	✓	✓	✓	
40 & 41		✓	✓	✓	✓	✓	✓	✓	✓	
61	*	*	*	*	*	*	*	*	*	
62 & 63	*	*	*	*	*	*	*	*	*	

✓ Always complete data sheet for this section.
* Complete data sheets if treatment was performed as appropriate.
A Complete data sheet if required data is available.
N Complete data sheet as needed.

CONSTRUCTION DATA SHEET 13.	PARTIAL DEPTH PATCHING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES (CONTINUED)
CONSTRUCTION DATA SHEET 14.	PARTIAL DEPTH PATCHING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES (CONTINUED)
CONSTRUCTION DATA SHEET 15.	JOINT RESEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES
CONSTRUCTION DATA SHEET 16.	JOINT RESEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES (CONTINUED)
CONSTRUCTION DATA SHEET 17.	CRACK SEALING DATA FROM PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES
CONSTRUCTION DATA SHEET 18.	CRACK SEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACE (CONTINUED)
CONSTRUCTION DATA SHEET 20.	FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES
CONSTRUCTION DATA SHEET 21.	FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES (CONTINUED)
CONSTRUCTION DATA SHEET 22.	FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES (CONTINUED)
CONSTRUCTION DATA SHEET 23.	FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES (CONTINUED)
CONSTRUCTION DATA SHEET 24.	LOAD TRANSFER RESTORATION DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES
CONSTRUCTION DATA SHEET 25.	LOAD TRANSFER RESTORATION DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES (CONTINUED)
CONSTRUCTION DATA SHEET 26.	UNDERSEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES
CONSTRUCTION DATA SHEET 27-1.	UNDERSEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES (CONTINUED)
CONSTRUCTION DATA SHEET 28.	SUBDRAINAGE RETROFIT DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES
CONSTRUCTION DATA SHEET 31.	REFLECTIVE CRACK CONTROL FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES

CONSTRUCTION DATA SHEET 32.	MILLING OF PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES
CONSTRUCTION DATA SHEET 33.	SURFACE REMOVAL/CLEANING OF PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES
CONSTRUCTION DATA SHEET 34.	PORTLAND CEMENT CONCRETE OVERLAY PLACEMENT OPERATIONS
CONSTRUCTION DATA SHEET 35.	BONDED PORTLAND CEMENT CONCRETE OVERLAY - JOINT DATA
CONSTRUCTION DATA SHEET 36.	DELAMINATION OF BONDED PORTLAND CEMENT CONCRETE OVERLAY
CONSTRUCTION DATA SHEET 37.	DELAMINATION DETECTION SECTION MAP

A description of the items to be entered on each Construction Data Sheet follows.

CONSTRUCTION DATA SHEET 1. REFERENCE PROJECT STATION TABLE

A reference project station system must be established for each project. This station referencing system starts with station 0+00 assigned to the starting point of the first test section encountered on the project. The station number of the beginning and end of all test sections on the project will be referenced to this point to provide a relative distance measure of the beginning, end, and distance between test sections on the site. This continuous system is used to avoid compounding measurement error within test sections since test sections are not precisely marked to 500 feet when laid out. This information will be used to process profile data collected from continuous measurements over the test site and to identify the locations of the materials sampling and testing operations on the test sections for the entire site. In addition, this information will indicate the ordering and distance between test sections.

Space is also provided on the data form to identify the GPS test sections that exist on the same project.

Field measurements should be used to locate the start and end point of each test section with an accuracy of ± 1 foot. A manual rolling wheel distance

measurement device or a calibrated vehicle mounted DMI of the required accuracy may be used for this purpose. Ideally, these measurements should be made prior to overlay construction, e.g. at the time when the test section locations are initially marked on the pavement. This data can then be used as a check against the repositioning of the start and end of the test sections following overlay construction. Otherwise, these measurements should be performed on the as-marked sections following construction.

The relative SPS project station location information is recorded on Construction Data Sheet 1. The starting point of the first test section encountered on the project in the direction of traffic is assigned station 0+00. Station numbers for the start and end of all test sections on each SPS test site should run continuous from this point with no equations and measured to the nearest one foot. This station numbering system is independent of the station numbering used on the construction plans to avoid complications due to mid-project station equations. A space is provided for the station number of the end of the first test section, since it may not always occur precisely at station 5+00.

The test section ID number and relative station numbers of the beginning and ending of each section should be entered on Sheet 1, in the order that each test section is encountered in the direction of travel.

1. TEST SECTION ID NUMBER. The six digit test section ID number, consisting of the STATE CODE, SPS PROJECT CODE, and TEST SECTION NUMBER, should be entered for each SPS test section. If a GPS test section on the project is being used as both a SPS and GPS test section, such as use of a GPS section as the control section for an SPS project, then enter the GPS test section number in the table and indicate the corresponding SPS test section number under item 5 below.

2. START STATION NUMBER. The station number of the starting point of the test section relative to the starting point of the first test section on the project, to the nearest foot.

3. END STATION NUMBER. The station number of the ending point of the test section relative to the starting point of the first test section on the project, to the nearest foot.

4. SUBGRADE STRUCTURE TYPE. Enter the code number shown under note 1 on the form to indicate if the test section is located entirely on fill, cut, at-grade or is located on both cut and fill. If the test section is located on both cut and fill, the approximate location of the cut-fill transition within the test section should entered using a TEST SECTION relative station number (0+00 to 5+00).

5. SPS - GPS TEST SECTION EQUALITIES. Spaces are provided to indicate the corresponding SPS test section number if a GPS test section(s) is being used as part of the SPS experiment. Typically this will be limited to use of a GPS test section as the control section for the SPS experiment. Other GPS sections may be present on the project if the agency's standard rehabilitation treatment on the project corresponds to the criteria established for the GPS-7B or GPS-9 experiment.

6. INTERSECTIONS BETWEEN TEST SECTIONS ON THE PROJECT. If any intersections occur between any of the test sections on the project, indicate the number or name of the intersecting route, the reference project station number, and check whether it is an entrance or exit ramp, or an intersection with a stop sign, traffic signal, or is unsignalized.

CONSTRUCTION DATA SHEET 2. REVISED LAYER DESCRIPTIONS

This data sheet should be completed for each test section to describe the previous and newly overlaid pavement structure layers. The layer numbers shown on this form provide a key reference to the other detailed information sheets concerning the properties of the layer. In order to provide future analysts with information on the test section pavement structure prior to overlay and to avoid confusion with layer numbers, the complete layer structure of the test section prior to overlay must be described. This pavement layer structure should be the

same as the layer structure provided on the Laboratory Material Handling and Testing Form L05.

1. LAYER NUMBER. The printed layer number on the form is used to reference the pavement layers on other data sheets. The first layer is assigned to subgrade and all other layers assigned increasing numbers. An overlay surface will be the highest numbered layer.

2. LAYER DESCRIPTION. The layer description code, as shown in note 2 on the form, which describes the general type of layer should be entered corresponding to its order within the layer structure.

3. MATERIAL TYPE CLASSIFICATION. This code identifies the type of material in each layer. These codes are listed in Tables A.5, A.6, and A.7. for surfacing materials, base and subbase materials, and subgrade soils, respectively.

4. LAYER THICKNESS. Enter the average thickness of each material layer. If sufficient measurement information is available enter the maximum, minimum, and standard deviation of the thickness measurements.

CONSTRUCTION DATA SHEET 3. PRE-OVERLAY SURFACE PREPARATION SKETCH

This form is used to sketch the approximate locations of pre-overlay preparation treatments applied to the test section. The approximate location of patches, sealed cracks, and other features of the surface prior to placement of the overlay should be sketched. This will help establish the location of pertinent features on the test section surface prior to placement of the overlay and those which may not have been recorded by the distress photography performed prior to the start of construction.

CONSTRUCTION DATA SHEET 9-1. CONSTRUCTION QUALITY CONTROL MEASUREMENTS

The purpose of this form is to record the results of surface profile measurements used as construction control or acceptance testing by the

participating agency. Reported Profilograph readings should be based on measurements on the 500 foot test section length and prorated to units of inches per mile. Measurements over 528 feet (0.1 of a mile) centered around the test section may also be used.

1. DATA MEASUREMENTS BEGAN. Enter the date on which the quality control measurements on the test section began.

2. DATE MEASUREMENTS COMPLETED. Enter the date on which the quality control measurements on the test section were completed.

3. PROFILOGRAPH MEASUREMENTS. Report the results of any Profilograph measurements performed on the overlay surface layer. For each measurement performed, report the type of Profilograph (Rainhart or California), Profile index, interpretation method (manual, mechanical, or computer), height of blanking band, and cutoff height. Note that mechanical interpretation method refers to readings from mechanical counters located on some devices. Enter mechanical counter reading only if the profilograms are not interpreted either by manual or computer methods.

4. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? Indicate if the surface profile is or is not used as a contractual basis for incentive payments to the construction contractor.

CONSTRUCTION DATA SHEET 10-1. LAYER THICKNESS MEASUREMENTS

This form is used to record the results of the layer thickness measurements within the test section from before and after elevation measurements. Enter the date for the beginning and completion of measurements in Items 1 and 2, respectively.

Results of thickness measurements should be provided for 5 offset points at every station along the project which was measured. The station number should be entered as the test section relative station number. Offset distance should be entered in inches and measured from the outside shoulder lane edge joint.

Space is provided to enter the layer thickness for one layer within the test section. Enter the overlay layer thickness in the column after offset. Enter the layer number of the overlay course. Use more than one sheet as required.

CONSTRUCTION DATA SHEET 11. MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS

This data sheet is provided for miscellaneous notes and comments, further descriptions of entries on other forms, or other construction related data that are not covered on other data forms. Comments on this form should address features or occurrences which may ultimately influence the performance of the test section. For example, comments from the site inspector may be included on marginal or questionable surface preparation on the test sections.

Also, this sheet may be used to provide additional comments on items included in other data sheets. In those cases, the items and sheet numbers pertaining to these comments should be indicated on this form.

In addition, this form can also be used to report other types of quality control measurements performed on the test sections which are not covered in the construction data sheets. For example, if profile or ride quality acceptance procedures are not based on Profilograph measurements, this information could be provided on this form. In this case, specify the type, manufacture, model number of measurement equipment used, and a reference to the standard test procedure employed (such as ASTM, AASHTO, or Agency Test method). If similar types of data or information are reported on this sheet, consideration will be given to the development of standard data forms for reporting this information to simplify entry in the data base.

CONSTRUCTION DATA SHEET 12. PARTIAL DEPTH PATCHING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES

This data sheet is used for reporting information on patches constructed on portland cement concrete pavements within a test section. A partial depth patch consists of replacing less than the full depth of the pavement surface

layer primarily to repair areas of spalling. It does not include replacing all pavement and base courses down to the subgrade.

1. DATE PATCHING OPERATIONS BEGAN. This is the date on which patching operations on the test section began.

2. DATE PATCHING OPERATIONS COMPLETE. This is the date on which placement of all patches on the test section was completed.

3. PRIMARY DISTRESS OCCURRENCE PATCHED. Enter the code which indicates the primary reason for patching. Where patching was required for more than one reason, enter the cause resulting in the greatest area of patching. Codes appear on Table A.22 of Appendix A of the LTPP Data Collection Guide. A space is also provided for writing in a reason for which no code is provided.

4. SECONDARY DISTRESS OCCURRENCE PATCHING. Enter the code which indicates the secondary reason for patches from Table A.22 of Appendix A of the LTPP Data Collection Guide.

5. PATCHES. The approximate total area patched in square feet, i.e. the number of patches, and the average depth of the patches to the nearest 0.1 inch.

6. METHOD USED FOR PATCH BOUNDARY DETERMINATION. Enter the appropriate code to identify the method of patch boundary determination. A space is provided on the data form to specify other methods, if used.

7. METHOD USED TO CUT BOUNDARIES. Enter the appropriate code to indicate the method used for cutting the existing pavement at the patch boundary. A space is provided for entering other methods, if used.

8. METHOD USED TO BREAK UP AND/OR REMOVE DETERIORATED CONCRETE. Enter the appropriate code to identify the method used to break up and/or remove the

existing PCC materials. A space is provided to specify other methods, if used.

9. METHOD FOR FINAL CLEANING OF PATCH AREA. Enter the appropriate code to specify the means of final surface preparation used to prepare the area to be patched.

CONSTRUCTION DATA SHEET 13. PARTIAL DEPTH PATCHING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED

This data sheet is a continuation of Construction Data Sheet 12, Partial Depth Patching Data for Pavements with Portland Cement Concrete Surfaces.

1. PATCH MATERIAL USED. Enter the appropriate code to identify the type of surface material used to patch the pavement. If a material other than those specified is used, it should be indicated in the space provided.

2. BONDING AGENT. Enter the appropriate code to identify the material used to bond the patch material to the existing portland cement. If a material other than those specified is used, it should be indicated in the space provided.

3. MIXTURE DESIGN FOR PATCH MATERIAL. The pounds per cubic yard of coarse aggregate, fine aggregate, cement, and water (in gallons per cubic yard) in the patch mixture. Coarse aggregate is aggregate retained on a No. 4 sieve.

4. MAXIMUM SIZE OF COARSE AGGREGATE. The maximum size of coarse aggregate used in the patch material to the nearest 0.1 inch.

5. CEMENT TYPE USED. Enter the appropriate code to identify the type of cement used in the patch mix. Types of cement and associated codes are shown in Tables A.11. Enter "61" for epoxy cement and "62" for polymer cement. If a cement not otherwise identified was used, enter "63."

6. AIR CONTENT. The mean air content in percent by volume and range of air contents in the portland cement concrete mix to the nearest one-tenth of a percent.

7. ADMIXTURES. Admixtures added to the concrete mix. Spaces are provided to list up to two types of admixtures. Codes are provided in Table A.12, Appendix A.

8. SLUMP. The mean and range of the slump for portland cement concrete patch material to the nearest 0.1 inch.

9. COMPRESSIVE STRENGTH OF PATCH MATERIAL. The compressive strength of a standard cylinder of PCC patch material in psi after a certain curing time period in days. If compression tests were not performed and another strength test (such as the indirect tensile test) was performed, space is provided to identify the type of strength testing performed on the patch material, type of loading, age at testing, and measured strength. Refer to the test by AASHTO, ASTM, or agency's designation.

CONSTRUCTION DATA SHEET 14. PARTIAL DEPTH PATCHING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED

This data sheet is a continuation of Construction Data Sheets 12 and 13, Partial Depth Patching Data for Pavements with Portland Cement Concrete Surfaces.

1. CURING METHOD. The methods used for curing the patch material, if any. Space is provided to identify up to two methods used. Space is also provided to specify other methods that are not shown on the data form. Where only one method is used, enter code for "Method 1" and leave "Method 2" blank.

2. APPROXIMATE TIME BETWEEN PATCHING AND OPENING TO TRAFFIC. The approximate time in hours after placement of materials until traffic was allowed on the patch surface.

3. AMBIENT CONDITIONS AT TIME OF PATCHING. The low and high air temperatures observed during patching activities in degrees Fahrenheit, and a code to indicate whether the surface was dry or wet at the time of patching.

4. METHOD OF CONSOLIDATING MATERIALS. A code to identify the means of consolidating the patch materials.

5. FINISHING METHOD. A code to identify the method used to finish the patch surface.

6. JOINT FORMING METHOD. The method used for forming contraction joints into the patch for longitudinal, transverse, and shoulder joints where they may be present.

CONSTRUCTION DATA SHEET 15. JOINT RESEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES

This data sheet is used for recording data for replacement of joint seals in PCC pavements.

1. DATE JOINT SEALANT OPERATIONS BEGAN. This is the date on which joint sealant operations on the test section began.

2. DATE JOINT SEALANT OPERATIONS COMPLETE. This is the date on which all joint sealant operations on the test section were completed.

3. METHOD OF REMOVING OLD SEALANT. A code to identify the method used for removing the old or existing joint sealant.

4. NEW SEALANT RESERVOIR DIMENSIONS. The width and depth of the sealant reservoir to the nearest 0.1 inch.

5. BOND BREAKER UNDER SEALANT. A code to identify the material used to prevent an adhesive bond between the sealant and the bottom of the

reservoir. Space is also provided to identify other materials or methods, if used.

6. WERE JOINTED SIDEWALLS REFACED. A code to specify whether none, one, or both sidewalls were refaced during the joint resealing process.

7. CLEANING OF SIDEWALLS. A code to specify the means of cleaning the sidewalls prior to resealing.

CONSTRUCTION DATA SHEET 16. JOINT RESEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED

This data sheet is a continuation of Construction Data Sheet 15, Joint Resealing Data for Pavements with Portland Cement Concrete Surfaces. If more than one material or method is used for different joints, repeat Sheets 15 and 16 for each type.

1. TYPE OF CONTRACTION JOINT SEALANT. A code to specify the AASHTO/ASTM designation of the type of joint sealant material used. Space is also provided to enter information regarding the manufacturer and the product's specific name, if no code is provided for the joint sealant used.

2. AVERAGE DEPTH OF TOP OF SEALANT PLACEMENT. The depth to the nearest 0.1 inch from the top of the slab to the top of the joint sealant material.

3. ARE EXPANSION JOINTS SEALED DIFFERENTLY THAN CONTRACTION JOINTS. A code to indicate differences in sealing materials used for contraction and expansion joints. A space is provided to enter information on the material types, if used.

4. TOTAL LINEAR FEET OF JOINTS SEALED. The total linear feet to the nearest 0.1 foot of joints sealed for transverse and longitudinal joints.

CONSTRUCTION DATA SHEET 17. CRACK SEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES

This data sheet is used for recording data for sealing of cracks in PCC pavements.

1. DATE CRACK SEALANT OPERATIONS BEGAN. This is the date on which crack sealing operations began.

2. DATE CRACK SEALANT OPERATIONS COMPLETE. This is the date on which crack sealing operations were completed.

3. NEW SEALANT RESERVOIR DIMENSIONS. The width and depth of the sealant reservoir to the nearest 0.1 inch.

4. BOND BREAKER UNDER SEALANT. A code to identify the material used to prevent an adhesive bond between the sealant and the bottom of the reservoir. Space is also provided to identify other materials or methods, if used.

5. CLEANING OF CRACKS. A code to specify the means of cleaning the cracks prior to sealing.

CONSTRUCTION DATA SHEET 18. CRACK SEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED

This data sheet is a continuation of Constuction Data Sheet 17, Crack Sealing Data for Pavements with Portland Cement Concrete Surfaces. If more than one material or method is used for different cracks, repeat Sheets 17 and 18 for each type.

1. TYPE OF SEALANT. A code to specify the AASHTO/ASTM designation of the type of crack sealant material used. Space is also provided to enter information regarding the manufacturer and the product's specific name, if no code is provided for the crack sealant used.

2. AVERAGE DEPTH OF TOP OF SEALANT PLACEMENT. The depth to the nearest one-tenth of an inch from the top of the slab to the top of the crack sealant material.

3. TOTAL LINEAR FEET OF CRACKS SEALED. The total linear feet to the nearest 0.1 foot of cracks sealed on the test section.

CONSTRUCTION DATA SHEET 20. FULL DEPTH REPAIR FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES

This data sheet is used for reporting details of full depth repair, including either full depth patches or complete slab replacement, for pavements with PCC surfaces.

1. DATE PATCHING OPERATIONS BEGAN. This is the date on which patching operations on the test section began.

2. DATE PATCHING OPERATIONS COMPLETE. This is the date on which placement of all patches on the test section was completed.

3. PRIMARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB. A code for indicating the primary reason for patching or slab replacement. If patching or slab replacement was required for more than one reason, enter the cause resulting in the greatest repair area. Codes appear in Table A.22 of Appendix A of the SHRP-LTPP Data Collection Guide and space is provided for writing in a reason for which no code is provided.

4. SECONDARY DISTRESS OCCURRENCE PATCHED OR REPLACED WITH NEW SLAB. A code for indicating a secondary reason for patching or slab replacement.

5. PATCHES. The number and area in square feet of patches placed. Quantities shall be recorded separately for patches of slab replacement only and for patches of both the slab and base replacement.

6. PATCH MATERIAL USED. A code entered to record the type of surface material used to patch the pavement. If a material other than those specified is used, it should be described in the space provided.

7. SLABS REPLACED. The number and area in square feet of slabs replaced. Quantities shall be recorded separately for slab replacement of concrete only and slab replacement of concrete and base layers.

8. METHOD FOR PATCH BOUNDARY DETERMINATION. A code to indicate the means of determining the extent of the area to be patched, or whether slabs should be replaced. Space is provided to describe other methods for which a code was not provided.

9. CUTTING INSTRUMENT. A code to specify the instrument used to cut the boundaries of the are to be patched.

CONSTRUCTION DATA SHEET 21. FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED

This data sheet is a continuation of Construction Data Sheet 20, Full Depth Repair Data for Pavements with Portland Cement Concrete Surfaces.

1. SECURING LOAD TRANSFER DEVICES. A code to indicate the material used to grout or epoxy load transfer devices into drilled or preformed holes. Space is provided to enter material other than those specified on the data sheet.

2. REINFORCING STEEL PLACED IN PATCH. A code to indicate whether the patched area contains reinforcing steel or not.

3. REBAR NUMBER. The rebar numbers of the longitudinal and transverse bars or wire mesh (tied or untied to old reinforcement) for temperature steel, dowel bars, and tie bars in the full-depth repair. If either longitudinal or transverse bars were not used, the appropriate spaces may be left blank for these and the next three items.

4. BAR LENGTHS. The lengths of longitudinal and transverse bars or wire mesh, to the nearest 0.1 inch.

5. BAR SPACINGS. The approximate center-to-center spacings of adjacent longitudinal and transverse bars or wire mesh, to the nearest 0.1 inch.

6. DOWEL COATINGS. Codes to record the coatings used on longitudinal and transverse dowel bars. If dowel bars were not used, leave this space blank.

7. NUMBER OF SAW CUTS. The number of saw cuts required per patch, if any.

8. DEPTH OF TYPICAL BOUNDARY SAW CUT. The depth, to the nearest 0.1 inch, of the average boundary saw cut.

9. CONCRETE BREAKUP. A code to specify the means of breaking up the existing concrete to be removed.

10. REMOVAL OF CONCRETE. A code entered to indicate the method of material removal from the area patched.

CONSTRUCTION DATA SHEET 22. FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED

This data sheet is a continuation of Construction Data Sheets 20 and 21, Full Depth Repair Data for Pavements with Portland Cement Concrete Surfaces.

1. METHOD OF REINFORCING STEEL PLACEMENT. A code to indicate the means of placing the reinforcing steel. If reinforcing steel is not included, this space should be left blank.

2. MIXTURE DESIGN FOR PCC PATCH MATERIAL. The pounds per cubic yard of coarse aggregate, fine aggregate, cement, and water (in gallons per cubic yard)

in patch mixture. Coarse aggregate is the portion retained on the No. 4 sieve.

3. CEMENT TYPE USED. Enter the appropriate code to identify the type of cement used in the patch mix. Types of cement and associated codes are provided in Table A.11. Enter "61 for epoxy cement and "62" for polymer cement. If a cement not otherwise identified was used, enter "63."

4. AIR CONTENT. The mean air content and range of the measured values (in percent by volume) in the portland cement mix, to the nearest 0.1 percent.

5. ADMIXTURES. Admixtures added to the PCC mix. Spaces are provided to list up to two types of admixtures. A list of admixtures is provided in Table A.12, Appendix A of the SHRP-LTPP Data Collection Guide.

6. SLUMP. The mean slump and the range (minimum and maximum measured value) for portland cement concrete patch material, to the nearest 0.1 inch.

7. FLEXURAL STRENGTH (MODULUS OF RUPTURE). The mean flexural strength of the portland cement concrete mix used in the patch in pounds per square inch, based on third point loading (ASTM C78), and the number of days the beam was cured before testing. If third-point beam tests were not performed and another strength test (such as compressive or splitting tensile tests) were performed, space is provided to identify the type of strength testing performed on the concrete mixture, the type of loading, age at testing, and measured strength. Refer to the test by AASHTO, ASTM, or agency's designation.

8. AMBIENT CONDITIONS AT TIME OF PATCHING. The low and high air temperature observed during patching activities in degrees Fahrenheit, and a code to indicate whether the surface was dry or wet at the time of patching.

9. MAXIMUM SIZE OF COARSE AGGREGATE. The maximum size of the coarse aggregate in the patch material to the nearest 0.1 inch.

10. CONSOLIDATION OF MATERIALS. A code to indicate the means of consolidating the patch materials into the area patched.

11. FINISHING. A code to indicate the means of finishing the surface of the patched area or new slab. Where a method other than one of those specified was used, it should be indicated in the space provided.

CONSTRUCTION DATA SHEET 23. FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED

This data sheet is a continuation of Construction Data Sheets 20, 21, and 22, Full Depth Repair Data for Pavements with Portland Cement Concrete Surfaces.

1. JOINT FORMING METHOD. Codes to specify the method of forming contraction joints in the shoulder, transverse direction, and longitudinal direction. Space is provided to specify a method other than those listed.

2. WAS BOND BREAKER USED BETWEEN ADJACENT LANES. A code to indicate whether a bond breaker was used to prevent bonding of the new patch to the adjacent lane.

3. CURING METHOD. Codes to indicate one or two methods of curing the patch materials. A space is provided to specify a method other than one of those listed. If only one method was used, leave "Method 2" only.

4. APPROXIMATE TIME BETWEEN PATCHING AND OPENING TO TRAFFIC. The approximate time, in hours, the patch materials were allowed to cure prior to allowing traffic on the surface.

5. TYPE OF TRANSVERSE JOINTS IN PATCHES OR SLABS. Codes to indicate the type of joints adjacent to or in patches or new slabs, respectively, include expansion joints, contraction joints, or a mixture of the two. Leave code for patches blank if no patches were adjacent to or include joints. Leave code for slabs blank if no full slabs were replaced.

6. WERE OLD JOINTS MATCHED. A code to indicate whether joints in the patch were matched with the existing joints in the pavement.

CONSTRUCTION DATA SHEET 24. LOAD TRANSFER RESTORATION DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES

This data sheet is used for describing work to restore load transfer across joints in an existing jointed concrete pavement.

1. DATE LOAD TRANSFER RESTORATION BEGAN. This is the date on which load transfer restoration operations on the test section began.

2. DATE LOAD TRANSFER RESTORATION COMPLETE. This is the date on which load transfer restoration of all required joints on the test section was completed.

3. NUMBER OF JOINTS IN TEST SECTION. The total number of joints in the test section.

4. NUMBER OF LOAD TRANSFER RESTORATION LOCATIONS. The total number of joints where load transfer restoration was performed.

5. NUMBER OF DEVICES PER JOINT. The number of load restoration devices installed per joint.

6. LOCATION OF DOWELS OR SHEAR DEVICES. The average distances (to the nearest inch) from the outer lane edge to the center of the load transfer device, for up to fourteen devices.

7. DIAMETER OF RETROFIT DOWEL BARS. The average dowel bar diameter to the nearest 0.01 inch, if dowel bars are installed. A dowel bar diameter greater than or equal to 1.25 inches is generally specified.

8. MATERIAL USED TO BACKFILL SLOT/CORE HOLE. A code to identify the type of material used to backfill around the load transfer restoration device.

9. BONDING AGENT USED BETWEEN EXISTING PCC AND BACKFILL MATERIAL. A code to identify the material used to bond the backfill material to the existing PCC pavement.

CONSTRUCTION DATA SHEET 25. LOAD TRANSFER RESTORATION DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED

This data sheet is a continuation of Construction Data Sheet 24, Load Transfer Restoration Data for Pavements with Portland Cement Concrete Surfaces. This data sheet is used to report information on the joint load transfer efficiency measurements made both before and after treatment. The procedures for performing the necessary deflection testing using a Falling Weight Deflectometer are contained in the FWD Test Plan for the SPS-6 experiment.

1. LOAD TRANSFER EFFICIENCY BEFORE AND AFTER RESTORATION. The load transfer efficiencies are recorded in the outer wheel path (approximately 2.5 feet from the edge of the traveled lane for transverse joints) at a maximum of 10 joints. Entries for point distance will be the same for each of the three separate tests (deflection basin at the center of the slab, deflection transfer on the approach side of the joint and deflection transfer on the leave side of the joint) performed at a particular joint. Tests are to be conducted before and after restoration at the same joints.

Load Transfer Efficiency (LTE) is calculated as follows:

$$LTE = A * \frac{\delta_{ul}}{\delta_{l}} * 100$$

where:

LTE = percent load transfer

$A = 1$ if $X \leq 12$ in.

$A = \delta_o/\delta_x$ if $X > 12$ in.

X = distance between deflection measurements δ_o and δ_x, and δ_l and δ_{ul}, inches (it is preferred that $X \leq 12$ in.)

δ_o - center load deflection for midslab test (at same load level as δ_l).
δ_x - midslab deflection measured X distance from δ_o.
δ_l - center load deflection for test at edge of crack or joint.
δ_{ul} - deflection of the surface of the unloaded slab X distance from δ_l.

(Note: The purpose for including the center of slab deflections is to adjust the measurements at the joint for natural slab bending. This is believed to provide a more realistic value for load transfer efficiency.)

The FWD measurements are not to be obtained when the temperature is greater than 70°F as the joints and cracks are likely to be closed tightly and high load transfer will typically be measured.

It is preferable to make FWD measurements within six months after load transfer restoration is completed.

2. DATE OF LOAD TRANSFER EFFICIENCY TESTS. Provide day, month, and year (last two digits) when tests were conducted, before and after the load restoration.

CONSTRUCTION DATA SHEET 26. UNDERSEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES

This data sheet is used for reporting information on undersealing operations performed on an existing pavement.

1. DATE UNDERSEALING BEGAN. This is the date on which undersealing operations on the test section began.

2. DATE UNDERSEALING COMPLETE. This is the date on which all undersealing operations on the test section were completed.

3. TYPE OF MIXTURE USED IN UNDERSEALING. A code to identify the type of material used to underseal the pavement.

4-8. MIX DESIGN OF PORTLAND CEMENT GROUT. Spaces are provided to record mix design information for a portland cement grout used to underseal the pavement. This includes type of cement, the ratio of cement to sand by weight, the water/cement ratio by weight, additive type (enter "N" if none is used), and amount of additive in percent by weight of cement.

9. FLUIDITY OF PORTLAND CEMENT GROUT. The fluidity of the grout, to the nearest 0.2 seconds, as measured by Test Method ASTM C939-81.

10. CUBE COMPRESSIVE STRENGTH OF PORTLAND CEMENT GROUT. The compressive strength of 2 inch cube specimens as measured by Test Methods AASHTO T106 or ASTM C109 in psi.

11. CURING PERIOD FOR PORTLAND CEMENT GROUT. Number of days the grout cubes were cured before compressive strength testing by Test Methods AASHTO T106 or ASTM C109 was performed.

12. DETERMINATION OF AREA TO BE UNDERSEALED. A code to record the means for determining the required areal extent of the undersealing efforts. Codes are provided on the data sheet.

CONSTRUCTION DATA SHEET 27-1. UNDERSEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED

This data sheet is a continuation of Construction Data Sheet 26, Undersealing Data for Pavements with Portland Cement Concrete Surfaces.

1. DEPTH OF UNDERSEALING HOLE FROM TOP OF THE SLAB. The thickness of the slab at the subsealing hole to the nearest 0.1 inch.

2. MAXIMUM ALLOWABLE PUMPING PRESSURE. The maximum pumping pressure allowable during subsealing to the nearest psi.

3. MAXIMUM SURGE PRESSURE. The maximum surge pressure allowed to initiate undersealing to the nearest psi.

4. SLABS IN TEST SECTION. For jointed concrete pavements record the number of slabs in the test section (to the nearest whole number) and the number of slabs undersealed.

5. AVERAGE NUMBER OF HOLES PER SLAB UNDERSEALED. The average number of holes per slab in the jointed concrete test sections that were undersealed. for SHRP LTPP, the numbers are to represent only the outside lane.

6. TYPICAL NUMBER OF UNDERSEALING HOLES NEAR JOINT OR CRACK. The average number of undersealing holes per slab within two feet of a joint or crack.

7. AVERAGE NUMBER OF HOLES PER LINEAR FOOT OF PAVEMENT. For CRCP pavements enter the average number of grout holes per linear foot of the test section.

8. AVERAGE VOLUME OF MATERIAL PUMPED PER HOLE. The average volume of pumped material per hole, to the nearest 0.1 cubic foot.

9. MONITORING OF LIFT. Code to identify the method used for monitoring the undersealing work and amount of lift. A space is provided for describing a method other than those listed.

10. TYPICAL TIME BETWEEN UNDERSEALING AND REOPENING TO TRAFFIC. The approximate time in hours between the time of subsealing and allowing traffic over the project.

11. WERE DEFLECTION MEASUREMENTS TAKEN BEFORE AND AFTER UNDERSEALING. A code to identify whether or not deflection measurements were taken before and/or after undersealing.

12. TIME OF DAY WHEN DEFLECTION MEASUREMENTS WERE CONDUCTED. Provide the hour of the day at which the deflection measurements started and ended, for

measurements before and after undersealing, in military time. If measurements were taken for more than one day, enter earliest starting time and latest ending time.

CONSTRUCTION DATA SHEET 28. SUBDRAINAGE RETROFIT DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES

This data sheet used is for reporting information on subdrainage systems installed in an existing pavement.

1. DATE SUBDRAINAGE PLACEMENT BEGAN. This is the date on which subdrainage installation on the test section began.

2. DATE SUBDRAINAGE PLACEMENT COMPLETE. This is the date on which subdrainage installation on the test section was completed.

3. TYPE OF DRAINAGE PIPE. A code to record the type of pipe used as subdrains. A space is provided for entering a type other than those listed. If the drainage system does not employ pipes, enter "9".

4. DIAMETER OF PIPE. The diameter or width of the subdrain pipe to the nearest 0.1 inch. If the drainage system does not employ pipes, leave blank.

5. DEPTH OF PIPE BELOW TOP OF PAVEMENT SURFACE. The average depth from the top of the pavement surface to the top of the subdrain pipe, to the nearest 0.1 inch. Where the drainage system does not employ pipes, leave blank.

6. HORIZONTAL PLACEMENT OF PIPE FROM OUTER EDGE OF PAVEMENT. The approximate horizontal distance between the edge of the full depth pavement surface and the centerline of the subdrain pipe, to the nearest 0.1 inch. If the drainage system does not employ pipes, leave blank.

7. TYPE OF PRIMARY FILTER USED. A code to identify the type of primary filter material used to prevent clogging of the drain.

8. MAXIMUM PARTICLE SIZE OF PRIMARY FILTER MATERIAL. Where the primary filter material is granular in composition, the maximum aggregate size used, to the nearest 0.1 inch.

9. GRADATION OF THE PRIMARY FILTER MATERIAL. Where the primary filter material is granular in composition, the gradation of the filter material expressed in terms of percent by weight passing each of four listed standard sieve sizes.

10. PERMEABILITY OF PRIMARY FILTER MATERIAL. The average permeability of the primary filter material to the nearest 100 feet per day.

11. TYPE AND LOCATION OF SECONDARY FILTER MATERIAL. A code to record the use of a secondary filter material, if applicable.

12. AVERAGE OUTLET INTERVAL. The approximate average distance in feet between adjacent subdrainage outlets.

13. PRIMARY PURPOSE OF SUBDRAINAGE INSTALLATION. A code to identify the primary reason for which subdrains were installed.

CONSTRUCTION DATA SHEET 31. REFLECTIVE CRACK CONTROL DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES

This data sheet is used for recording data on the preventive methods used to control reflective cracking. One data sheet should be completed for each test section. Information on the location of reflective crack control devices should be sketched on Construction Data Sheet 3.

1. DATE REFLECTIVE CRACK CONTROL OPERATIONS BEGAN. This is the date on which reflective cracking control operations on the test section began.

2. DATE REFLECTIVE CRACK CONTROL OPERATIONS COMPLETE. This is the date on which the placement of all reflective cracking control devices on the test section was completed.

3. TOTAL LINEAR FEET OF CRACKS TIED. The total linear feet to the nearest foot of cracks tied with reflective cracking control devices.

4. METHOD OF BAR PLACEMENT THROUGH TRANSVERSE CRACKS. Enter the code which describes the method used to set bars across transverse cracks.

5. METHOD OF FORMING RECESSED SLOT. Enter the code which describes the method used to remove the concrete prior to bar placement.

6. BAR SIZE, NO.. Enter the bar number used in transverse cracks for control of reflective cracking.

7. BAR LENGTH. Enter the length of the reflective crack control bar, to the nearest 0.1 inch.

8. METHOD OF BAR PLACEMENT THROUGH LONGITUDINAL CRACKS. Enter the code which describes the method used to set bars across longitudinal cracks.

CONSTRUCTION DATA SHEET 32. MILLING OF PORTLAND CEMENT CONCRETE SURFACES

This data sheet is to be completed for test sections where milling is performed. One data sheet should be completed for each test section, as appropriate.

1. DATE MILLING OPERATIONS BEGAN. This is the date on which milling operations on the test section began.

2. DATE MILLING OPERATIONS COMPLETE. This is the date on which milling operations on the test section were completed.

3. AVERAGE DEPTH OF CUT. The average depth of cut in the surface material to the nearest 0.1 inch.

4. CUTTING HEAD WIDTH. The approximate width of the machine cutting head to the nearest 0.1 inch.

CONSTRUCTION DATA SHEET 33. SURFACE REMOVAL/CLEANING FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES

This data sheet is used for reporting information on the method, other than milling (e.g. shot blasting), used for the preparation and cleaning of the surface of portland cement concrete pavements prior to overlay with PCC overlays. One data sheet should be completed for each test section where shot blasting or another preparation method is performed.

1. DATE SURFACE REMOVAL/CLEANING OPERATIONS BEGAN. This is the date on which surface removal/cleaning operations on the test section began.

2. DATE SURFACE REMOVAL/CLEANING OPERATIONS COMPLETE. This is the date on which surface removal/cleaning operations on the test section were completed.

3. METHOD OF REMOVAL/CLEANING. Enter the code which describes the method used to remove, secondary clean, or final clean the portland cement concrete surface.

4. REASON FOR REMOVAL/CLEANING. Enter the code which describes the reason for surface removal or cleaning.

CONSTRUCTION DATA SHEET 34. PORTLAND CEMENT CONCRETE OVERLAY PLACEMENT OPERATIONS

This data sheet is used for reporting information on the placement of portland cement concrete overlays. One data sheet should be completed for each test section.

1. DATE PAVING OPERATIONS BEGAN. This is the date on which paving operations of portland cement concrete overlays on the test section began.

2. DATE PAVING OPERATIONS COMPLETE. This is the date on which paving operations of portland cement concrete overlays on the test section were completed.

3-5. AIR TEMPERATURE DURING PLACEMENT. The mean air temperature at the time the overlay concrete was placed (in °F) and the range of air temperatures (minimum and maximum) occurring during placement.

6. CURING PERIOD BEFORE OPENING TO ANY TRAFFIC. The number of days the concrete was allowed to cure before opening the pavement to traffic (including construction traffic).

7. TIME BEFORE SAWING JOINTS. The number of hours between the time the concrete was placed and the time the joints were sawed.

8. METHOD USED TO CURE CONCRETE. The method used to cure the concrete pavement. Space is provided for identifying another curing method, if used.

9. METHOD USED TO TEXTURE CONCRETE. How the concrete surface was textured. Space is provided for identifying another texturing method, if used.

10. TYPE OF GROUT USED FOR BONDED OVERLAYS. A code used to identify the type of grout used for the bonded overlay. For SPS-7 test sections, only neat cement grout or no grout are allowed.

11-15. MIX DESIGN OF PORTLAND CEMENT GROUT. Spaces are provided to record mix design information for a portland cement grout used to prepare the surface of the existing concrete pavement. This includes type of cement, the ratio of cement to sand by weight (if sand is used), the

water/cement ratio by weight, additive type (enter "N" if none is used), and amount of additive in percent by weight of cement.

CONSTRUCTION DATA SHEET 35. BONDED PORTLAND CEMENT CONCRETE OVERLAY - JOINT DATA

This data sheet is used for reporting information on joints constructed in portland cement concrete overlays. One data sheet should be completed for each test section.

1. DATE JOINTING OPERATIONS BEGAN. This is the date on which joint construction operations (in the portland cement concrete overlay) on the test section began.

2. DATE JOINTING OPERATIONS COMPLETE. This is the date on which joint construction operations on the test section were completed.

3. AVERAGE CONTRACTION JOINT SPACING. The average spacing between consecutive contraction joints to the nearest 0.1 foot. A space is provided to write in a description of any random joint spacing.

4. BUILT-IN EXPANSION JOINT SPACING. The average spacing in feet between consecutive expansion joints of the pavement under survey. If there are no expansion joints in the original construction, enter "N".

5. SKEWNESS OF JOINTS. The average deviation of the contraction joint across the slab from a right angle with the edge, measured in feet per lane. If not skewed, enter "N".

6. AVERAGE INTERMEDIATE SAWED JOINT SPACING. The average distance between joints sawed at intermediate locations, if applicable, to the nearest 0.1 foot.

7. METHOD USED TO FORM TRANSVERSE JOINTS. Enter the code which indicates the method used to construct the contraction joints, whether by sawing the

hardened slab at the proper time, by placing an insert in the slab surface while the concrete is plastic, or by another method. Space is provided for indicating a method other than those for which codes are provided.

8. TYPE OF LONGITUDINAL JOINT. Enter the code which indicates the method used for forming the longitudinal joint between the lanes. Space is provided for indicating a method other than those for which codes are provided.

9. TYPE OF SHOULDER-TRAFFIC LANE JOINT. Enter the code which indicates the method used for forming the joint between the shoulder and the traffic lane. "Tied concrete curb" indicates that a curb was provided in lieu of a shoulder. Space is provided for describing a method other than those for which codes are provided.

10. TRANSVERSE JOINT SEALANT TYPE. Type of joint sealant used in the transverse joints. Space is provided for describing a type other than those for which codes are provided.

11. TRANSVERSE JOINT SEALANT RESERVOIR WIDTH. The as-constructed width of the transverse joint sealant reservoir to the nearest 0.01 inch.

12. TRANSVERSE JOINT SEALANT RESERVOIR DEPTH. The as-constructed depth of the transverse joint sealant reservoir to the nearest 0.01 inch.

13. LONGITUDINAL JOINT SEALANT RESERVOIR WIDTH. The width of the as-built longitudinal joint sealant reservoir to the nearest 0.01 inch. If butt or keyed joints were used without a sealant reservoir, enter "0.00".

14. LONGITUDINAL JOINT SEALANT RESERVOIR DEPTH. The depth of the as-built longitudinal joint sealant reservoir to the nearest 0.01 inch. If butt or keyed joints were used without a sealant reservoir, enter "0.00".

15. JOINT SEALANT BACKER MATERIAL TYPE. A code to indicate the type of blocking material used (placed prior to the joint sealant).

16. JOINT SEALANT BACKER DIMENSION. If the joint sealant backer material type is a rod or rope, enter the diameter, in inches to the nearest 0.1 inch. If the joint sealant backer material type is tape, enter the width, in inches to the nearest 0.01 inch.

17-18 SHOULDER-TRAFFIC LANE JOINT SEALANT RESERVOIR. The width and depth of the as-built joint sealant reservoir between the shoulder and traffic lane. If butt or keyed joints were used without a sealant reservoir, enter "0.00" in both of the spaces provided.

CONSTRUCTION DATA SHEET 36. DELAMINATION OF BONDED PORTLAND CEMENT CONCRETE OVERLAY

This data sheet is used for reporting results of tests performed on bonded portland cement concrete overlay to detect areas of possible delamination. One data sheet should be completed for each test section.

1. DATE OF DELAMINATION SURVEY. This is the date on which delamination detection on the test section was performed.

2. METHOD OF DETECTION. Enter the code which describes the method used to detect areas of possible overlay delamination.

3. AREA OF POSSIBLE DELAMINATION. Enter the total area in square feet of possible overlay delamination.

4. TOTAL NUMBER OF SLABS (JOINTED CONCRETE PAVEMENTS ONLY). Enter the number of individual slabs having delamination. This applies only to Jointed Concrete Pavements.

CONSTRUCTION DATA SHEET 37. DELAMINATION DETECTION SECTION MAP

This data sheet is used to provide mapping of the delamination survey conducted periodically after construction. Areas exhibiting delamination should be drawn on the sheet. This data is then reduced and entered in Construction

Data Sheet 35, Delamination of Bonded Portland Cement Concrete Overlay. Multiple data sheets will be required for each test section since each sheet provides space to record information for only 100 feet.

GPS REHABILITATION DATA SHEETS

Several data collection sheets from the GPS Rehabilitation Data Collection Chapter of the Data Collection Guide that should be completed for the SPS-7 test sites, as indicated in Table 2. These include:

REHABILITATION SHEET 39 PORTLAND CEMENT CONCRETE OVERLAY, MIXTURE DATA
REHABILITATION SHEET 40 PORTLAND CEMENT CONCRETE OVERLAY, AGGREGATE DATA
REHABILITATION SHEET 41 PORTLAND CEMENT CONCRETE OVERLAY, AGGREGATE DATA (CONTINUED) AND CONSTRUCTION DATA
REHABILITATION SHEET 61 RESTORATION OF AC SHOULDERS
REHABILITATION SHEET 62 RESTORATION OF PCC SHOULDERS
REHABILITATION SHEET 63 RESTORATION OF PCC SHOULDERS, (CONTINUED)

Rehabilitation Data Sheets 39, 40, and 41 should be completed from project records and construction observations for the bonded portland cement concrete overlay. Rehabilitation Data Sheets 61, 62, and 63 should be completed to provide information on shoulder treatments. A description of items to be entered on each Rehabilitation Data Sheet follows.

REHABILITATION SHEET 39. PORTLAND CEMENT CONCRETE OVERLAY, MIXTURE DATA

1. LAYER NUMBER. The portland cement concrete overlay for which a description is being provided (from Sheet 2).

2-5. MIX DESIGN. The over dry weights in pounds of coarse aggregate, fine aggregate, cement, and weight of water provided by the mix design for a cubic yard of concrete.

6. CEMENT TYPE USED. Type of cement used in the slab concrete. These cement type codes appear in Table A.11 in Appendix A.

7. ALKALI CONTENT OF CEMENT. The alkali content of the cement to the nearest tenth of one percent, expressed as sodium oxide equivalent.

8-10 ENTRAINED AIR CONTENT. The mean, minimum, and maximum values of entrained air (percent of mixture volume) as measured during construction to the nearest 0.1 percent.

11-13 ADMIXTURES. The types and amounts (in percent by weight of cement to the nearest thousandth) of admixtures used in the concrete. The codes for concrete admixtures appear in Table A.12 in Appendix A, and space has been provided for identifying an admixture type for which a code was not provided.

14-18 SLUMP. The mean of the slump measurements made, the minimum and maximum values, the standard deviation from the mean to the nearest 0.1 inch and the number of tests from which the values are obtained. The maximum and minimum values and standard deviation of slump should be left blank if only one test result is available.

REHABILITATION SHEET 40. PORTLAND CEMENT CONCRETE OVERLAY, AGGREGATE DATA

1. LAYER NUMBER. The portland cement concrete overlay for which a description is being provided (from Sheet 2).

2-4. COMPOSITION OF COARSE AGGREGATE. When more than one coarse aggregate is used, the type and percentage by total weight of coarse aggregate should be indicated for each coarse aggregate. The coarse aggregate fraction of a concrete mix is composed of material retained on the No. 8 sieve. If only one type of coarse aggregate is used, enter its type code and 100 percent in the top set of the data spaces, leaving the others blank.

5. GEOLOGIC CLASSIFICATION OF COARSE AGGREGATE. The geologic classification of the natural stone used as coarse aggregate in the concrete. These codes appear in Table A.9 and provide identification as to which of the three major classes of rock the coarse aggregate belongs to and the type

of rock within those classes. If a "blend" was used, enter the code for he geologic classification for the material representing the majority of the coarse aggregate. If a "crushed slag", "manufactured lightweight", or "recycled concrete" was used, enter "N".

6-8. COMPOSITION OF FINE AGGREGATE. When more than one fine aggregate is used, the type and percentage by total weight of fine aggregate should be indicated for each fine aggregate. The fine aggregate fraction used in a concrete mix is composed of material passing the No. 4 sieve and retained on the No. 200 sieve. If only one type of fine aggregate issued, enter its type code and 100 percent in the top set of the data spaces, leaving the others blank.

9. INSOLUBLE RESIDUE. The percentage of insoluble residue (noncarbonate material) as determined using ASTM D3042.

10-11 GRADATION OF AGGREGATES. The percent passing various standard sieve sizes to the nearest one percent of the coarse and fine aggregate fractions. It is not expected that values will be available for all sieve sizes shown; the objective is to provide sufficient sieve sizes to accommodate testing and specification practice for most agencies.

12-13 BULK SPECIFIC GRAVITIES. The mean bulk specific gravities (to the nearest thousandth) for coarse aggregate and fine aggregate fractions. The bulk specific gravities for the aggregate fractions are measured using these laboratory procedures: a) Coarse Aggregate - AASHTO T85 or ASTM C127, and b) Fine Aggregate - AASHTO T84 or ASTM C128.

REHABILITATION SHEET 41. PORTLAND CEMENT CONCRETE OVERLAY, AGGREGATE DATA, (CONTINUED) AND CONSTRUCTION DATA

1. LAYER NUMBER. The portland cement concrete overlay for which a description is being provided (from Sheet 2).

2-5. AGGREGATE DURABILITY TEST RESULTS. The type of durability tests used and the results in tenths recorded in units specified for the test. Three of these sets are for coarse and one for the combination of coarse and fine aggregates. The durability test type codes and the units for reporting appear in Table A.13.

6-13 Leave blank for SPS-7 test sections, this information will be reported using the appropriate Construction Data Sheets.

REHABILITATION SHEET 61. RESTORATION OF AC SHOULDERS

This data sheet is for describing work to restore existing shoulders. All data items pertain to the characteristics of the restored AC shoulder.

1. SHOULDER RESTORED. A code to indicate whether the outside, inside, or both shoulders were restored. Codes are provided on the data sheet. Note that Data Items 2 to 7 pertain to restored inside and/or outside shoulders. Data Items 8 to 14 pertain to restored outside shoulders only.

2. SURFACE TYPE. The type of restored shoulder surface (See Table A.5, Appendix A for codes).

3. TOTAL WIDTH. The total (paved and unpaved) width of the restored shoulder to the nearest whole number of feet.

4. PAVED WIDTH. The total paved width of the restored shoulder to the nearest whole number of feet.

5. SHOULDER BASE TYPE. The type of base material used in the restored shoulder (See Table A.6, Appendix A for codes).

6. SURFACE THICKNESS. The average thickness of the restored shoulder surface at the outside lane-shoulder edge to the nearest 0.1 inch.

7. BASE THICKNESS. The average thickness of the restored shoulder base at the outside lane-shoulder edge to the nearest 0.1 inch.

8. TYPE OF SHOULDER RESTORATION. A code to identify the procedure used to restore the shoulder. Codes are provided on the data sheet.

9. TYPE OF AC MATERIALS. The type of asphalt concrete materials used in the shoulder restoration. Codes are provided on the data sheet.

10. THICKNESS OF AC MATERIAL REMOVED BY COLD MILLING. If cold milling was used, the thickness of the AC removal, to the nearest 0.1 inch.

11. AC OVERLAY THICKNESS. If an AC overlay was placed on the shoulder, the thickness of the overlay to the nearest 0.1 inch.

12. LANE/SHOULDER JOINT SEALANT. The method used to seal the joint separating the shoulder and traffic lane. Codes are provided on the data sheet.

13. LANE/SHOULDER JOINT SEALANT RESERVOIR. The average width and depth of the as-built joint sealant reservoir between the restored shoulder and traffic lane. If butt or keyed joints were used without a sealant reservoir, enter "0.0" in both of the spaces provided.

14. TYPE OF JOINT SEALANT. A code to indicate whether the sealant was poured (molded in place) or preformed (compression-type). Codes are provided on the data sheet.

REHABILITATION SHEET 62. RESTORATION OF PCC SHOULDERS

This data sheet is for describing work to restore existing shoulders. All data items pertain to the characteristics of the restored PCC shoulder. Tied PCC shoulders are not permitted in SPS-7 test sections therefore Items 13 through 16 should be blank.

1. SHOULDER RESTORED. A code to indicate whether the outside, inside, or both shoulders were restored. Codes are provided on the data sheet. Note that Data Items 2 to 7 pertain to restored inside and/or outside shoulders. The remaining data items pertain to restored outside shoulders only.

2. SURFACE TYPE. The type of restored shoulder surface (See Table A.5, Appendix A for codes).

3. TOTAL WIDTH. The total (paved and unpaved) width of the restored shoulder to the nearest whole number of feet.

4. PAVED WIDTH. The total paved width of the restored shoulder to the nearest whole number of feet.

5. SHOULDER BASE TYPE. The type of base material used in the restored shoulder (See Table A.6, Appendix A for codes).

6. SURFACE THICKNESS. The average thickness of the restored shoulder surface at the outside lane-shoulder edge to the nearest 0.1 inch.

7. BASE THICKNESS. The average thickness of the restored shoulder base at the outside lane-shoulder edge to the nearest 0.1 inch.

8. TYPE OF SHOULDER SYSTEM. A code to indicate whether the restored shoulder is jointed plain concrete pavement (JPCP), jointed reinforced concrete pavement (JRCP), or continuously reinforced concrete pavement (CRCP). Note that Data Items 9 through 11 pertain only to JPCP and JRCP shoulders.

9. AVERAGE JOINT SPACING. Average joint spacing for JPCP or JRCP shoulders to the nearest whole foot.

10. SKEWNESS OF JOINTS. The average deviation of the contraction joint across the restored shoulder from a right angle with the edge. This is measured in feet to the nearest tenth. If joints are not skewed, enter "N".

11. JOINTS MATCH PAVEMENT JOINTS?. Codes to indicate whether the joints in the restored shoulder were constructed to match the joints in the adjacent pavement slab.

12. TYPE OF LANE/SHOULDER JOINT. A code to identify the type of lane/shoulder joint present. Codes are provided on the data sheet.

13-16 Lane/Shoulder Joint Tie System. Specify the type of system employed utilizing the codes provided on the data sheet, the outer bar diameter of the tie bars across the joint between the shoulder and the traffic lane to the nearest 0.01 inch, the mean bar length of the tie bars to the nearest inch, and the average center-to-center distance (bar spacing) in inches between consecutive tie bars across the concrete shoulder-traffic lane joint.

REHABILITATION SHEET 63. RESTORATION OF PCC SHOULDERS, CONTINUED

1. LANE/SHOULDER JOINT SEALANT. The method used to seal the joint separating the shoulder and traffic lane. Codes are provided on the data sheet.

2. LANE/SHOULDER JOINT SEALANT RESERVOIR. The average width and depth of the as-built joint sealant reservoir between the restored shoulder and traffic lane. If butt or keyed joints were used without a sealant reservoir, enter "0.0" in both of the spaces provided.

3. TYPE OF JOINT SEALANT. A code to indicate whether the sealant was poured (molded in place) or preformed (compression-type). Codes are provided on the data sheet.

4. JOINT SEALANT BACKER MATERIAL TYPE. A code to indicate the type of blocking material used (placed prior to the joint sealant). Codes are provided on the data sheet.

5. JOINT SEALANT BACKER DIMENSION. If the joint sealant backer material is a rod or rope, enter the diameter, in inches to the nearest 0.1 inch. If

the joint sealant backer material type is tape, enter the width, in inches to the nearest 0.1 inch.

LABORATORY MATERIAL TESTING DATA

Laboratory material tests should be performed in accordance with the SHRP standard protocols contained in the most recent version of Operational Guide No. SHRP-LTPP-OG-004," SHRP-LTPP Interim Guide for Laboratory Materials Handling and Testing". The Guide contains data forms for reporting test information and results. Procedures and forms for those test methods that are not included in the GPS materials testing program but required for the SPS-7 experiment are listed in the Operational Memorandum No. SHRP-LTPP-OM-020, "Specific Pavement Studies Materials Sampling and Testing Requirements for Experiment SPS-7, Bonded Portland Cement Concrete Overlays", January 1991.

TRAFFIC DATA

Traffic data should be collected and reported using the same forms and procedures as used for GPS test sections. Historical traffic data forms must be completed for the project as required for GPS test sections. Monitoring information must be reported using the same formats and procedures as required for GPS test sections.

In general, traffic data should be project level data and coded with a "00" as the test section number. In instances where an intersection exists within the test site and thus resulting in different traffic levels on the test sections, measurements of the traffic level on the different groups of sections on each side of the intersection should be referenced to the lead test section of the group. The locations of any intersections or ramps should be recorded on Construction Data Sheet 1.

CLIMATIC DATA

The procedures used for collection and storage of climate and environmental data for GPS test sections should be used for SPS-7 projects. Since this data will apply to all test sections on the project, it should be recorded as "project level data" with a "00" entered as the test section number.

DISTRESS, DEFLECTION, PROFILE AND SKID DATA

Guidelines on the timing of delamination detection, deflection, profile, distress, and friction measurements before and after overlay construction are shown in Table 3. In general, the same procedures and reporting formats used for GPS sections should be followed for these measurements on SPS test sections, except that deflection measurements should be modified in accordance with the FWD Test Plan developed for this experiment. Also, the delamination detection protocol developed for this experiment should be followed. The data should be obtained and reported for each test section.

MAINTENANCE AND REHABILITATION DATA

All maintenance and rehabilitation activities performed on the SPS test sections after completion of construction should be recorded on a test section basis using the data sheets contained in the LTPP Data Collection Guide.

Table 3. Guidelines on before and after monitoring measurements on SPS-7 test sections.

MEASUREMENT	BEFORE CONSTRUCTION	AFTER CONSTRUCTION
DELAMINATION DETECTION	N/A	14 DAYS (BEFORE OPENING) 1 YEAR 5 YEARS
DEFLECTION MEASUREMENTS	< 3 Months	1 - 3 Months
PROFILE MEASUREMENTS	< 3 Months	< 2 Months
DISTRESS SURVEY	< 6 Months	< 6 Months
FRICTION MEASUREMENTS	< 12 Months	3 - 12 Months

APPENDIX A

SAMPLING DATA SHEETS, CONSTRUCTION DATA SHEETS AND FIELD OPERATIONS INFORMATION FORMS

(Exclusively for SPS Experiments)

LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING SHEET NUMBER _____ OF_____
PAVEMENT CORE LOG AT BOREHOLE LOCATIONS
SAMPLING DATA SHEET 1

REGION _____ STATE _____ STATE CODE __ __
EXPERIMENT NO _____ SPS PROJECT CODE __ __
ROUTE/HIGHWAY_____ Lane_____ Direction_____ TEST SECTION NO. __ __
SAMPLE/TEST LOCATION: ☐ Before Section ☐ After Section FIELD SET NO. __

OPERATOR_____ EQUIPMENT USED_____ CORING DATE___-___-___
SAMPLING AREA NO. SA-_____ LOCATION: STATION_____ OFFSET_____feet from °/s
CORE HOLE NUMBER _____ CORE BARREL SIZE_____(in. Inside Diam.) Cooling Medium_____

Scale (Inches)	Depth (Inches)	Core Recov. (Inches)	Core Sample No.	Material Description	Material Code
0					
5					
10					
15					
20					
25					

Note: "Depth" should be measured from the top of the pavement surface to the bottom of the cores of each layer and recorded to the nearest tenth of an inch.

GENERAL REMARKS:_____

CERTIFIED VERIFIED AND APPROVED DATE

_____ _____ __ __-__ __-19__ __
Field Crew Chief SHRP Representative Month- Day - Year
Affiliation:_____ Affiliation:_____

LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING
PAVEMENT CORE LOG AT C-TYPE CORE LOCATIONS
SAMPLING DATA SHEET 2

SHEET NUMBER _____ OF _____

P REGION _____ STATE _____ STATE CODE __ __
EXPERIMENT NO _____ SPS PROJECT CODE __ __
ROUTE/HIGHWAY_____ Lane_____ Direction_____ TEST SECTION NO. __ __
SAMPLE/TEST LOCATION: ☐ Before Section ☐ After Section FIELD SET NO. __

OPERATOR_____ EQUIPMENT USED_____ CORING DATE ___-___-___

SAMPLING AREA NO SA-_____ CORE BARREL: Tip Type_____ Cooling Medium_____

Note: Record information for all cores extracted from each core hole in one column in the table below. Use a separate sheet for each sampling area. "Depth" should be measured from the pavement surface to the bottom of the core and recorded to the nearest tenth of an inch.

CORE HOLE NUMBER						
LOCATION: (a) STATION						
(b) OFFSET (Feet, O/S)						
Core Recovered?	*YES/NO*	*YES/NO*	*YES/NO*	*YES/NO*	*YES/NO*	*YES/NO*
Replacement Core Hole No.						
Core Size (inch Diam.)	*4/6*	*4/6*	*4/6*	*4/6*	*4/6*	*4/6*
Core Sample No.						
Depth (Inches)						
Material Description						
Material Code						
Core Size (inch Diam)	*4/6*	*4/6*	*4/6*	*4/6*	*4/6*	*4/6*
Core Sample No.						
Depth (Inches)						
Material Description						
Material Code						
Core Size (inch Diam.)	*4/6*	*4/6*	*4/6*	*4/6*	*4/6*	*4/6*
Core Sample No.						
Depth (Inches)						
Material Description						
Material Code						
Core Size (inch Diam.)	*4/6*	*4/6*	*4/6*	*4/6*	*4/6*	*4/6*
Core Sample No.						
Depth (Inches)						
Material Description						
Material Code						
Remarks						

GENERAL REMARKS:_____

CERTIFIED VERIFIED AND APPROVED DATE

_____ _____ _____-____-19___

Field Crew Chief SHRP Representative Month- Day- Year
Affiliation:_____ Affiliation:_____

LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING SHEET NUMBER _____ OF _____
A-TYPE BORE HOLE LOG
SAMPLING DATA SHEET 4

? REGION _____ STATE _____ STATE CODE __ __
EXPERIMENT NO _____ SPS PROJECT CODE __ __
ROUTE/HIGHWAY_____ Lane_____ Direction_____ TEST SECTION NO. __ __
SAMPLE/TEST LOCATION: ☐ Before Section ☐ After Section FIELD SET NO. __

OPERATOR_____ EQUIPMENT USED_____ BORING DATE___-___-___
SAMPLING AREA NO: SA-_____ LOCATION: STATION_____ OFFSET_____ feet from o/s
BORE HOLE NUMBER:_____ BORE HOLE SIZE: _____ (inch Diam.)

Scale (Inches)	Strata Change (Inches)	Sample Number (1)	#Blows(2) 6"	6"	6"	Ref? Y/N (3)	DLR (Inches) (4)	IOP (5)	Material Description	Material Code
_____										
_10.0__										
_____										
_20.0__										
_____										
_30.0__										
_____										
_40.0__										
_____										
_50.0__										
_____										
_60.0__										
____										
.0__										
_____										
_80.0__										
_____										
_90.0__										
_____										
_100.0_										

1. Record sample numbers for splitspoon/thin-walled tube samples taken from the subgrade.
2. For splitspoon samples, record the number of blows for the first, second and third 6 inches of penetration.
3. ***Refused*** - If the splitspoon is refused, place a Y in the ***REFUSAL*** column and complete ***Driving Length To Refusal*** column. Refusal is defined as less than 1 inch of penetration with 100 blows.
4. ***Driving Length To Refusal*** - Record penetration to refusal of splitspoon from the top of the pavement surface.
5. ***Inches Of Penetration*** - Record from start of splitspoon sampling procedure if 100 blows is reached before one foot of penetration. If penetration exceeds 12 inches before 100 blows is reached, enter middle 6 inches plus depth of penetration into the last 6 inches when 100 blows was reached (not including seating drive); record to nearest tenth of an inch.

GENERAL REMARKS:_____

CERTIFIED VERIFIED AND APPROVED DATE

_____ _____ _____-____-19___

Field Crew Chief SHRP Representative Month- Day- Year

Af ation:_____ Affiliation:_____

LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING SHEET NUMBER _____ OF _____
BA-TYPE BORE HOLE LOG
SAMPLING DATA SHEET 5

? REGION _____ STATE _____ STATE CODE __ __
EXPERIMENT NO _____ SPS PROJECT CODE __ __
ROUTE/HIGHWAY_____ Lane_____ Direction_____ TEST SECTION NO. __ __
SAMPLE/TEST LOCATION: □ Before Section □ After Section FIELD SET NO. __

OPERATOR_____ EQUIPMENT USED_____ BORING DATE___-___-___
SAMPLING AREA NO: SA-_____ LOCATION: STATION_____ OFFSET_____ feet from °/s
BORE HOLE NUMBER:_____ BORE HOLE SIZE: _____ (inch Diam.)

Scale (Inches)	Strata Change (Inches)	Sample Number (1)	Moisture Sample Number (2)	Material Description	Material Code
_____					
_10.0__					
_____					
_20.0__					
_____					
_30.0__					
_____					
_40.0__					
_____					
_50.0__					
_____					
_60.0__					
_____					
_70.0__					
_____					
_80.0__					
_____					
_90.0__					
_____					
_100.0_					

1. Record sample numbers for bulk samples taken from unbound layers and the subgrade.
2. Record sample numbers for samples taken from unbound base, subbase and subgrade for moisture content testing.

GENERAL REMARKS:_____

_____

CERTIFIED VERIFIED AND APPROVED DATE

_____ _____ _____-____-19___

Field Crew Chief SHRP Representative Month- Day- Year

Affiliation:_____ Affiliation:_____

LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING
TEST PIT LOG
SAMPLING DATA SHEET 6

SHEET NUMBER _____ OF _____

P REGION _____ STATE _____ STATE CODE __ __
EXPERIMENT NO _____ SPS PROJECT CODE __ __
ROUTE/HIGHWAY_____ Lane_____ Direction_____ TEST SECTION NO. __ __
SAMPLE/TEST LOCATION: ☐ Before Section ☐ After Section FIELD SET NO. __

TECHNICIAN_____ EQUIPMENT _____ EXPLORATION DATE___-___-___
SAMPLING AREA NO: SA-_____ LOCATION: STATION_____ OFFSET_____feet from °/s
TEST PIT NUMBER_____ PIT SIZE: (a) Length_____feet (b) Width_____feet

Scale (Inches)	Strata Change (Inches)	Moisture Sample No.	Bulk Sample No.	Material Description	Material Code
4					
8					
12					
20					
24					
28					
32					
36					
40					
44					
48					

GENERAL REMARKS:_____

CERTIFIED _____
Field Crew Chief
Affiliation:_____

VERIFIED AND APPROVED _____
SHRP Representative
Affiliation:_____

DATE
_____-_____-19___
Month- Day- Year

LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING SHEET NUMBER _____ OF _____
TEST PIT SKETCH
SAMPLING DATA SHEET 7

P REGION _____ STATE _____ STATE CODE __ __
EXPERIMENT NO _____ SPS PROJECT CODE __ __
ROUTE/HIGHWAY_____ Lane_____ Direction_____ TEST SECTION NO. __ __
SAMPLE/TEST LOCATION: ☐ Before Section ☐ After Section FIELD SET NO. __

TECHNICIAN_____ EQUIPMENT _____ EXPLORATION DATE___-___-___
SAMPLING AREA NO: SA-_____ LOCATION: STATION_____OFFSET_____feet from °/s
TEST PIT NUMBER_____ PIT SIZE: (a) Length_____feet (b) Width_____feet

This form is to be used to sketch the test pit as it was sampled. Show the dimensions of the test pit, the depth of each layer and the material type for each layer. Sketch the direction of traffic on the test pit illustration with an arrow in the direction of traffic.

GENERALREMARKS:_____

_____

~~~TIFIED VERIFIED AND APPROVED DATE

_____ _____ _____-____-19___

Field Crew Chief SHRP Representative Month- Day- Year

Affiliation:_____ Affiliation:_____
~~~

LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING
IN SITU DENSITY AND MOISTURE TESTS
SAMPLING DATA SHEET 8

SHEET NUMBER _____ OF _____

P REGION _____ STATE _____ STATE CODE __ __
EXPERIMENT NO _____ SPS PROJECT CODE __ __
ROUTE/HIGHWAY_____ Lane_____ Direction_____ TEST SECTION NO. __ __
SAMPLE/TEST LOCATION: ☐ Before Section ☐ Within Section FIELD SET NO. __
☐ After Section
OPERATOR_____ NUCLEAR DENSITY GAUGE I.D._____ TEST DATE___-___-____
SAMPLING AREA NO: SA-_____ LOCATION: STATION_____ OFFSET_____feet from °/s
TEST PIT NO:_____ DATE OF LAST MAJOR CALIBRATION___-___-___

DEPTH FROM SURFACE TO THE TOP OF THE LAYER, INCHES (See Sheet 5)						
LAYER DESCRIPTION						
MATERIAL TYPE:(G/T)						
DENSITY, pcf DENSITY COUNT (AASHTO T238-86) 1						
DENSITY, pcf DENSITY COUNT (AASHTO T238-86) 2						
DENSITY, pcf DENSITY COUNT (AASHTO T238-86) 3						
DENSITY, pcf DENSITY COUNT (AASHTO T238-86) 4						
AVERAGE DENSITY						
Method (A,B,or C)						
Rod Depth, inches						
MOISTURE CONTENT, % MOISTURE COUNT (AASHTO T239-86) 1						
MOISTURE CONTENT, % MOISTURE COUNT (AASHTO T239-86) 2						
MOISTURE CONTENT, % MOISTURE COUNT (AASHTO T239-86) 3						
MOISTURE CONTENT, % MOISTURE COUNT (AASHTO T239-86) 4						
AVERAGE MOISTURE, %						

GENERAL REMARKS:_____

CERTIFIED _____
Field Crew Chief
Affiliation:_____

VERIFIED AND APPROVED _____
SHRP Representative
Affiliation:_____

DATE
_____-____-19___
Month- Day- Year

LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING
SHOULDER PROBE LOG
SAMPLING DATA SHEET 9

SHEET NUMBER _____ OF _____

SHRP REGION _____ STATE _____ STATE CODE __ __
EXPERIMENT NO _____ SPS PROJECT CODE __ __
E/HIGHWAY_____ Lane_____ Direction_____ TEST SECTION NO. __ __
SAMPLE/TEST LOCATION: ☐ Before Section ☐ Within Section FIELD SET NO. __
☐ After Section
OPERATOR_____ EQUIPMENT USED_____ AUGERING DATE___-____-____
AUGER PROBE NUMBER_____ LOCATION STATION:_____ OFFSET:_____*feet from °/s*
TOP OF ROCK BASED ON:_____

Scale (feet)	Depth from Surface (Feet)	Material Description	Material Code
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

REFUSAL WITHIN 20 FEET (Y/N):_____ DEPTH TO REFUSAL:_____FEET)

GENERAL REMARKS:_____

CERTIFIED VERIFIED AND APPROVED DATE

_____ _____ _____-____-19___

eld Crew Chief SHRP Representative Month- Day- Year

filiation:_____ Affiliation:_____

LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING
SAMPLING FRESH PORTLAND CEMENT CONCRETE MIXTURES
SAMPLING DATA SHEET 11

SHEET NUMBER _____ OF _____

P REGION _____ STATE _____ STATE CODE __ __
EXPERIMENT NUMBER _____ SPS PROJECT CODE __ __
ROUTE/HIGHWAY_____ Lane_____ Direction_____ TEST SECTION NO. __ __
FIELD SET NO. __

PERSON PERFORMING SAMPLING

NAME _____ EMPLOYER _____

TITLE _____

SAMPLING LOCATION [__]

Batch Plant ..... 1 Hauling Truck before Paving 2
Hauling Truck during Paving ..... 3 Paver 4
Other ..... 5 (specify) _____

SAMPLE NUMBER (e.g. FC1) [__ __ __ __]

PCC MIX TEMPERATURE WHEN SAMPLED (°F) [__ __ __]

AMBIENT TEMPERATURE WHEN SAMPLED (°F) [__ __ __]

TIME SAMPLED (Military Time) [__ __ __ __]

DATE SAMPLED (Month - Day - Year) [__ __ - __ __ - __ __]

SLUMP, inches [__ __.__]

AIR CONTENT, percent [__.__]

CIMEN NUMBER [G X __ __][G X __ __]
[G Y __ __][G Y __ __]
[G Z __ __][G Z __ __]

[F __ __ __][F __ __ __][F __ __ __]

LABORATORY ID CODE [__ __ __ __]

DATE SHIPPED [__ __ - __ __ - __ __]

NOTES : X denotes 14 day cure Y denotes 28 day cure Z denotes 365 day cure

GENERAL REMARKS:_____

_____

_____

_____

CERTIFIED VERIFIED AND APPROVED DATE

_____ _____ ____-____-19___

Field Crew Chief SHRP Representative Month- Day- Year
Affiliation:_____ Affiliation:_____

LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING SHEET NUMBER _____ OF _____
LABORATORY SHIPMENT SAMPLES INVENTORY
FIELD OPERATIONS INFORMATION FORM 1

P REGION _____ STATE _____ STATE CODE __ __
EXPERIMENT NO _____ SPS PROJECT CODE __ __
ROUTE/HIGHWAY_____ Lane_____ Direction_____ TEST SECTION NO. __ __
SAMPLE/TEST LOCATION: ☐ Before Section ☐ After Section FIELD SET NO. __

SAMPLING AREA No: SA- _____ FIELD WORK COMPLETED ON ____-____-____

Note: Use a separate form for each sampling area. Use additional sheets if necessary. Include summary information (Field Operations Information Form 2) and "as actual" sampling location plan sheets with this material samples inventory.

SAMPLE LOCATION	SAMPLE NUMBER	SAMPLE SIZE	SAMPLE TYPE	SAMPLE MATERIAL	SAMPLE CONDITION	LAB*

* Enter number of laboratory, as specified below, each sample was sent to:

Lab No.(1) _____
Lab No.(2) _____
Lab No.(3) _____

GENERAL REMARKS:_____
_____
_____

CERTIFIED VERIFIED AND APPROVED DATE

_____ _____ _____-_____-19___

Field Crew Chief SHRP Representative Month- Day- Year

iliation:_____ Affiliation:_____

LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING SHEET NUMBER _____ OF _____
SUMMARY OF MATERIAL SAMPLES SENT TO EACH LABORATORY
FIELD OPERATIONS INFORMATION FORM 2

REGION _____ STATE _____ STATE CODE __ __
EXPERIMENT NO _____ SPS PROJECT CODE __ __
ROUTE/HIGHWAY_____ Lane_____ Direction_____ TEST SECTION NO. __ __
SAMPLE/TEST LOCATION: ☐ Before Section ☐ After Section FIELD SET NO. __

LABORATORY _____ WORK COMPLETED ON ____-____-____

NOTE: This is a summary of material samples sent to each laboratory based on the information from Field Operations Information Form 1. Complete one form for each laboratory that material samples were sent.

LAYER NO. (From Subgrade)	MATERIAL/SAMPLE TYPE	TOTAL NUMBER OF SAMPLES
_____	AC CORES:	4" Diameter_____ 6" Diameter_____ 12" Diameter_____
		AC Cores with Bound Base/Subbase _____
		AC Cores with PCC _____
		AC Cores with PCC and Bound Base/Subbase _____
		PCC Cores with Bound Base/Subbase _____
_____	AC MIX BULK SAMPLES:	Fifty Pound Samples - Virgin _____
		Recycled _____
_____	PCC CORES:	4" Diameter_____ 6" Diameter_____
__	BOUND BASE CORES:	4" Diameter_____
_____	UNBOUND BASE SAMPLES:	(a) BAGS (BULK)_____ (b) JARS (MOISTURE)_____
_____	BOUND SUBBASE CORES:	4" Diameter_____
_____	UNBOUND SUBBASE SAMPLES:	(a) BAGS (BULK)_____ (b) JARS (MOISTURE)_____
1	SUBGRADE SAMPLES:	(a) BAGS (BULK)_____ (b) JARS (MOISTURE)_____

(c) THIN-WALLED TUBES_____ (d) SPLITSPOON _____ JARS

GENERAL REMARKS:_____

_____

_____

_____

CERTIFIED VERIFIED AND APPROVED DATE

_____ _____ _____-_____-19___
Field Crew Chief SHRP Representative Month- Day- Year
Affiliation:_____ Affiliation:_____

LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING SHEET NUMBER _____ OF _____
LABORATORY SHIPMENT SAMPLES INVENTORY - MOLDED CONCRETE
FIELD OPERATIONS INFORMATION FORM 3

P REGION _____ STATE _____ STATE CODE __ __
EXPERIMENT NO _____ SPS PROJECT CODE __ __
ROUTE/HIGHWAY_____ Lane_____ Direction_____ TEST SECTION NO. __ __
FIELD SET NO. __

FIELD WORK COMPLETED ON ____-____-____

Note: Use one form for all fresh PCC samples collected for all sampling areas. Use additional sheets if necessary. Include "as actual" sampling location plan sheets with this material samples inventory.

SAMPLE LOCATION	SPECIMEN NUMBERS OF MOLDED SPECIMENS

LABORATORY ID CODE [__ __ __ __]

MOLDED PCC SPECIMENS SENT TO LABORATORY

LAYER NO. (From Subgrade)	SPECIMEN TYPE	TOTAL NUMBER OF SAMPLES
_____	PCC Molded Cylinders	_____
_____	PCC Molded Beams	_____

GENERAL REMARKS:_____

CERTIFIED _____ .d Crew Chief
Affiliation:_____

VERIFIED AND APPROVED _____ SHRP Representative
Affiliation:_____

DATE _____-____-19___ Month- Day- Year

SPS-7 CONSTRUCTION DATA SHEET 1 REFERENCE PROJECT STATION TABLE	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [0 0]

ORDER	TEST SECTION ID NO (1)	REFERENCE PROJECT STATION NUMBER		(4) CUT-FILL[1]	
		(2) START	(3) END	TYPE	STATION
1	__ __ __ __ __ __	0 + 0 0	__ __ __ __ + __ __	___	__ + __ __
2	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
3	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
4	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
5	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
6	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
7	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
8	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
9	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
10	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
11	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
12	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
13	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
14	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
15	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
16	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
17	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
18	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
19	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	__ + __ __
20	__ __ __ __ __ __	__ __ __ __ + __ __	__ __ __ __ + __ __	___	

5. SPS - GPS TEST SECTION EQUALITIES
   GPS section __ __ __ __ __ __ is the same as SPS section __ __ __ __ __ __
   GPS section __ __ __ __ __ __ is the same as SPS section __ __ __ __ __ __

6. INTERSECTIONS BETWEEN TEST SECTION ON THE PROJECT

ROUTE	PROJECT STATION NO.	RAMPS | EXIT	ENT	- - - INTERSECTION - - - | STOP	SIGNAL	UNSIG
_____	__ __ __ __ + __ __	____	____	____	____	____
_____	__ __ __ __ + __ __	____	____	____	____	____
_____	__ __ __ __ + __ __	____	____	____	____	____

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

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 2 REVISED LAYER DESCRIPTIONS	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

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

NOTES:

1. Layer 1 is subgrade soil, the highest numbered layer is the pavement surface.
2. Layer description codes:

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

   If milling was performed, the layers which were milled shall be assigned their previous layer number and material type. If the layer was completely removed by milling, it shall still be shown as a layer with a zero thickness.
3. Enter the material type classification codes from Tables A.5, A.6, A.7 and A.8 which best describes the material in each layer. If the layer was milled, enter the material classification code corresponding to the type material which was removed.
4. Enter the average thickness of each layer and the maximum, minimum, and standard deviation of the thickness measurements, if known. If a layer was partially milled, the remaining thickness of the layer shall be indicated.

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 3 PRE-OVERLAY SURFACE PREPARATION SKETCH	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 4 CONSTRUCTION QUALITY CONTROL MEASUREMENTS	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE MEASUREMENTS BEGAN (Month-Day- Year) [__ __-__ __-__ __]
2. DATE MEASUREMENTS COMPLETED [__ __-__ __-__ __]

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

4. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) ___

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 5 LAYER THICKNESS MEASUREMENTS	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE MEASUREMENTS BEGAN (Month - Day - Year) [__ __ - __ __ - __ __]
2. DATE MEASUREMENTS COMPLETED [__ __ - __ __ - __ __]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET ____ OF ____

STATION NUMBER	OFFSET (Inches)	SURFACE COURSE
__ + __ __	___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___	___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___
__ + __ __	___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___	___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___
__ + __ __	___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___	___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___
__ + __ __	___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___	___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___
__ + __ __	___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___	___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___
__ + __ __	___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___	___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___
__ + __ __	___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___	___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___ ___ ___ . ___
LAYER NUMBER		___ ___

PREPARER________________________ EMPLOYER______________________ DATE _______________

SPS-7 CONSTRUCTION DATA SHEET 6 MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

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

PREPARER _____ EMPLOYER _____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 7 PARTIAL DEPTH PATCHING FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE PATCHING OPERATIONS BEGAN (Month-Day-Year) [__ __ - __ __ - __ __]

2. DATE PATCHING OPERATIONS COMPLETED [__ __ - __ __ - __ __]

3. PRIMARY DISTRESS OCCURRENCE PATCHED (code from Table A.22) [__ __]
   Other (Specify)_____
   _____

4. SECONDARY DISTRESS OCCURRENCE PATCHED (code from Table A.22) [__ __]
   Other (Specify)_____
   _____

5. PATCHES
   Total Square Feet [__ __ __ __.]
   Number [__ __ .]
   Average Depth, Inches [__ __ . __]

6. METHOD USED FOR PATCH BOUNDARY DETERMINATION ___
   Visual...1 Ball Peen Hammer, Steel Rod, Chain or Equivalent...2
   Delam-Tech...3 Other (Specify)...4
   _____

7. METHOD USED TO CUT BOUNDARIES ___
   Diamond Blade Saw... 1 Carbide Blade Saw...2 None... 3 Air Hammer...4
   Cold Milling... 5 Other (Specify)...6
   _____

8. METHOD USED TO BREAK UP AND/OR REMOVE DETERIORATED CONCRETE ___
   Jackhammer...1 Cold Milling...2
   Other (Specify)...3 _____

9. METHOD FOR FINAL CLEANING OF PATCH AREA
   None...1 Sandblasting...2 Waterblasting...3
   Other (Specify)...4 _____

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 8 PARTIAL DEPTH PATCHING FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. PATCH MATERIAL USED [___]
   Portland Cement Concrete...1 Polymer Concrete...2 Epoxy Mortar... 3
   Other (Specify)...5 _____

2. BONDING AGENT [___]
   None... 1 Cement Grout... 2 Epoxy Resin... 3
   Other (Specify)...5 _____

3. MIXTURE DESIGN FOR PATCH MATERIAL, LB./CUBIC YARD
   Coarse Aggregate [___ ___ ___ ___.]
   Fine Aggregate [___ ___ ___ ___.]
   Cement [___ ___ ___ ___.]
   Water (Gallons/Cubic yd.) [___ ___ ___ ___.]

4. MAXIMUM SIZE OF COARSE AGGREGATE, INCHES ___ . ___

5. CEMENT TYPE USED [__ __]
   (See Cement Type Codes, Tables A.11)

6. AIR CONTENT, PERCENT BY VOLUME
   Mean [___ . ___ . ___]
   Range Min [___ . ___ . ___]
   Max [___ . ___ . ___]

7. ADMIXTURES [__ __]
   (See Cement Additive Codes, Table A.12) [__ __]

8. SLUMP, INCHES
   Mean [___ . ___ . ___]
   Range Min [___ . ___ . ___]
   Max [___ . ___ . ___]

9. COMPRESSIVE STRENGTH OF PATCH MATERIAL, PSI [___ ___ ___ ___.]
   Curing Time, Days [___ ___]
   If Unavailable, and Other Strength Test Conducted,
   Alternate Test [_____]
   Type of Loading [_____]
   Age, Days [___ ___]; Strength, PSI [___ ___ ___ ___ .]

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 9 PARTIAL DEPTH PATCHING FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. CURING METHOD METHOD 1 [___ ___]
   METHOD 2 [___ ___]

   None...1 Membrane Curing Compound...2 Burlap Curing Blankets... 3
   Waterproof Paper Blankets... 4 White Polyethylene Sheeting... 5
   Burlap-Polyethylene Blankets...6 Insulating Layers... 7
   Cotton Mat Curing...8 Hay...9
   Other (Specify)...10 _____

2. APPROXIMATE TIME BETWEEN PATCHING AND OPENING TO TRAFFIC, HOURS [___ ___]

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

4. METHOD OF CONSOLIDATING MATERIALS ___
   Vibrators...1 Vibrating Screeds...2 Troweling... 3
   Rodding/Tamping...4 Rolling...5
   Other (Specify)...6 _____

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

6. JOINT FORMING METHOD
   Shoulder ___
   Transverse ___
   Longitudinal ___

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

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 10 JOINT RESEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE JOINT SEALANT OPERATIONS BEGAN (Month-Day- Year) [__ __ - __ __ - __ __]

2. DATE JOINT SEALANT OPERATIONS COMPLETED [__ __ - __ __ - __ __]

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

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

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

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

7. CLEANING OF SIDEWALLS [__]
   None...l Air Blast...2 Sand Blast... 3 Water Blast ...4
   Other (Specify)...4 _____

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 11 JOINT RESEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

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

D1850 (ASTM) Concrete Joint Sealer, Cold-Application Type... 1
D1190 (ASTM) - M173 (AASHTO) Concrete Joint Sealer, Hot-Poured Elastic Type...2
D3406 (ASTM) - M282 (AASHTO) Joint Sealants, Hot-Poured, Elastomeric-Type, for PCC Pavements... 3
D3405 (ASTM) - M301 (AASHTO) Joint Sealants, Hot-Poured for Concrete and Asphalt Pavements...4
D3542 (ASTM) Preformed Polychloroprene Elastomeric Joint Seals for Bridges... 5
D2628 (ASTM) Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements...6
Other (Describe - if Silicone Material is Used Federal Spec. TT-S-001543A, Georgia D.O.T. Spec 833.06, or Equal Applies...7
_____
_____

Manufacturer Information on Type of Pressure Relief Joint Sealant
Manufacturer Name [_____]
Manufacturer Sealant Name [_____]

2. AVERAGE DEPTH OF TOP OF SEALANT PLACEMENT
BELOW PAVEMENT SURFACE, INCHES [__ . __]

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

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

4. TOTAL LINEAR FEET OF JOINTS SEALED
Transverse Joints [__ __ __ __ . __]
Longitudinal Joints [__ __ __ __ . __]

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

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 12 FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE PATCHING OPERATIONS BEGAN (Month-Day-Year) [__ __ - __ __ - __ __]

2. DATE PATCHING OPERATIONS COMPLETED [__ __ - __ __ - __ __]

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

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

5.

PATCHES	NUMBER	SQ. FEET
SLAB ONLY	[__ __]	[__ __ __ __]
SLAB AND BASE	[__ __]	[__ __ __ __]

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

7.

SLABS REPLACED	NUMBER	SQ. FEET
SLAB ONLY	[__ __]	[__ __ __ __]
SLAB AND BASE	[__ __]	[__ __ __ __]

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

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

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 13 FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

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

2. REINFORCING STEEL PLACED IN PATCH [__]
   No...l Yes... 2

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

	Dowel Bars	Tie Bars
6. REBAR NUMBER	[__ __]	[__ __]
7. BAR LENGTHS, INCHES	[__ __ . __]	[__ __ . __]
8. BAR SPACING, INCHES	[__ __ . __]	[__ __ . __]

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

10. NUMBER OF SAW CUTS PER PATCH (If Sawed) ___ ___

11. DEPTH OF TYPICAL BOUNDARY SAW CUT, INCHES __ __ . __

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

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

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 14 FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. METHOD OF REINFORCING STEEL PLACEMENT [__]
   Chairs...1 Between Layers of Concrete...2

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

3. CEMENT TYPE USED [__ __]
   (See Type Codes, Tables A.11)

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

5. ADMIXTURES [__ __]
   (See Cement Additive Codes, Table A.12) [__ __]

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

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

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

9. MAXIMUM SIZE OF COARSE AGGREGATE, INCHES __ . __

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

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

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 15 FULL DEPTH REPAIR DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. JOINT FORMING METHOD SHOULDER [__] TRANSVERSE [__] LONGITUDINAL [__]

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

2. WAS BOND BREAKER USED BETWEEN ADJACENT LANES? [__]

   Yes...1 No...2

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

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

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

5. TYPE OF TRANSVERSE JOINTS IN PATCHES ___ OR SLABS ___

   None... 1 All Expansion Joints...2 All Contraction Joints...3
   Mixture of Expansion and Contraction Joints... 4

6. WERE OLD JOINTS MATCHED? ___

   Yes... 1 No...2

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 16 LOAD TRANSFER RESTORATION DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE LOAD TRANSFER RESTORATION BEGAN (Month-Day- Year) [__ __ - __ __ - __ __]

2. DATE LOAD TRANSFER RESTORATION COMPLETED [__ __ - __ __ - __ __]

3. NUMBER OF JOINTS IN TEST SECTION [__ __ __]

4. NUMBER OF JOINT LOAD TRANSFER RESTORATION LOCATIONS [__ __ __]

5. NUMBER OF DEVICES PER JOINT [__ __ __]

6. LOCATION OF DOWELS OR SHEAR DEVICES (INCHES)

(DISTANCE FROM THE OUTER LANE EDGE TO THE CENTER OF EACH DEVICE)

lst [__ __ __ .]
2nd [__ __ __ .]
3rd [__ __ __ .]
4th [__ __ __ .]
5th [__ __ __ .]
6th [__ __ __ .]
7th [__ __ __ .]
8th [__ __ __ .]
9th [__ __ __ .]
10th [__ __ __ .]
11th [__ __ __ .]
12th [__ __ __ .]
13th [__ __ __ .]
14th [__ __ __ .]

7. DIAMETER OF RETROFIT DOWEL BARS, INCHES [__ . __ __]

8. MATERIAL USED TO BACKFILL SLOT/CORE HOLE [__]
   Cement Based Grout... 1 Polymer Concrete...2
   Epoxy Resin Grout... 3
   Other (Specify)...4 _____

9. BONDING AGENT USED BETWEEN EXISTING PCC AND BACKFILL MATERIAL [__]
   None...1 Epoxy...2 Cement/Water... 3
   Other (Specify)...4 _____

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 17 LOAD TRANSFER RESTORATION DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. LOAD TRANSFER EFFICIENCY BEFORE AND AFTER RESTORATION

	LOAD TRANSFER EFFICIENCY (%)			
	BEFORE RESTORATION		AFTER RESTORATION	
POINT DISTANCE (FEET)	APPROACH	LEAVE	APPROACH	LEAVE
[__ __ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]
[__ __ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]
[__ __ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]
[__ __ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]
[__ __ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]
[__ __ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]
[__ __ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]
[__ __ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]
[__ __ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]
[__ __ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]	[__ __ __ .]

2. DATE OF LOAD TRANSFER EFFICIENCY TESTS
   BEFORE RESTORATION (Month-Day-Year) [__ __ - __ __ - __ __]
   AFTER RESTORATION [__ __ - __ __ - __ __]

PREPARER________________________ EMPLOYER______________________ DATE _______________

SPS-7 CONSTRUCTION DATA SHEET 18 UNDERSEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE UNDERSEALING BEGAN (Month-Day- Year) [__ __ - __ __ - __ __]

2. DATE UNDERSEALING COMPLETED [__ __ - __ __ - __ __]

3. TYPE OF MIXTURE USED IN SUBSEALING [__]
   Cement-Loam Top Soil Slurry...1 Cement-Limestone Dust Slurry...2
   Cement-Pozzolan Slurry... 3 Cement-Fine Sand Slurry... 4
   Other (Specify)... 6 _____

MIX DESIGN OF PORTLAND CEMENT GROUT (Items 4. to 8.)

4. CEMENT TYPE (SEE CEMENT TYPE CODES, TABLE A.11) [__ __]
5. CEMENT TO SAND RATIO (BY WEIGHT) [__ . __]
6. WATER/CEMENT RATIO (BY WEIGHT) [__ . __ __]
7. ADDITIVE TYPE (SEE TABLE A.12) [__ __]
8. AMOUNT OF ADDITIVE (BY PERCENT OF CEMENT WEIGHT) [__ __ __ .]

9. FLUIDITY OF PORTLAND CEMENT GROUT [__ __ . __]
   (Flow Cone Method ASTM C939) (SEC)

10. CUBE COMPRESSIVE STRENGTH OF PORTLAND CEMENT GROUT, psi __ __ __ .

11. CURING PERIOD FOR PORTLAND CEMENT GROUT (DAYS) __ __

12. DETERMINATION OF AREA TO BE UNDERSEALED [__]
    Blanket Coverage...1 Deflection Data... 2
    Visual Signs of Pumping...3
    Other (Specify)...4 _____

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 19 UNDERSEALING DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES, CONTINUED	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DEPTH OF SUBSEALING HOLE FROM TOP OF SLAB (INCHES) [__ __ . __ __]

2. MAXIMUM ALLOWABLE PUMPING PRESSURE [__ __ __.]
   (Gauge at Plant) (PSI)

3. MAXIMUM SURGE PRESSURE (PSI) [__ __ __.]

4. SLABS IN TEST SECTION (JOINTED CONCRETE PAVEMENTS ONLY)
   Total Number [__ __ __ .] Number Sealed [__ __ __ .]

5. AVERAGE NUMBER OF HOLES PER SLAB SUBSEALED [__ __ .]
   (JCP Only)

6. TYPICAL NUMBER OF SUBSEALING HOLES NEAR JOINT OR CRACK [__ __ .]
   (JCP Only)

7. AVERAGE NUMBER OF HOLES PER LINEAL FOOT OF PAVEMENT [__ __ . __]
   (CRCP Only)

8. AVERAGE VOLUME OF MATERIAL PUMPED PER HOLE [__ __ . __]
   (Cubic Feet)

9. MONITORING OF LIFT [__]
   Deflection Device (e.g. , Benkelman Beam)... 1 Maximum Pumping Time...2
   Appearance of Material in Adjacent Joints or Cracks...3
   Other (Specify)... 4 _____

10. TYPICAL TIME BETWEEN SUBSEALING AND REOPENING TO TRAFFIC (HOURS) [__ __ .]

11. WERE DEFLECTION MEASUREMENTS TAKEN BEFORE AND AFTER SUBSEALING?
    Yes... 1 No...2
    BEFORE SUBSEALING [__]
    AFTER SUBSEALING [__]

12. TIME OF DAY THAT DEFLECTION MEASUREMENTS WERE CONDUCTED (HOURS)

	STARTING TIME	ENDING TIME
BEFORE SEALING	[__ __ __ __]	[__ __ __ __]
AFTER SEALING	[__ __ __ __]	[__ __ __ __]

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 20 SUBDRAINAGE RETROFIT FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE SUBDRAINAGE PLACEMENT BEGAN (Month-Day- Year) [__ __ - __ __ - __ __]

2. DATE SUBDRAINAGE PLACEMENT COMPLETED [__ __ - __ __ - __ __]

3. TYPE OF DRAINAGE PIPE [__]
   Clay Tile... 1 Concrete Tile...2 Vitrified Clay...3
   Perforated Plastic Bituminous Fiber...4 Perforated Corrugated Metal... 5
   Corrugated Plastic Tubing... 6 Drainage Mat... 7
   Other (Specify)... 8 _____

4. DIAMETER OF PIPE (INCHES) [__ __ . __]

5. DEPTH OF PIPE BELOW TOP OF PAVEMENT SURFACE (INCHES) [__ __ . __]

6. HORIZONTAL PLACEMENT OF PIPE FROM OUTER EDGE OF PAVEMENT (INCHES) [__ __ . __]

7. TYPE OF PRIMARY FILTER USED [__]
   Graded Aggregate...1 Uniformly Graded Aggregate (One Size)...2
   Woven Fabric...3 Non-Woven Fabric... 4 Porous PCC... 5
   Porous Bituminous Concrete... 6
   Other (Specify)... 7 _____

8. MAXIMUM PARTICLE SIZE OF PRIMARY FILTER MATERIAL (INCHES) [__ . __]

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

10. PERMEABILITY OF PRIMARY FILTER MATERIAL (FT/DAY) __ __ . __ __

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

12. AVERAGE OUTLET INTERVAL (FEET) [__ __ . __]

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

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 21 REFLECTIVE CRACK CONTROL DATA FOR PAVEMENTS WITH PORTLAND CEMENT CONCRETE SURFACES	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE REFLECTIVE CRACK CONTROL OPERATIONS BEGAN
   (Month-Day-Year) [__ __ - __ __ - __ __]

2. DATE REFLECTIVE CRACK CONTROL OPERATIONS COMPLETED [__ __ - __ __ - __ __]

3. TOTAL LINEAR FEET OF CRACKS TIED [__ __ __ __ .]

4. METHOD OF BAR PLACEMENT THROUGH TRANSVERSE CRACKS [__]
   Placed on top of crack...1 Recessed in pavement... 2
   Other (Specify)...3 _____

5. METHOD OF FORMING RECESSED SLOT [__]
   (Leave Blank if Answered "1" to Question 4)
   Saw Cut...1 Milled...2
   Other (Specify)...3 _____

6. BAR SIZE (No.) [__]

7. BAR LENGTH, inches [__ __ . __]

8. METHOD OF BAR PLACEMENT THROUGH LONGITUDINAL CRACKS [__]
   Placed on top of crack...1 Recessed in pavement... 2
   Cross stitched... 3
   Other (Specify)... 4 _____

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 22 MILLING OF PORTLAND CEMENT CEMENT CONCRETE SURFACES	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE MILLING OPERATIONS BEGAN (Month-Day-Year) [__ __ - __ __ - __ __]

2. DATE MILLING OPERATIONS COMPLETED [__ __ - __ __ - __ __]

3. AVERAGE DEPTH OF CUT, inches [__ . __]

4. CUTTING HEAD WIDTH, inches [__ __ __ . __]

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 23 SUFRACE REMOVAL/CLEANING FOR PAVEMENT WITH PORTLAND CEMENT CONCRETE SURFACES	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE SURFACE REMOVAL/CLEANING OPERATIONS BEGAN
   (Month-Day-Year) [__ __ - __ __ - __ __]

2. DATE SURFACE REMOVAL/CLEANING OPERATIONS COMPLETED [__ __ - __ __ - __ __]

3. METHOD OF REMOVAL/CLEANING [__]
   Shotblasting... 1 Sandblasting...2 Water Blasting w/abrasives... 3
   Water Blasting...4 Air Blowing... 5
   Other (Specify)...6 _____

4. REASON FOR REMOVAL/CLEANING [__]
   Provide rough surface for Overlay... 1
   Secondary Cleaning after Cold Milling... 2
   Secondary Cleaning after Shotblasting... 3
   Final Cleaning to remove dust & free particles... 4
   Other (Specify) ...5 _____

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 24 PORTLAND CEMENT CONCRETE OVERLAY PLAVEMENT OPERATIONS	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [__ __ - __ __ - __ __]
2. DATE PAVING OPERATIONS COMPLETED [__ __ - __ __ - __ __]

AIR TEMPERATURES DURING PLACEMENT (°F) (Items 3, 4, & 5)

3. MEAN [__ __ __ .]
4. MINIMUM [__ __ __ .]
5. MAXIMUM [__ __ __ .]

6. CURING PERIOD BEFORE OPENING TO ANY TRAFFIC (DAYS) [__ __ .]

7. TIME BEFORE SAWING (HOURS) [__ __ .]

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

9. METHOD USED TO TEXTURE CONCRETE [__]
   Tine... 1 Broom...2 Burlap Drag...3 Grooved Float...4
   Astro Turf... 5
   Other (Specify)...6 _____

10. TYPE OF GROUT USED FOR BONDED OVERLAYS [__]
    None...1 Water/Cement...2 Water/Cement/Sand... 3
    Epoxy-Resin...4
    Other (Specify)...5 _____

    MIX DESIGN OF PORTLAND CEMENT GROUT (Items 11. to 15.)

11. CEMENT TYPE (SEE CEMENT TYPE CODES, TABLE A.11) [__ __]
12. CEMENT TO SAND RATIO (BY WEIGHT) [__ . __]
13. WATER/CEMENT RATIO (BY WEIGHT) [__ . __ __]
14. ADDITIVE TYPE (SEE TABLE A.12) [__ __]
15. AMOUNT OF ADDITIVE (BY PERCENT OF CEMENT WEIGHT) [__ __ __ .]

.PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 25 BONDED PORTLAND CEMENT CONCRETE OVERLAY-JOINT DATA	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE JOINTING OPERATIONS BEGAN (Month-Day- Year) [__ __ - __ __ - __ __]

2. DATE JOINTING OPERATIONS COMPLETED [__ __ - __ __ - __ __]

3. AVERAGE CONTRACTION JOINT SPACING (FEET) [__ __ __ . __]
   (RANDOM JOINT SPACING, IF ANY: _____)

4. BUILT-IN EXPANSION JOINT SPACING (FEET) [__ __ __ __ .]

5. SKEWNESS OF JOINTS (FT/LANE) [__ . __]

6. AVERAGE INTERMEDIATE SAWED JOINT SPACING (FEET) [__ __ . __]

7. METHOD USED TO FORM TRANSVERSE JOINTS [__]
   Sawed.....1 Metal Insert
   Plastic Insert..... 2 (i.e., Uni-Tube).....3
   Other (Specify)... 4 _____

8. TYPE OF LONGITUDINAL JOINT (BETWEEN LANES) [__]
   Butt..... 1 Sawed Weakened Plane....3
   Keyed..... 2 Insert Weakened Plane.....4
   Other (Specify).... 5

9. TYPE OF SHOULDER-TRAFFIC LANE JOINT [__]
   Butt..... 1 Insert Weakened Plane....4
   Keyed..... 2 Tied Concrete Curb.....5
   Sawed Weakened Plane..3
   Other (Specify)..... 5 _____

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

11. TRANSVERSE JOINT SEALANT RESERVOIR WIDTH (INCHES) [__ . __ __]
12. TRANSVERSE JOINT SEALANT RESERVOIR DEPTH (INCHES) [__ . __ __]
13. LONGITUDINAL JOINT SEALANT RESERVOIR WIDTH (INCHES) [__ . __ __]
14. LONGITUDINAL JOINT SEALANT RESERVOIR DEPTH (INCHES) [__ . __ __]

15. JOINT SEALANT BACKER MATERIAL TYPE [__]
    Foam Backer Rod.....1 Tape..... 2 Rope....3
    None..... 4 Other (Specify)_____

16. JOINT SEALANT BACKER DIMENSION (INCHES) [__ . __ __]
    (Enter diameter of rod/rope or width of tape)

SHOULDER-TRAFFIC LANE JOINT SEALANT RESERVOIR (Items 17 and 18)

17. WIDTH (INCHES) [__ . __ __]
18. DEPTH (INCHES) [__ . __ __]

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 26 DELAMINATION OF PORTLAND CEMENT CONCRETE OVERLAY	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

1. DATE OF DELAMINATION DETECTION OPERATIONS (Month-Day-Year) [__ __ - __ __ - __ __]

2. METHOD OF DELAMINATION DETECTION [__]

   1 -- ELECTRO-MECHANICAL DEVICE
   2 -- CHAIN DRAG OR TAPPING

3. TOTAL AREA OF POSSIBLE DELAMINATION, square feet [__ __ __ __]

4. TOTAL NUMBER OF SLABS WITH DELAMINATION (JCP ONLY) [__ __ __]

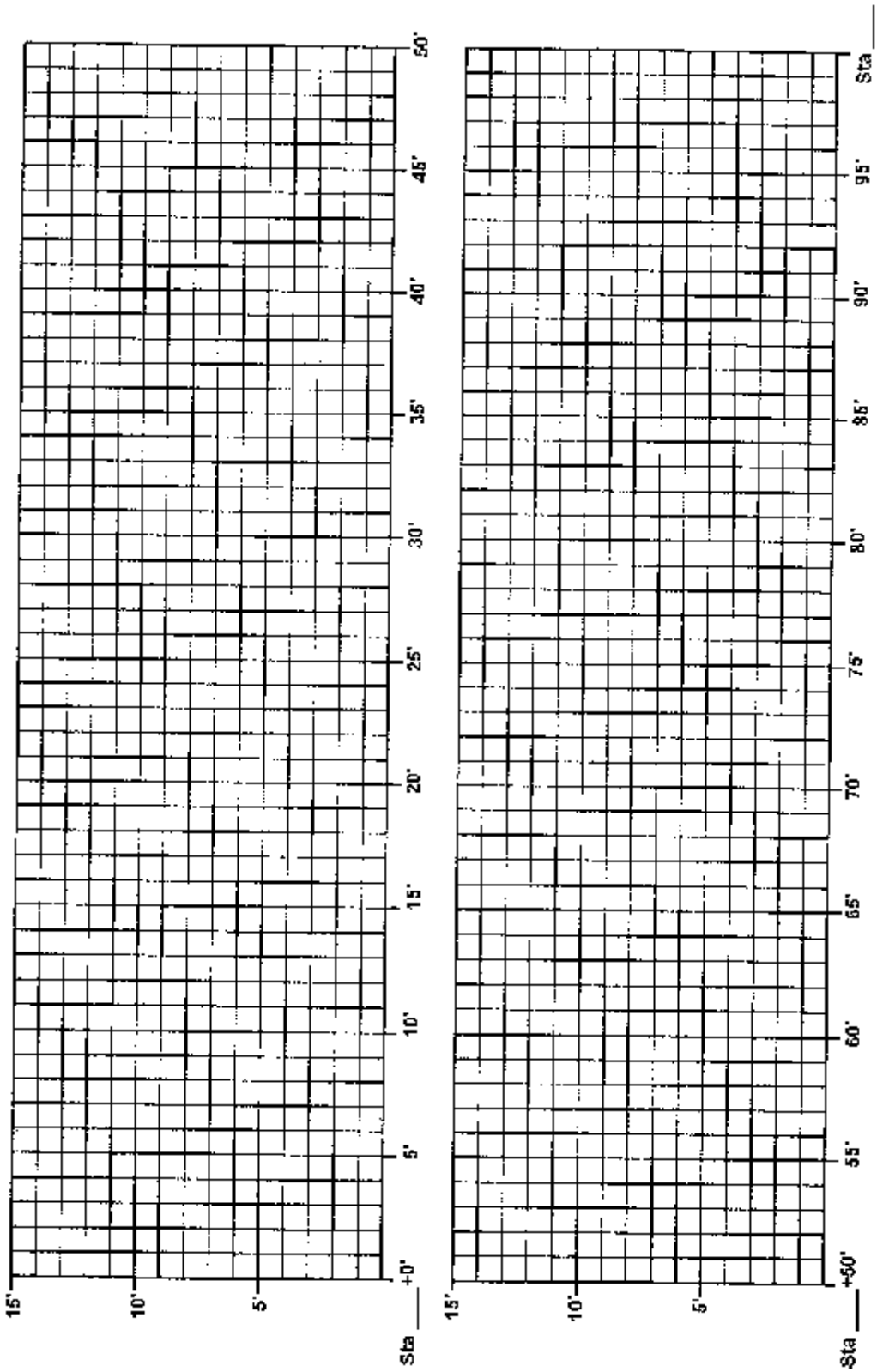
Number of map sheets used for this section _____ .

COMMENTS_____
_____
_____
_____
.

PREPARER_____ EMPLOYER_____ DATE _____

SPS-7 CONSTRUCTION DATA SHEET 27 DELAMINATION OF DETECTION SECTION MAP	* STATE CODE [__ __] * SPS PROJECT CODE [__ __] * TEST SECTION NO. [__ __]

SHEET __ OF __



PREPARER_____ EMPLOYER_____ DATE _____

APPENDIX B

DATA COLLECTION SHEETS

(Reproduced from SHRP-LTPP Data Collection Guide)

Revised June 13, 1988

*STATE ASSIGNED ID [__ __ __ __]

SHEET 1 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

PROJECT AND SECTION IDENTIFICATION

* 1.DATE OF DATA COLLECTION OR UPDATE (MO/YR) [__ __/__ __]

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

* 3.COUNTY OR PARISH [__ __ __.]

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

* 5.ROUTE SIGNING (NUMERIC CODE) [__.]

Interstate	1	State	3
U. S.	2	Other	4

* 6.ROUTE NUMBER [__ __ __ __ __.]

* 7.LTPP EXPERIMENT CODE (SEE TABLE A.3, APPENDIX A) [__ __.]

* 8.TYPE OF PAVEMENT (SEE CODES, TABLE A.4) [__ __.]

* 9.NUMBER OF THROUGH LANES (ONE DIRECTION) [__.]

*10.DIRECTION OF TRAVEL [__.]

East Bound	1	North Bound	3
West Bound	2	South Bound	4

SECTION LOCATION STARTING POINT

*11.MILEPOINT ..... [__ __ __.__ __]
*12.ELEVATION ..... [__ __ __ __ __]
*13.LATITUDE ..... [__ __° __ __' __ __.__ __"]
*14.LONGITUDE .....[__ __ __° __ __' __ __.__ __"]

*15.ADDITIONAL LOCATION INFORMATION (SIGNIFICANT LANDMARKS):[_____

_____

_____]

16.HPMS SAMPLE NUMBER (HPMS ITEM 28)

__ __ __ __ __ __ __ __ __ __ __ __

17.HPMS SECTION SUBDIVISION (HPMS ITEM 29) __.

Revised June 13, 1988

*STATE ASSIGNED ID [__ __ __ __]

SHEET 2 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION

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

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

* 3.SUBSURFACE DRAINAGE LOCATION [__.]
Continuous Along Test Section...1
Intermittent.....2

* 4.SUBSURFACE DRAINAGE TYPE [__.]

No Subsurface Drainage..1	Well System.....5
Longitudinal Drains.....2	Drainage Blanket with Longitudinal Drains...6
Transverse Drains.....3	
Drainage Blanket.....4	
Other (Specify)_____7	

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
* 5. SURFACE TYPE	__	[__]
6. TOTAL WIDTH (FEET)	__ __.	__ __.
7. PAVED WIDTH (FEET)	__ __.	__ __.
8. SHOULDER BASE TYPE (CODES-TABLES A.6)	__ __	__ __
9. SURFACE THICKNESS (INCHES)	__ __.__	__ __.__
10. BASE THICKNESS (INCHES)	__ __.__	__ __.__
ADDITIONAL DATA FOR PCC SHOULDERS:		
11. AVERAGE JOINT SPACING (FEET)	__ __ __.	__ __ __.
12. SKEWNESS OF JOINTS (FEET)	__.__	__.__
13. JOINTS MATCH PAVEMENT JOINTS? (YES - 1, NO - 2)	__	__
14. REINFORCED? (YES - 1, NO - 2)	__	__

15.DIAMETER OF LONGITUDINAL DRAINPIPES (INCHES) __.__

16.SPACING OF LATERALS (FEET) __ __ __.

NOTES:
1. For the LTPP studies, only the outside lane will be studied, so the number "1" should always be entered.

*STATE ASSIGNED ID [__ __ __ __]

SHEET 3

*STATE CODE [__ __]

INVENTORY DATA

*SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM

LAYER DESCRIPTIONS

LAYER[1] NUMBER	*LAYER[2] DESCRIPTION	*MATERIAL[3] TYPE CLASSIFICATION	<------ LAYER THICKNESS (IN) ------> *MEAN	MIN.	MAX.	STD. DEV.	*LAYER[4] TYPE
1	SUBGRADE(7)	[__ __]					[__]
2	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._	[__]
3	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._	[__]
4	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._	[__]
5	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._	[__]
6	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._	[__]
7	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._	[__]
8	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._	[__]
9	[__ __]	[__ __]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._	[__]

*DEPTH BELOW SURFACE TO "RIGID" LAYER (FEET) [__ __.__]
(ROCK, STONE, DENSE SHALE)

NOTES:

1. Layer 1 is subgrade soil, last layer is existing surface.

2. Layer description codes:

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

3. The material type classification codes for surface, base or subbase, subgrade, and seal coat or interlayer materials appear in Tables A.5, A.6, A.7 and A.8, respectively.

4. Layer Types:
   - A - HMAC Layer (Requires sheets 12-18 to be filled out)
   - P - PCC Layer (Requires sheets 5-11 to be filled out)
   - B - Base/Subbase Layers (Requires sheets 19 and 20 to be filled out)
   - G - Subgrade (Requires sheets 21 and 22 to be filled out)

Revised June 13, 1988

*STATE ASSIGNED ID [__ __ __ __]

SHEET 4 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM

AGE AND MAJOR PAVEMENT IMPROVEMENTS

* 1. DATE OF LATEST (RE)CONSTRUCTION (MONTH/YEAR) [__ __/__ __]

* 2. DATE SUBSEQUENTLY OPENED TO TRAFFIC (MONTH/YEAR) [__ __/__ __]

3. LATEST (RE)CONSTRUCTION COST PER LANE MILE (IN THOUSANDS OF DOLLARS)[1] __ __ __ __ __.

MAJOR IMPROVEMENTS SINCE LATEST (RE)CONSTRUCTION

* 4. YEAR	* 5. WORK TYPE CODE (TABLE A.17)	* 6. WORK QUANTITY (TABLE A.17 for units)	7. THICKNESS (INCHES)	8. TOTAL COST[1] (THOUSANDS OF DOLLARS PER LANE-MILE)
[__ __]	[__ __]	[__ __ __ __ __.]	__ __.__	__ __ __.
[__ __]	[__ __]	[__ __ __ __ __.]	__ __.__	__ __ __.
[__ __]	[__ __]	[__ __ __ __ __.]	__ __.__	__ __ __.
[__ __]	[__ __]	[__ __ __ __ __.]	__ __.__	__ __ __.
[__ __]	[__ __]	[__ __ __ __ __.]	__ __.__	__ __ __.
[__ __]	[__ __]	[__ __ __ __ __.]	__ __.__	__ __ __.

* 9. YEAR WHEN ROADWAY WIDENED [__ __]

*10. ORIGINAL NUMBER OF LANES (ONE DIRECTION) [__]

*11. FINAL NUMBER OF LANES (ONE DIRECTION) [__]

*12. LANE NUMBER OF LANE ADDED[2] [__]

NOTES 1. Cost is to represent pavement structure cost. Non-pavement costs such as cut and fill work, work on bridges, culverts, lighting, and guard rails are to be excluded.

2. A lane created by roadway widening should not be used for SHRP LTPP unless the pavement structure under the entire lane was constructed at the same time and is uniform.

*STATE ASSIGNED ID [__ __ __ __]

SHEET 5 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

PORTLAND CEMENT CONCRETE LAYERS

JOINT DATA

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

* 2.AVERAGE CONTRACTION JOINT SPACING (FEET) [__ __ __.__]

3. (RANDOM JOINT SPACING, IF ANY:_____)

* 4.BUILT-IN EXPANSION JOINT SPACING (FEET) [__ __ __ __.]

* 5.SKEWNESS OF JOINTS (FT/LANE) [__.__]

* 6.TRANSVERSE CONTRACTION JOINT LOAD TRANSFER SYSTEM [__]

Round Dowels.....1
Aggregate Interlock.....2
I-Beams.....3
Star Lugs.....4
Other (Specify)_____5

* 7.ROUND DOWEL DIAMETER (INCHES) [__.__ __]

* 8.DOWEL OR MECHANICAL LOAD TRANSFER DEVICE SPACING (INCHES) [__ __.]

9.AVERAGE INTERMEDIATE SAWED JOINT SPACING (FEET) __ __.__

DIMENSIONS FOR I-BEAM DOWEL BARS

10. HEIGHT, (INCHES) ..... __.__ __

11. WIDTH, (INCHES) ..... __.__ __

12.DISTANCE OF NEAREST DOWEL (OR MECHANICAL LOAD TRANSFER DEVICE) FROM OUTSIDE LANE-SHOULDER EDGE (INCHES) __ __.__

13.DOWEL LENGTH (INCHES) __ __.

14.DOWEL COATING __

Paint and/or Grease.....1
Plastic.....2
Monel.....3
Stainless Steel.....4
Epoxy.....5
Other (Specify)_____6

15.METHOD USED TO INSTALL MECHANICAL LOAD TRANSFER DEVICES __

Preplaced on Baskets.....1
Mechanically Installed.....2
Other (Specify)_____3

*STATE ASSIGNED ID [__ __ __ __]

SHEET 6 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

PORTLAND CEMENT CONCRETE LAYERS

JOINT DATA (CONTINUED)

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

* 2. METHOD USED TO FORM TRANSVERSE JOINTS [__]
Sawed.....1 Metal Insert
Plastic Insert.....2 (i.e., Uni-Tube).....3
Other (Specify)_____4

* 3. TYPE OF LONGITUDINAL JOINT (BETWEEN LANES) [__]
Butt.....1 Sawed Weakened Plane.....3
Keyed.....2 Insert Weakened Plane.....4
Other (Specify)_____5

* 4. TYPE OF SHOULDER-TRAFFIC LANE JOINT [__]
Butt.....1 Insert Weakened Plane.....4
Keyed.....2 Tied Concrete Curb.....5
Sawed Weakened Plane.....3
Other (Specify)_____6

5. TRANSVERSE JOINT SEALANT TYPE (AS BUILT) __
Preformed (Open Web).....1 Rubberized Asphalt.....3
Asphalt.....2 Low-Modulus Silicone.....4
Other (Specify)_____5

TRANSVERSE JOINT SEALANT RESERVOIR (AS BUILT)

6. WIDTH, (INCHES) ..... __.__ __
7. DEPTH, (INCHES) ..... __.__ __

LONGITUDINAL JOINT SEALANT RESERVOIR (AS BUILT)

8. WIDTH, (INCHES) ..... __.__ __
9. DEPTH, (INCHES) ..... __.__ __

10. BETWEEN LANE TIE BAR DIAMETER (INCHES) __.__ __

11. BETWEEN LANE TIE BAR LENGTH (INCHES) __ __.

12. BETWEEN LANE TIE BAR SPACING (INCHES) __ __.__

SHOULDER-TRAFFIC LANE JOINT SEALANT RESERVOIR (AS BUILT)

13. WIDTH, (INCHES) ..... __.__ __
14. DEPTH, (INCHES) ..... __.__ __

SHOULDER-TRAFFIC LANE JOINT TIE BARS (FOR CONCRETE SHOULDER)

15. DIAMETER (INCHES) __.__ __
16. LENGTH (INCHES) __ __.
17. SPACING (INCHES) __ __.

Revised June 13, 1988

*STATE ASSIGNED ID [__ __ __ __]

SHEET 7 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

PORTLAND CEMENT CONCRETE LAYERS
REINFORCING STEEL DATA

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

* 2.TYPE OF REINFORCING [__]
Deformed Bars.....1
Welded Wire Fabric.....2
Other (specify)_____3

* 3.TRANSVERSE BAR DIAMETER (INCHES) [__.__ __]

* 4.TRANSVERSE BAR SPACING (INCHES) [__ __.__]

* 5.LONGITUDINAL BAR DIAMETER (INCHES) [__.__ __]

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

7.DEPTH TO REINFORCEMENT FROM SLAB SURFACE (INCHES) [__.__]

8.LONGITUDINAL BAR SPACING (INCHES) __ __.__

9.YIELD STRENGTH OF REINFORCING (KSI) __ __.__

10.METHOD USED TO PLACE REINFORCEMENT __
Preset on Chairs.....1
Mechanically.....2
Between Layers of Concrete.....3
Other (Specify)_____4

11.LAP LENGTH OF LONGITUDINAL STEEL SPLICES (INCHES) __ __.
(CRCP ONLY)

*STATE ASSIGNED ID [__ __ __ __]

SHEET 8 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

PORTLAND CEMENT CONCRETE LAYERS
MIXTURE DATA

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

MIX DESIGN (LB./YD^3 - OVEN DRIED WEIGHT)

* 2. Coarse Aggregate ..... [__ __ __ __.]
* 3. Fine Aggregate ..... [__ __ __ __.]
* 4. Cement ..... [__ __ __ __.]
* 5. Water ..... [__ __ __ __.]

* 6. TYPE CEMENT USED (See Cement Type Codes, Table A.11) [__ __]
(If Other, Specify_____)

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

ENTRAINED AIR CONTENT, (PERCENT) (AASHTO T121, T152, OR T196)

* 8. Mean ..... [__.__]
Range:
9. Minimum Value ..... __.__
10. Maximum Value ..... __.__

	TYPE CODE	AMOUNT
*11. ADMIXTURE #1	[__ __]	[__ __ __.__ __ __]
*12. ADMIXTURE #2	[__ __]	[__ __ __.__ __ __]
*13. ADMIXTURE #3	[__ __]	[__ __ __.__ __ __]

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

SLUMP (Inches) (AASHTO T119 OR ASTM C143)

14. Mean..... __.__
Range:
15. Minimum Value..... __.__
16. Maximum Value..... __.__
17. Standard Deviation..... __.__
18. Number of Tests..... __ __ __.

Revised June 13, 1988

*STATE ASSIGNED ID [__ __ __ __]

SHEET 9 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

PORTLAND CEMENT CONCRETE LAYERS
MIXTURE DATA (CONTINUED)

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

	COMPOSITION OF COARSE AGGREGATE		TYPE	PERCENT
* 2.	Crushed Stone..1	Manufactured	[__]	[__ __ __.]
* 3.	Gravel.....2	Lightweight.....5	[__]	[__ __ __.]
* 4.	Crushed Gravel.3	Recycled Concrete..6	[__]	[__ __ __.]
	Crushed Slag...4			
	Other (Specify)_____7			

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

	COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
* 6.	Natural Sand.....1	[__]	[__ __ __.]
* 7.	Crushed or Manufactured Sand (From	[__]	[__ __ __.]
* 8.	Crushed Gravel or Stone).....2	[__]	[__ __ __.]
	Recycled Concrete.....3		
	Other (Specify)_____4		

9. INSOLUBLE RESIDUE, PERCENT (ASTM D3042) __ __ __.

10. GRADATION OF COARSE AGGREGATE

11. GRADATION OF FINE AGGREGATE

Sieve Size	% Passing	Sieve Size	% Passing
2".....	__ __ __	No. 4.....	__ __ __
1 1/2".....	__ __ __	No. 8.....	__ __ __
1".....	__ __ __	No. 10.....	__ __ __
7/8".....	__ __ __	No. 16.....	__ __
3/4".....	__ __ __	No. 30.....	__ __
5/8".....	__ __ __	No. 40.....	__ __
1/2".....	__ __	No. 50.....	__ __
3/8".....	__ __	No. 80.....	__ __
		No. 100....	__ __
		No. 200....	__ __

BULK SPECIFIC GRAVITIES:

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

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

*STATE ASSIGNED ID [__ __ __ __]

SHEET 10 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

PORTLAND CEMENT CONTRETE LAYERS
MIXTURE DATA (CONTINUED)

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

* 2.TYPE OF PAVER USED [__]
Slip-Form Paver.....1 Side-Form.....2
Other (Specify)_____3

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

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
3.	Coarse	__ __	__ __ __.__
4.	Coarse	__ __	__ __ __.__
5.	Coarse	__ __	__ __ __.__
6.	Coarse and Fine	__ __	__ __ __.__

7.METHOD USED TO CURE CONCRETE __
Membrane Curing Compound....1 Burlap-Polyethylene Blanket.5
Burlap Curing Blankets.....2 Cotton Mat Curing.....6
Waterproof Paper Blankets...3 Hay.....7
White Polyethylene Sheeting.4
Other (Specify)_____8

8.METHOD USED TO TEXTURE CONCRETE __
Tine.....1 Grooved Float.....4
Broom.....2 Astro Turf.....5
Burlap Drag.....3
Other (Specify)_____6

ELASTIC MODULUS (KSI)

9. MEAN ..... __ __ __ __ __.

10. MINIMUM ..... __ __ __ __ __.

11. MAXIMUM ..... __ __ __ __ __.

12. NUMBER OF TESTS ..... __ __.

13. STD. DEV. ..... __ __ __ __ __.

14.METHOD FOR DETERMINATION OF ELASTIC MODULUS __
Compression Test on Cores (ASTM C469).....1
Compression Test on Cylinders Molded
During Construction (ASTM C469).....2
Calculated Using ACI Relation Between
Elastic Modulus and Compressive Strength
(ACI 318, Section 8.5) 3
Other (Specify)_____4

Revised June 13, 1988

*STATE ASSIGNED ID [__ __ __ __]

SHEET 11 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

PORTLAND CEMENT CONCRETE LAYERS
STRENGTH DATA

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

FLEXURAL STRENGTH[1] (MODULUS OF RUPTURE) (PSI)

* 2. TYPE OF TEST..... [__]
THIRD-POINT LOADING (AASHTO T97 OR ASTM C78) 1
CENTER-POINT LOADING (AASHTO T177 OR ASTM C293) .. 2

* 3. AGE (DAYS)..... [__ __ __.]

* 4. MEAN..... [__ __ __ __ __.]

5. MINIMUM..... __ __ __ __ __.

6. MAXIMUM..... __ __ __ __ __.

7. NUMBER OF TESTS..... __ __.

8. STD. DEV..... __ __ __ __ __.

COMPRESSIVE STRENGTH OF CONCRETE (PSI)
(TEST METHOD AASHTO T22 OR ASTM C39)

* 9. AGE (DAYS)..... [__ __ __.]

*10. MEAN..... [__ __ __ __ __.]

11. MINIMUM..... __ __ __ __ __.

12. MAXIMUM..... __ __ __ __ __.

13. NUMBER OF TESTS..... __ __.

14. STD. DEV..... __ __ __ __ __.

SPLITTING TENSILE STRENGTH OF CONCRETE (PSI)
(TEST METHOD AASHTO T198 OR ASTM C496)

15. AGE (DAYS)..... [__ __ __.]

16. MEAN..... [__ __ __ __ __.]

17. MINIMUM..... __ __ __ __.

18. MAXIMUM..... __ __ __ __.

19. NUMBER OF TESTS..... __ __.

20. STD. DEV..... __ __ __ __.

NOTE 1: For new construction of test sections for SHRP LTPP, use third point loading.

*STATE ASSIGNED ID [__ __ __ __]

SHEET 12 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

PLANT MIXED ASPHALT BOUND LAYERS
AGGREGATE PROPERTIES

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

COMPOSITION OF COARSE AGGREGATE			TYPE	PERCENT
* 2.	Crushed Stone.....1	Crushed Slag.....4	[__]	[__ __ __.]
* 3.	Gravel.....2	Manufactured	[__]	[__ __ __.]
* 4.	Crushed Gravel.....3	Lightweight.....5	[__]	[__ __ __.]
	Other (Specify)_____6			

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

COMPOSITION OF FINE AGGREGATE		TYPE	PERCENT
* 6.	Natural Sand.....1	[__]	[__ __ __.]
* 7.	Crushed or Manufactured Sand (From	[__]	[__ __ __.]
* 8.	Crushed Gravel or Stone).....2	[__]	[__ __ __.]
	Recycled Concrete.....3		
	Other (Specify)_____4		

* 9. TYPE OF MINERAL FILLER [__]

Stone Dust.....1		Portland Cement....3	
Hydrated Lime.....2		Fly Ash.....4	
Other (Specify)_____5			

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

TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
10. Coarse	__ __	__ __ __.__ __ __
11. Coarse	__ __	__ __ __.__ __ __
12. Coarse	__ __	__ __ __.__ __ __
13. Coarse	__ __	__ __ __.__ __ __

14. POLISH VALUE OF COARSE AGGREGATES [__ __.]
SURFACE LAYER ONLY (AASHTO T279, ASTM D3319)

*STATE ASSIGNED ID [__ __ __ __]

SHEET 13

INVENTORY DATA

LTPP PROGRAM

*STATE CODE [__ __]

*SHRP SECTION ID [__ __ __ __]

PLANT MIXED ASPHALT BOUND LAYERS

AGGREGATE PROPERTIES (CONTINUED)

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

* 2. GRADATION OF COMBINED AGGREGATES

Sieve Size or No.	% Passing	Sieve Size or No.	% Passing
2".....	[__ __ __]	No. 4.....	[__ __]
1 1/2".....	[__ __ __]	No. 8.....	[__ __]
1".....	[__ __ __]	No. 10.....	[__ __]
7/8".....	[__ __ __]	No. 16.....	[__ __]
3/4 ".....	[__ __ __]	No. 30.....	[__ __]
5/8".....	[__ __ __]	No. 40.....	[__ __]
1/2".....	[__ __ __]	No. 50.....	[__ __]
3/8".....	[__ __]	No. 80.....	[__ __]
		No. 100.....	[__ __]
		No. 200.....	[__ __]

BULK SPECIFIC GRAVITIES:

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

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

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

* 6. Aggregate Combination (Calculated) [__.__ __ __]

7.EFFECTIVE SPECIFIC GRAVITY OF AGGREGATE COMBINATION (Calculated) __.__ __ __

*STATE ASSIGNED ID [__ __ __ __]

SHEET 14 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

PLANT MIXED ASPHALT BOUND LAYERS
ASPHALT CEMENT PROPERTIES

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

* 2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [__ __]
(IF OTHER, SPECIFY_____)

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

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

ORIGINAL ASPHALT CEMENT PROPERTIES

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

* 6. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES)
(AASHTO T201) [__ __ __ __.__ __]

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

ASPHALT MODIFIERS (SEE TYPE CODE, TABLE A.15)

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

(IF OTHER, SPECIFY TYPE _____)

10. DUCTILITY AT 77°F (CM)
(AASHTO T51) __ __ __.

11. DUCTILITY AT 39.2°(CM)
(AASHTO T51) __ __ __.

12. TEST RATE FOR DUCTILITY MEASUREMENT
AT 39.2°F (CM/MIN) __ __ __.

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

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) __ __ __.

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

Revised June 13, 1988

*STATE ASSIGNED ID [__ __ __ __]

SHEET 15 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM

PLANT MIXED ASPHALT BOUND LAYERS

ASPHALT CEMENT PROPERTIES (CONTINUED)

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

LABORATORY AGED ASPHALT CEMENT PROPERTIES

2. TEST PROCEDURE USED TO MEASURE AGING EFFECTS __

ASTM D1754 - THIN FILM OVEN TEST.....1
ASTM D2872 - ROLLING THIN FILM OVEN TEST...2
OTHER (SPECIFY)_____3

3. VISCOSITY OF ASPHALT AT 140°F (POISE) (AASHTO T202) __ __ __ __ __ __.

4. VISCOSITY OF ASPHALT AT 275°F (CENTISTOKES) (AASHTO T201) __ __ __ __.__ __

5. DUCTILITY AT 77°F (CM) (AASHTO T51) __ __ __.

6. DUCTILITY AT 39.2°F (CM) (AASHTO T51) __ __ __.

7. TEST RATE FOR DUCTILITY MEASUREMENT AT 39.2°F (CM/MIN) __ __.__

8. PENETRATION AT 77°F, 100 g., 5 Sec. (TENTHS OF A MM) (AASHTO T49) __ __ __.

9. PENETRATION AT 39.2°F, 200 g., 60 Sec. (TENTHS OF A MM) (AASHTO T49) __ __.

10. RING AND BALL SOFTENING POINT (°F) (AASHTO T53) __ __ __.

11. WEIGHT LOSS (PERCENT) __.__

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

*STATE ASSIGNED ID [__ __ __ __]

SHEET 16 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM

PLANT MIXED ASPHALT BOUND LAYERS

ORIGINAL MIXTURE PROPERTIES

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

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

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

BULK SPECIFIC GRAVITY (ASTM D1188)

* 4.	MEAN .....[__.__ __ __]	NUMBER OF TESTS	__ __.
5.	MINIMUM ..... __.__ __ __	MAXIMUM	__.__ __ __
6.		STD. DEV.....	__.__ __ __

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

* 7.	MEAN .....[__ __.__]	NUMBER OF SAMPLES	__ __.
8.	MINIMUM ..... __ __.__	MAXIMUM	__ __.__
9.		STD. DEV.	__ __.__

PERCENT AIR VOIDS

*10.	MEAN .....[__ __.__]	NUMBER OF SAMPLES	__ __.
11.	MINIMUM ..... __ __.__	MAXIMUM	__ __.__
12.		STD. DEV.	__ __.__

13. VOIDS IN MINERAL AGGREGATE (PERCENT) __ __.__

14. EFFECTIVE ASPHALT CONTENT (PERCENT) __ __.__

15. MARSHALL STABILITY (LBS) (AASHTO T245 OR ASTM D1559) __ __ __ __.

16. NUMBER OF BLOWS __ __

17. MARSHALL FLOW (HUNDREDTHS OF AN INCH) __ __ __ __.
(AASHTO T245 OR ASTM D1559)

18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) __ __ __.

19. HVEEM COHESIOMETER VALUE (GRAMS/25 MM OF WIDTH)
(AASHTO T246 OR ASTM D1561) __ __ __ __.

*STATE ASSIGNED ID [__ __ __ __]

SHEET 17 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

PLANT MIXED ASPHALT BOUND LAYERS

ORIGINAL MIXTURE PROPERTIES

CONTINUED

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

* 2.TYPE ASPHALT PLANT [__]

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

OTHER (SPECIFY)_____3

* 3.TYPE OF ANTISTRIPPING AGENT USED
(SEE TYPE CODES, TABLE A.21) [__ __]
(Other, Specify_____)

* 4.AMOUNT OF ANTISTRIPPING AGENT USED LIQUID OR SOLID CODE [__]

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

6.MOISTURE SUSCEPTIBILITY TEST TYPE __

1 - AASHTO T165 (ASTM D1075)
2 - TEXAS FREEZE-THAW PEDESTAL TEST (REF. 21)
3 - TEXAS BOILING TEST (REF. 22)
4 - REVISED LOTTMAN PROCEDURE (AASHTO T283)
5 - OTHER (SPECIFY) _____

MOISTURE SUSCEPTIBILITY TEST RESULTS:

7. HVEEM STABILITY NO. __ __

8. PERCENT STRIPPED __ __

9. TENSILE STRENGTH RATIO (AASHTO T283) __.__ __

10. INDEX OF RETAINED STRENGTH (AASHTO T165) __ __ __.

Revised June 13, 1988

*STATE ASSIGNED ID [__ __ __ __]

SHEET 18 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

PLANT-MIXED ASPHALT BOUND LAYERS
CONSTRUCTION DATA

* 1. LAYER NUMBER (SEE SHEET 3) [__]

2. MEAN MIXING TEMPERATURE (°F) __ __ __.

LAYDOWN TEMPERATURES (°F)

3. MEAN ..... __ __ __ NUMBER OF TESTS ..... __ __
4. MINIMUM ..... __ __ __ MAXIMUM ..... __ __ __
5. STD. DEV. ..... __ __ __

	ROLLER CODE	ROLLER # DESCRIPTION	GROSS WGT (TONS)	TIRE PRES. (PSI)	FREQ. (VIBR/MIN)	AMPLITUDE (IN)	SPEED (MPH)
6.	A	STEEL-WHL TANDEM	__ __.__				
7.	B	STEEL-WHL TANDEM	__ __.__				
8.	C	STEEL-WHL TANDEM	__ __.__				
9.	D	STEEL-WHL TANDEM	__ __.__				
10.	E	PNEUMATIC-TIRED	__ __.__	__ __ __.			
11.	F	PNEUMATIC-TIRED	__ __.__	__ __ __.			
12.	G	PNEUMATIC-TIRED	__ __.__	__ __ __.			
13.	H	PNEUMATIC-TIRED	__ __.__	__ __ __.			
14.	I	SINGLE-DRUM VIBR.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
15.	J	SINGLE-DRUM VIBR.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
16.	K	SINGLE-DRUM VIBR.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
17.	L	SINGLE-DRUM VIBR.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
18.	M	DOUBLE-DRUM VIBR.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
19.	N	DOUBLE-DRUM VIBR.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
20.	O	DOUBLE-DRUM VIBR.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
21.	P	DOUBLE-DRUM VIBR.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
22.	Q	OTHER _____					

COMPACTION DATA

	First Lift	Second Lift	Third Lift	Fourth Lift
Breakdown				
23. Roller Code # (A-Q)	__	__	__	__
24. Coverages	__ __.	__ __.	__ __.	__ __.
Intermediate				
25. Roller Code # (A-Q)	__	__	__	__
26. Coverages	__ __.	__ __.	__ __.	__ __.
Final				
27. Roller Code # (A-Q)	__	__	__	__
28. Coverages	__ __.	__ __.	__ __.	__ __.
29. Mean Air Temp (°F)	__ __ __.	__ __ __.	__ __ __.	__ __ __.
30. Compacted Thick. (in)	__.__	__.__	__.__	__.__
31. Curing Period (days)	__ __.	__ __.	__ __.	__ __.

*STATE ASSIGNED ID [__ __ __ __]

SHEET 19 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

UNBOUND OR STABILIZED BASE OR SUBBASE MATERIAL DESCRIPTION

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

* 2. AASHTO SOIL CLASSIFICATION (SEE CODES, TABLE A.10) [__ __]

* 3. ATTERBERG LIMITS (ASTM D4318)
PI ..... [__ __.] LL ..... [__ __.] PL ..... [__ __.]

4. MAXIMUM LAB DRY DENSITY (PCF) __ __ __.

5. OPTIMUM LAB MOISTURE CONTENT (PERCENT) __ __.__

6. TEST USED TO MEASURE MAXIMUM DRY DENSITY __
Standard AASHTO T99.....1 ASTM D558.....4
Modified AASHTO T180.....2 ASTM D4223.....5
AASHTO T134 (SOIL-CEMENT)..3
Other (SPECIFY)_____6

7. COMPACTIVE ENERGY FOR 'OTHER' METHOD
(FT.-LBS./CU.IN.) __ __.__

IN SITU DRY DENSITY (PCF)

8. MEAN ..... __ __ __ NUMBER OF SAMPLES .... __ __
9. MINIMUM ..... __ __ __ MAXIMUM ..... __ __ __
10. STD. DEV. ..... __ __ __

IN SITU MOISTURE CONTENT (PERCENT OF DRY WEIGHT)

11. MEAN ..... __ __ __ NUMBER OF SAMPLES .... __ __
12. MINIMUM ..... __ __ __ MAXIMUM ..... __ __ __
13. STD. DEV. ..... __ __ __

14. COARSE GRADATION OF BASE/SUBBASE MATL.

15.

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

FINE GRADATION OF BASE/SUBBASE MATL.

Sieve Size or No.	% Passing
No. 4	__ __
No. 8	__ __
No. 10	__ __
No. 16	__ __
No. 30	__ __
No. 40	__ __
No. 50	__ __
No. 80	__ __
No. 100	__ __
No. 200	__ __

*STATE ASSIGNED ID [__ __ __ __]

SHEET 20 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

UNBOUND OR STABILIZED BASE OR

SUBBASE MATERIAL DESCRIPTION (CONTINUED)

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

TYPE AND PERCENT STABILIZING AGENT (FOR STABILIZED LAYERS ONLY)

* 2. STABILIZING AGENT 1 TYPE CODE [__] PERCENT [__ __.__]
* 3. STABILIZING AGENT 2 TYPE CODE [__] PERCENT [__ __.__]

STABILIZING AGENT TYPE CODES

Asphalt Cement	1	Lime	5
Emulsified Asphalt	2	Fly Ash, Class C	6
Cutback Asphalt	3	Fly Ash, Class N	7
Portland Cement	4		
Other (Specify) _____	8		

* 4. ADMIXTURES: TYPE [__] PERCENT [__ __.]

Calcium Chloride	1	Magnesium Chloride	3
Sodium Chloride	2		
Other (Specify) _____	4		

COMPRESSIVE STRENGTH (PSI)

* 5. MEAN .....[__ __ __] NUMBER OF TESTS ..... __ __
6. MINIMUM ..... __ __ __ MAXIMUM ..... __ __ __
7. STD. DEV. ..... __ __ __

* 8. TYPE OF COMPRESSION TEST [__]

AASHTO T167 (ASTM D1074)	1	AASHTO T220	2
AASHTO T24 (ASTM D1633)	2	AASHTO T234 (ASTM D2850)	4
Other (Specify) _____	5		

* 9. CONFINING PRESSURE (PSI)[1] [__ __.__]

10. CALCIUM CARBONATE CONTENT (PERCENT) (ASTM D4373) __ __ __.

11. CALIFORNIA BEARING RATIO (CBR) (AASHTO T193 OR ASTM D3668) __ __ __.

12. RESISTANCE (R-VALUE) (ASTM D2844) __ __ __.

13. MODULUS OF SUBGRADE REACTION (K-VALUE) (PSI/SQ.IN.) __ __ __.

14. TYPE OF TEST __

AASHTO T221 OR ASTM D1195	1	AASHTO T222	2

NOTE 1: If the test is unconfined, enter "0.0".

*STATE ASSIGNED ID [__ __ __ __]

SHEET 21 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

SUBGRADE DATA

* 1. AASHTO SOIL CLASSIFICATION (SEE CODES, TABLE A.10) [__ __]
2. CALIFORNIA BEARING RATIO (CBR) (AASHTO T193 OR ASTM D3668) __ __ __.
3. RESISTANCE (R-VALUE) (AASHTO T190 OR ASTM D2844) __ __ __.
4. MODULUS OF SUBGRADE REACTION (K-VALUE) (PSI/SQ.IN.) __ __ __.
5. TYPE OF TEST __
   AASHTO T221 OR ASTM D1195... 1 AASHTO T222..... 2
6. PERCENT PASSING NO. 40 SIEVE __ __.__
7. PERCENT PASSING NO. 200 SIEVE __ __.__
8. PLASTICITY INDEX (AASHTO T90 OR ASTM D4318) __ __.
9. LIQUID LIMIT (AASHTO T89 OR ASTM D4318) __ __.
10. MAXIMUM LAB DRY DENSITY (PCF) __ __ __.
11. OPTIMUM LAB MOISTURE CONTENT (PERCENT) __ __.__
12. TEST USED TO MEASURE MAXIMUM DRY DENSITY __
    STANDARD AASHTO (T-99)..... 1 MODIFIED AASHTO (T-180).. 2
    Other (Specify)_____3
13. COMPACTIVE ENERGY FOR "OTHER" METHOD (FT.-LBS./CU.IN.) __ __.__

IN SITU DRY DENSITY (PERCENT OF OPTIMUM)

14. MEAN ..... __ __ __ NUMBER OF TESTS ..... __ __
15. MINIMUM ..... __ __ __ MAXIMUM ..... __ __ __
16. STD. DEV. ..... __ __ __

IN SITU MOISTURE CONTENT (PERCENT OF OPTIMUM)

17. MEAN ..... __ __ __.__ NUMBER OF TESTS ..... __ __
18. MINIMUM ..... __ __ __.__ MAXIMUM ..... __ __ __.__
19. STD. DEV. ..... __ __ __.__

IN SITU DRY DENSITY (PCF)

20. MEAN ..... __ __ __ NUMBER OF TESTS ..... __ __
21. MINIMUM ..... __ __ __ MAXIMUM ..... __ __ __
22. STD. DEV. ..... __ __ __

IN SITU MOISTURE CONTENT (PERCENT OF DRY WEIGHT)

23. MEAN ..... __ __ __ NUMBER OF TESTS ..... __ __
24. MINIMUM ..... __ __ __ MAXIMUM ..... __ __ __
25. STD. DEV. ..... __ __ __

*STATE ASSIGNED ID [__ __ __ __]

SHEET 22 *STATE CODE [__ __]

INVENTORY DATA *SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM _____

SUBGRADE DATA (CONTINUED)

RELATIVE DENSITY OF COHESIONLESS FREE-DRAINING SOILS
(ASTM D2049)

MEASURED DENSITIES FROM LABORATORY TESTS (PCF):

1. MINIMUM ..... __ __ __.__ MAXIMUM ..... __ __ __.__

RELATIVE DENSITIES (PERCENT):

2. MEAN ..... __ __.__ NUMBER OF TESTS ..... __ __
3. MINIMUM ..... __ __.__ MAXIMUM ..... __ __.__
4. STD. DEV. ..... __ __.__

5. SOIL SUCTION (TSF) (AASHTO T273) __ __ __.__

6. EXPANSION INDEX __ __ __.
(NEW TEST UNDER COMMITTEE BALLOT BY ASTM IN DEC. 1987)

SWELL PRESSURE (PSI)
7. TEST VALUE __ __ __.
8. TEST CODE __
AASHTO T190 OR ASTM D2844.1 AASHTO T258, Method 1..2
Other _____3

9. PERCENT BY WEIGHT FINER THAN 0.02MM[1] __ __.__

10. AVERAGE RATE OF HEAVE DURING STANDARD
LABORATORY FREEZING TEST (MILLIMETERS/DAY)[1] __ __.__

11. FROST SUSCEPTIBILITY CLASSIFICATION CODE[1] __

Negligible.....1	Medium.....4
Very Low.....2	High.....5
Low.....3	Very High.....6

NOTE 1: This data is only required in "Freeze Zones" where frost may be expected to penetrate into the subgrade.

Revised August 30, 1989

SHEET 1

MAINTENANCE DATA

LTPP PROGRAM

*STATE ASSIGNED ID _ _ _ _

*STATE CODE _ _

*SHRP SECTION ID _ _ _ _

HISTORICAL MAINTENANCE INFORMATION[1]

1 *YEAR	2 *MAINT. CASE NO. (CASE)	3 *WORK TYPE CODE (TABLE A.17)	4 *MAINTENANCE LOCATION CODE (TABLE A.18)	5 *MAINT. MATERIAL CODE (TABLE A.19)	6 *WORK QUANTITY	7 *THICKNESS (INCHES)	8 *TOTAL COST[2] (THOUSANDS OF DOLLAR PER LANE-MILE)
_ _	_ _ _	_ _	_ _	_ _	_ _ _ _ _.	_ _._	_ _ _.
_ _	_ _ _	_ _	_ _	_ _	_ _ _ _ _.	_ _._	_ _ _.
_ _	_ _ _	_ _	_ _	_ _	_ _ _ _ _.	_ _._	_ _ _.
_ _	_ _ _	_ _	_ _	_ _	_ _ _ _ _.	_ _._	_ _ _.
_ _	_ _ _	_ _	_ _	_ _	_ _ _ _ _.	_ _._	_ _ _.
_ _	_ _ _	_ _	_ _	_ _	_ _ _ _ _.	_ _._	_ _ _.

Note 1. This data will frequently be very difficult to convert from existing records for pre-SHRP monitoring work, but it is sufficiently important that every effort should be made to obtain it.

Note 2. Maintenance costs should be converted to thousands of dollars per lane-mile for uniformity with other cost data.

*STATE ASSIGNED ID [__ __ __ __]

SHEET 39

*STATE CODE [__ __]

REHABILITATION DATA

*SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM

PORTLAND CEMENT CONCRETE OVERLAY MIXTURE DATA

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

MIX DESIGN (LB./CU.YD. - OVEN DRIED WEIGHT) (Items 2. to 5.)

* 2. COARSE AGGREGATE [__ __ __ __.]
* 3. FINE AGGREGATE [__ __ __ __.]
* 4. CEMENT [__ __ __ __.]
* 5. WATER [__ __ __ __.]

* 6. CEMENT TYPE USED (See Cement Type Codes, Table A.11) [__ __]
(IF OTHER, SPECIFY_____)

* 7. ALKALI CONTENT OF CEMENT (PERCENT BY WEIGHT OF CEMENT) [__ __.__]

ENTRAINED AIR CONTENT (PERCENT) (Items 8., 9., and 10.)
(AASHTO T121, T152, OR T196)

* 8. MEAN [__.__]
9. MINIMUM __.__
10. MAXIMUM __.__

ADMIXTURES (Items 11., 12., and 13.)

	TYPE CODE	AMOUNT
*11. ADMIXTURE #1	[__ __]	[__ __ __.__ __ __]
*12. ADMIXTURE #2	[__ __]	[__ __ __.__ __ __]
*13. ADMIXTURE #3	[__ __]	[__ __ __.__ __ __]

(SEE PCC ADMIXTURE CODES, TABLE A.12)
(IF OTHER, SPECIFY _____)

SLUMP (Items 14. to 18.) (AASHO T119 OR ASTM C143)

14. MEAN (INCHES) __.__
15. MINIMUM (INCHES) __.__
16. MAXIMUM (INCHES) __.__
17. STANDARD DEVIATION (INCHES) __.__
18. NUMBER OF TESTS __ __ __.

*STATE ASSIGNED ID [__ __ __ __]

SHEET 40

*STATE CODE [__ __]

REHABILITATION DATA

*SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM

PORTLAND CEMENT CONCRETE OVERLAY AGGREGATE DATA

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

COMPOSITION OF COARSE AGGREGATE (Items 2., 3., and 4.)

			TYPE	PERCENT
Crushed Stone.. 1	Manufactured	* 2.	[__]	[__ __ __.]
Gravel..... 2	Lightweight..... 5	* 3.	[__]	[__ __ __.]
Crushed Gravel. 3	Recycled Concrete... 6	* 4.	[__]	[__ __ __.]
Crushed Slag... 4				
Other (Specify)_____ 7				

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

COMPOSITION OF FINE AGGREGATE (Items 6., 7., and 8.)

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

9.INSOLUBLE RESIDUE (PERCENT) (ASTM D3042) __ __ __.

GRADATION OF AGGREGATES (Items 10. and 11.)

* 10. COARSE AGGREGATE		* 11. FINE AGGREGATE	
Sieve Size	% Passing	Sieve Size	% Passing
2".....	__ __ __	No. 4.....	__ __ __
1 1/2".....	__ __ __	No. 8.....	__ __ __
1".....	__ __ __	No. 10.....	__ __ __
7/8".....	__ __ __	No. 16.....	__ __
3/4".....	__ __ __	No. 30.....	__ __
5/8".....	__ __ __	No. 40.....	__ __
1/2".....	__ __	No. 50.....	__ __
3/8".....	__ __	No. 80.....	__ __
		No. 100....	__ __
		No. 200....	__ __

BULK SPECIFIC GRAVITIES (Items 12. and 13.)

*12. COARSE AGGREGATE (AASHTO T85 OR ASTM C127) __.__ __ __

*13. FINE AGGREGATE (AASHTO T84 OR ASTM C128) __.__ __ __

SHEET 41

REHABILITATION DATA

LTPP PROGRAM

*STATE ASSIGNED ID [__ __ __ __]

*STATE CODE [__ __]

*SHRP SECTION ID [__ __ __ __]

PORTLAND CEMENT CONCRETE OVERLAY
AGGREGATE DATA (CONTINUED) AND CONSTRUCTION DATA

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

AGGREGATE DATA (CONTINUED)

AGGREGATE DURABILITY TEST RESULTS (Items 2. to 5.)
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
2.	COARSE	__ __	__ __ __.__
3.	COARSE	__ __	__ __ __.__
4.	COARSE	__ __	__ __ __.__
5.	COARSE AND FINE	__ __	__ __ __.__

CONSTRUCTION DATA

* 6. TYPE OF PAVER USED [__]
Slip-Form Paver..... 1 Side-Form..... 2
Other (Specify)_____ 3

AIR TEMPERATURES DURING PLACEMENT (°F) (Items 7., 8., and 9.)

* 7. MEAN [__ __ __.]
* 8. MINIMUM [__ __ __.]
* 9. MAXIMUM [__ __ __.]

*10. CURING PERIOD BEFORE OPENING TO ANY TRAFFIC (DAYS) [__ __.]

*11. TIME BEFORE SAWING JOINTS (HOURS) [__ __.]

12. METHOD USED TO CURE CONCRETE [__]
Membrane Curing Compound... 1 Burlap-Polyethylene Blanket. 5
Burlap Curing Blankets..... 2 Cotton Mat Curing..... 6
Waterproof Paper Blankets.. 3 Hay..... 7
White Polyethylene Sheeting 4
Other (Specify)_____ 8

13. METHOD USED TO TEXTURE CONCRETE [__]
Tine..... 1 Grooved Float..... 4
Broom..... 2 Astro Turf..... 5
Burlap Drag..... 3
Other (Specify)_____ 6

*STATE ASSIGNED ID [__ __ __ __]

SHEET 61

*STATE CODE [__ __]

REHABILITATION DATA

*SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM

RESTORATION OF AC SHOULDERS

* 1. SHOULDER RESTORED [__]
- Outside 1
- Inside 2
- Both 3

		INSIDE SHOULDER	OUTSIDE SHOULDER
* 2.	SURFACE TYPE (CODES-TABLE A.5)	__	[__]
* 3.	TOTAL WIDTH (FEET)	__ __.	[__ __.]
* 4.	PAVED WIDTH (FEET)	__ __.	[__ __.]
* 5.	SHOULDER BASE TYPE (CODES-TABLE A.6)	__ __	[__ __]
* 6.	SURFACE THICKNESS (INCHES)	__ __.__	[__ __.__]
* 7.	BASE THICKNESS (INCHES)	__ __.__	[__ __.__]

* 8. TYPE OF SHOULDER RESTORATION [__]
- AC Overlay Without Removal of Existing AC..... 1
- Cold Milling and AC Overlay..... 2
- Complete Shoulder Removal and Replacement..... 3
- In-place Recycling and Overlay..... 4
- Other (Specify)_____ 5

* 9. TYPE OF AC MATERIALS [__]
- New Materials..... 1
- Hot Recycled Materials..... 2
- Cold Recycled Materials..... 3
- Other (Specify)_____ 4

*10. THICKNESS OF AC MATERIAL REMOVED BY COLD MILLING (IN) [__.__]

*11. AC OVERLAY THICKNESS (IN) [__.__]

12. LANE/SHOULDER JOINT SEALANT [__]
- None..... 1
- Sealed Without Providing Reservoir..... 2
- Saw Reservoir and Seal..... 3
- Other (Specify)_____ 4

13. LANE/SHOULDER JOINT SEALANT RESERVOIR
- WIDTH (INCHES) __.__
- DEPTH (INCHES) __.__

14. TYPE OF JOINT SEALANT __
- Poured..... 1
- Preformed..... 2

NOTE: DATA ITEMS 8. TO 14. PERTAIN ONLY TO THE RESTORED OUTSIDE SHOULDER.

*STATE ASSIGNED ID [__ __ __ __]

SHEET 62

*STATE CODE [__ __]

REHABILITATION DATA

*SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM

RESTORATION OF PCC SHOULDERS

* 1. SHOULDER RESTORED [__]
Outside..... 1
Inside..... 2
Both..... 3

		INSIDE SHOULDER	OUTSIDE SHOULDER
* 2.	SURFACE TYPE (CODES-TABLE A.5)	__	[__]
* 3.	TOTAL WIDTH (FEET)	__ __.	[__ __.]
* 4.	PAVED WIDTH (FEET)	__ __.	[__ __.]
* 5.	SHOULDER BASE TYPE (CODES-TABLE A.6)	__ __	[__ __]
* 6.	SURFACE THICKNESS (INCHES)	__ __.__	[__ __.__]
* 7.	BASE THICKNESS (INCHES)	__ __.__	[__ __.__]

* 8. TYPE OF SHOULDER SYSTEM [__]
JPCP Shoulder..... 1 CRCP Shoulder..... 3
JRCP Shoulder..... 2 Other_____ 4

* 9. AVERAGE JOINT SPACING (FEET) [__ __ __.]

*10. SKEWNESS OF JOINTS (FEET) [__.__]

*11. JOINTS MATCH PAVEMENT JOINTS? [__]
(Yes.....1, No.....2)

*12. TYPE OF LANE/SHOULDER JOINT [__]
Tied..... 1 Keyed..... 3
Butt..... 2 Other (Specify)_____ 4

LANE/SHOULDER JOINT TIE SYSTEM (Items 13. to 16.)

*13. TYPE [__]
None..... 1 Hook Bolts..... 3
Deformed Bars..... 2 Other_____ 4

*14. BAR DIAMETER (INCHES) [__.__ __]

*15. BAR LENGTH (INCHES) [__ __.]

*16. BAR SPACING (INCHES) [__ __.]

NOTE: DATA ITEMS 8. TO 16. PERTAIN ONLY TO THE RESTORED OUTSIDE SHOULDER.

*STATE ASSIGNED ID [__ __ __ __]

SHEET 63

*STATE CODE [__ __]

REHABILITATION DATA

*SHRP SECTION ID [__ __ __ __]

LTPP PROGRAM

RESTORATION OF PCC SHOULDERS (CONTINUED)

* 1. **LANE/SHOULDER JOINT SEALANT** [__]

None.....1
Sealed Without Providing Reservoir..... 2
Saw Reservoir and Seal..... 3
Other (Specify)_____ 4

2. LANE/SHOULDER JOINT SEALANT RESERVOIR
WIDTH (INCHES) __.__
DEPTH (INCHES) __.__

3. TYPE OF JOINT SEALANT __
Poured..... 1 Preformed..... 2

4. JOINT SEALANT BACKER MATERIAL TYPE __
Foam Backer Rod..... 1 Rope..... 3
Tape..... 2 None..... 4
Other (Specify)_____ 5

5. JOINT SEALANT BACKER DIMENSION (INCHES) __.__
(Enter diameter of rod/rope or width of tape)

NOTE: DATA ITEMS 1. TO 5. PERTAIN ONLY TO THE RESTORED OUTSIDE SHOULER.

Revised August 30, 1989

APPENDIX A. STANDARD CODES

This appendix provides standard codes to simplify entry of data during collection and the subsequent storage and processing of this data. These codes are tabulated as follows:

Table A.1	Standard Codes for States, District of Columbia, Puerto Rico, American Protectorates, and Canadian Provinces
Table A.2	Functional Class Codes
Table A.3	Experiment Type Definitions for LTPP
Table A.4	Pavement Type Codes
Table A.5	Pavement Surface Material Type Classification Codes
Table A.6	Base and Subbase Material Type Classification Codes
Table A.7	Subgrade Soil Description Codes
Table A.8	Material Type Codes for Thin Seals and Interlayers
Table A.9	Geologic Classification Codes
Table A.10	Soil Type Codes, AASHTO Soil Classification
Table A.11	Portland Cement Type Codes
Table A.12	Portland Cement Concrete Admixture Codes
Table A.13	Aggregate Durability Test Type Codes
Table A.14	Asphalt Refiners and Processors in the United States
Table A.15	Asphalt Cement Modifier Codes
Table A.16	Grades of Asphalt, Emulsified Asphalt, and Cutback Asphalt Codes
Table A.17	Maintenance and Rehabilitation Work Type Codes
Table A.18	Maintenance Location Codes
Table A.19	Maintenance Materials Type Codes
Table A.20	Recycling Agent Type Codes
Table A.21	Anti-Stripping Agent Type Codes
Table A.22	Distress Types

Revised June 13, 1988

Table A.1. Table of Standard Codes for States, District of Columbia, Puerto Rico, American Protectorates and Canadian Provinces.

State	Code	State	Code
Alabama	01	New York	36
Alaska	02	North Carolina	37
Arizona	04	North Dakota	38
Arkansas	05	Ohio	39
California	06	Oklahoma	40
Colorado	08	Oregon	41
Connecticut	09	Pennsylvania	42
Delaware	10	Rhode Island	44
District of Columbia	11	South Carolina	45
Florida	12	South Dakota	46
Georgia	13	Tennessee	47
Hawaii	15	Texas	48
Idaho	16	Utah	49
Illinois	17	Vermont	50
Indiana	18	Virginia	51
Iowa	19	Washington	53
Kansas	20	West Virginia	54
Kentucky	21	Wisconsin	55
Louisiana	22	Wyoming	56
Maine	23	American Samoa	60
Maryland	24	Guam	66
Massachusetts	25	Puerto Rico	72
Michigan	26	Virgin Islands	78
Minnesota	27	Alberta	81
Mississippi	28	British Columbia	82
Missouri	29	Manitoba	83
Montana	30	New Brunswick	84
Nebraska	31	Newfoundland	85
Nevada	32	Nova Scotia	86
New Hampshire	33	Ontario	87
New Jersey	34	Prince Edward Island	88
New Mexico	35	Quebec	89
		Saskatchewan	90

Note: The U.S. codes are consistent with the Federal Information Processing Standards (FIPS) and HPMS

Table A.2. Functional class codes.

Functional Class	Code
Rural:	
Principal Arterial - Interstate	01
Principal Arterial - Other	02
Minor Arterial	06
Major Collector	07
Minor Collector	08
Local Collector	09
Urban:	
Principal Arterial - Interstate	11
Principal Arterial - Other Freeways or Expressways	12
Other Principal Arterial	14
Minor Arterial	16
Collector	17
Local	19

Note: These codes are consistent with the HPMS system.

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Table A.3. Detailed Descriptions of Pavements for Each LTPP General Pavement Studies Experiment.

(01) ASPHALT CONCRETE PAVEMENT WITH GRANULAR BASE

Acceptable pavements for this study include a dense-graded hot mix asphalt concrete (HMAC) surface layer (1), with or without other HMAC layers (28), placed over untreated granular base (22 or 23). One or more subbase layers (22, 23, 24, 25, 26,42, or 43) may also be present, but are not required. Two or more consecutive lifts of the same mixture design are to be treated as one layer. "Full depth" asphalt concrete pavements are also included in this study. They include an HMAC surface layer (1) and usually one or more HMAC layers (28) beneath the surface, with a minimum total HMAC thickness of 8 inches placed directly upon treated or untreated subgrade. For "full depth" asphalt concrete pavements, a base layer (Layer Description 5) of zero thickness and material code 21 should be indicated. If a treated subgrade (42 or 43) is present, it should be shown as a subbase (Layer Description 6). Seal coats or porous friction courses are allowed on the surface, but not in combination, i.e., a porous friction course placed over a seal coat is not acceptable. Seal coats are also permissible on top of granular base layers. At least one layer of dense graded HMAC is required, regardless of the existence of seal coats or porous friction courses.

(02) ASPHALT CONCRETE PAVEMENT WITH BOUND BASE

Acceptable pavements for this study include a dense-graded HMAC surface layer (1) with or without other HMAC layers (28), placed over a bound base layer (27-39, 42-44, 46). To properly account for a variety of bound base types in the sampling design, two classifications of binder types, bituminous and non-bituminous, are defined as the factor levels. Bituminous binders include asphalt cements, cutbacks, emulsions, and road tars. Non-bituminous binders include all hydraulic cements (those which harden by a chemical reaction with water and are capable of hardening under water), lime, fly ashes and natural pozzolans, or combinations thereof. Stabilized bases with lower quality materials such as sand asphalt or soil cement are also allowed. Stabilization practices of primary concern for this tudy are those in which the strucutral characteristics of the material are improved due to the cementing action of the stabilizing agent. Thus, the description of the study actually refers to treatments improving the structural properties of the base materials. Two or more consecutive lifts of the same mixture design are to be treated as one layer. One or more subbase layers (22, 23, 24, 25, 26, 42, or 43) may be present but are not required. Seal coats or porous friction courses are permitted on the surface but not in combination, i.e., a porous friction course placed over a seal coat is not acceptable. Project selection is often to those constructed on both fine and coarse subgrades (51-65).

Table A.3. Detailed Descriptions of Pavements for Each LTPP General Pavement Studies Experiment (Continued).

(03) JOINTED PLAIN CONCRETE PAVEMENT - JPCP

Acceptable jointed, unreinforced portland cement concrete slab (4) placed over untreated granular base (22 or 23), HMAC (28 or 31), or stabilized base (29, 30, 37, or 38). One or more subbase layers (22, 23, 24, 25, 26, 42, or 43) may also be present, but are not required. The joints may have either no load transfer devices or smooth dowel bars. A seal coat is also permissible above a granular base layer. Jointed slabs with load transfer devices other than dowel bars and pavements placed directly upon a treated or untreated subgrade are also not acceptable.

(04) JOINTED REINFORCED CONCRETE PAVEMENT - JRCP

Acceptable projects include jointed reinforced portland cement concrete pavements (5) with doweled joints spaced between 20 and 65 feet. The slab may rest directly upon a layer of any material listed in Table A.6 (except 25 and 45) or upon unstabilized coarse-grained subgrade (57-65). A base layer and one or more subbase layers may exist, but are not required. These layers may consist of any of the material types indicated in Table A.6. A seal coat is also permissible above a granular base layer. JRCP placed directly upon a fine-grained soil/aggregate layer (25) or a fine-grained subgrade (51-56) will not be considered for this study. JRCP's without load transfer devices or using devices other than smooth dowel bars at the joints are not acceptable.

(05) CONTINUOUSLY REINFORCED CONCRETE PAVEMENT - CRCP

Acceptable projects include continuously reinforced portland cement concrete pavements (6) placed directly upon a layer of any material listed in Table A.6 (except 25 or 45), or upon unstabilized coarse-grained subgrade (57-65). CRCP's placed directly upon a fine-grained soil/aggregate layer (25) or a fine-grained subgrade (51-56) are not acceptable for this study.

(06) AC OVERLAY OF AC PAVEMENT

Acceptable pavements for this study include a dense-graded HMAC surface layer (1) with or without other HMAC layers (28) placed over a previously existing asphalt concrete pavement meeting the requirements of GPS-1 or GPS-2. Seal coats or porous friction courses are allowed, but not in combination. Fabric interlayers (75 and 76) and Stress Absorbing Membrane Interlayers (SAMIs) (77) are permitted between the original surface and the overlay. The total pavements which have been overlaid more than once since they were originally constructed are not acceptable. Pavements in both bad and good condition as measured by levels of specific distress types present prior to the overlay are needed.

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Table A.3. Detailed Descriptions of Pavements for Each LTPP General Pavement Studies Experiment (Continued).

(07) AC OVERLAY OF JOINTED CONCRETE PAVEMENT

Acceptable pavements for this study include a dense-graded HMAC surface layer (1) with or without other HMAC layers (28) placed on either a JPCP (4), JRCP (5), or CRCP (6). The slab may rest on any combination of base and/or subbase layers indicated in Table A.6 (except 45). The previously existing concrete slab may also have been placed directly on lime or cement treated fine or coarse-grained subgrade (27, 42, and 43), or on untreated coarse-grained subgrade (57-65). Slabs placed directly on untreated fine-grained subgrade (51-56) are not acceptable. Seal coats or porous friction courses are permissible, but not in combination. Fabric interlayers (75 or 76) and SAMIs (77) are acceptable when placed between the original surface (concrete) and the overlay. Overlaid pavements with aggregate interlayers (79) and open-graded asphalt concrete (80) will not be considered in this study. The total thickness of HMAC used in the overlay must be at least 1.5 inches. Pavements which have been overlaid more than once since they were originally constructed are not acceptable. Pavements in both bad and good condition as measured by levels of specific distress types present prior to the overlay are needed.

(09) UNBONDED JCP OVERLAYS OF CONCRETE PAVEMENT

Acceptable projects for this study include unbonded JPCP (4), JRCP (5), or CRCP (6) overlay with a thickness of 5 inches or more placed over an existing JPCP (4), JRCP (5), or CRCP (6) pavement. The overlaid concrete pavement may rest on any of the base and subbase types listed in Table A.6 or directly upon subgrade.

Revised June 13, 1988

Table A.4 Pavement Type Codes

Type of Pavement	Code
Asphalt Concrete (AC) Surfaced Pavements:	
AC With Granular Base	01
AC With Bituminous Treated Base	02
AC With Non-Bituminous Treated Base	07
AC Overlay on AC Pavement	03
AC Overlay on JPCP Pavement	28
AC Overlay on JRCP Pavement	29
AC Overlay on CRCP Pavement	30
Other	10
Portland Cement Concrete Surfaced Pavements:	
JPCP - Placed Directly On Untreated Subgrade	11
JRCP - Placed Directly On Untreated Subgrade	12
CRCP - Placed Directly On Untreated Subgrade	13
JPCP - Placed Directly On Treated Subgrade	14
JRCP - Placed Directly On Treated Subgrade	15
CRCP - Placed Directly On Treated Subgrade	16
JPCP - Over Unbound Base	17
JRCP - Over Unbound Base	18
CRCP - Over Unbound Base	19
JPCP Over Bituminous Treated Base	20
JRCP Over Bituminous Treated Base	21
CRCP Over Bituminous Treated Base	22
JPCP Over Non-Bituminous Treated Base	23
JRCP Over Non-Bituminous Treated Base	24
CRCP Over Non-Bituminous Treated Base	25
JPCP Overlay on JPCP Pavement	31
JPCP Overlay on JRCP Pavement	33
JPCP Overlay on CRCP Pavement	35
JRCP Overlay on JPCP Pavement	32
JRCP Overlay on JRCP Pavement	34
JRCP Overlay on CRCP Pavement	36
CRCP Overlay on JPCP Pavement	38
CRCP Overlay on JRCP Pavement	39
CRCP Overlay on CRCP Pavement	37
JPCP Overlay on AC Pavement	04
JRCP Overlay on AC Pavement	05
CRCP Overlay on AC Pavement	06
Prestressed Concrete Pavement	40
Other	49

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Table A.4 Pavement Type Codes
(Continued)

*Composite Pavements (Wearing Surface Included in Initial Construction:

JPCP With Asphalt Concrete Wearing Surface.....51
JRCP With Asphalt Concrete Wearing Surface.....52
CRCP With Asphalt Concrete Wearing Surface.....53
Other.....59

Definitions:
JPCP - Jointed Plain Concrete Pavement
JRCP - Jointed Reinforced Concrete Pavement
CRCP - Continuously Reinforced Concrete Pavement

* "Composite Pavements" are pavements originally constructed with an asphalt concrete wearing surface over a portland cement concrete slab (1986 "AASHTO Guide for Design of Pavement Structures").

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Table A.5 Pavement Surface Material Type Classification Codes

Material Type	Code
Hot Mixed, Hot Laid Asphalt Concrete, Dense Graded	01
Hot Mixed, Hot Laid Asphalt Concrete, Open Graded (Porous Friction Course)	02
Sand Asphalt	03
Portland Cement Concrete (JPCP)	04
Portland Cement Concrete (JRCP)	05
Portland Cement Concrete (CRCP)	06
Portland Cement Concrete (Prestressed)	07
Portland Cement Concrete (Fiber Reinforced)	08
Plant Mix (Emulsified Asphalt) Material, Cold Laid	09
Plant Mix (Cutback Asphalt) Material, Cold Laid	10
Single Surface Treatment	11
Double Surface Treatment	12
Recycled Asphalt Concrete	
Hot, Central Plant Mix	13
Cold Laid Central Plant Mix	14
Cold Laid Mixed-In-Place	15
Heater Scarification/Recompaction	16
Recycled Portland Cement Concrete	
JPCP	17
JRCP	18
CRCP	19
Other	20

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Table A.6. Base and subbase material type classification codes.

	Code
No Base (Pavement Placed Directly on Subgrade)	21
Gravel (Uncrushed)	22
Crushed Stone, Gravel or Slag	23
Sand	24
Soil-Aggregate Mixture (Predominantly Fine-Grained Soil)	25
Soil-Aggregate Mixture (Predominantly Coarse-Grained Soil)	26
Soil Cement	27
Asphalt Bound Base or subbase Materials	
Dense Graded, Hot Laid, Central Plant Mix	28
Dense Graded, Cold Laid, Central Plant Mix	29
Dense Graded, Cold Laid, Mixed In-Place	30
Open Graded, Hot Laid, Central Plant Mix	31
Open Graded, Cold Laid, Central Plant Mix	32
Open Graded, Cold Laid, Mixed In-Place	33
Recycled Asphalt Concrete, Plant Mix, Hot Laid	34
Recycled Asphalt Concrete, Plant Mix, Cold Laid	35
Recycled Asphalt Concrete, Mixed In-Place	36
Sand Asphalt	46
Cement-Aggregate Mixture	37
Lean Concrete (<3 sacks cement/cy)	38
Recycled Portland Cement Concrete	39
Sand-Shell Mixture	40
Limerock, Caliche (Soft Carbonate Rock)	41
Lime-Treated Subgrade Soil	42
Cement-Treated Subgrade Soil	43
Pozzolanic-Aggregate Mixture	44
Cracked and Seated PCC Layer	45
Other	49

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Table A.7. Subgrade soil description codes.

Soil Description	Code
Fine-Grained Subgrade Soils:	
Clay (Liquid Limit >50)	51
Sandy Clay	52
Silty Clay	53
Silt	54
Sandy Silt	55
Clayey Silt	56
Coarse-Grained Subgrade Soils:	
Sand	57
Poorly Graded Sand	58
Silty Sand	59
Clayey Sand	60
Gravel	61
Poorly Graded Gravel	62
Clayey Gravel	63
Shale	64
Rock	65

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Table A.8. Material type codes for thin seals and interlayers.

	Code
Chip Seal Coat	71
Slurry Seal Coat	72
Fog Seal Coat	73
Woven Geotextile	74
Nonwoven Geotextile	75
Stress Absorbing Membrane Interlayer	77
Dense Graded Asphalt Concrete Interlayer	78
Aggregate Interlayer	79
Open Graded Asphalt Concrete Interlayer	80
Chip Seal With Modified Binder (Does Not Include Crumb Rubber)	81
Sand Seal	82
Asphalt-Rubber Seal Coat (Stress Absorbing Membrane)	83
Sand Asphalt	84
Other	85

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Table A.9. Geologic classification codes.

Igneous:	Code
Granite	01
Syenite	02
Diorite	03
Gabbro	04
Peridotite	05
Felsite	06
Basalt	07
Diabase	08
Sedimentary:	
Limestone	09
Dolomite	10
Shale	11
Sandstone	12
Chert	13
Conglomerate	14
Breccia	15
Metamorphic:	
Gneiss	16
Schist	17
Amphibolite	18
Slate	19
Quartzite	20
Marble	21
Serpentine	22

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Table A.10. Soil and soil-aggregate mixture type codes, AASHTO classification.

	Code
A-1-a	01
A-1-b	02
A-3	03
A-2-4	04
A-2-5	05
A-2-6	06
A-2-7	07
A-4	08
A-5	09
A-6	10
A-7-5	11
A-7-6	12

Table A.11 Portland Cement Type Codes

	Code
Type I	41
Type II	42
Type III	43
Type IV	44
Type V	45
Type IS	46
Type ISA	47
Type IA	48
Type IIA	49
Type IIIA	50
Type IP	51
Type IPA	52
Type N	53
Type NA	54
Other	55

Revised June 13, 1988

Table A.12 Portland Cement Concrete Admixture Codes

	Code
Water-Reducing (AASHTO M194, Type A)	01
Retarding (AASHTO M194, Type B)	02
Accelerating (AASHTO M194, Type C)	03
Water-Reducing and Retarding (AASHTO M194, Type D)	04
Water-Reducing and Accelerating (AASHTO M194, Type E)	05
Water-Reducing, High Range (AASHTO M194, Type F)	06
Water-Reducing, High Range and Retarding (AASHTO M194, Type G)	07
Air-Entraining Admixture (AASHTO M154)	08
Natural Pozzolans (AASHTO M295, Class N)	09
Fly Ash, Class F (AASHTO M295)	10
Fly Ash, Class C (AASHTO M295)	11
Other (Chemical)	12
Other (Mineral)	13

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Table A.13. Aggregate durability test type codes.

Description	AASHTO	ASTM	Code
Resistance to Abrasion of Small Size Coarse Aggregate by Use of Los Angeles Machine (Percent Weight Loss)	T96	C131	01
Soundness of Aggregate by Freezing and Thawing (Percent Weight Loss)	T103	--	02
Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate (Percent Weight Loss)	T104	C88	03
Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine (Percent Weight Loss)	--	C535	04
Potential Volume Change of Cement-Aggregate Combinations (Percent Expansion)	--	C342	05
Evaluation of Frost Resistance of Coarse Aggregates in Air-Entrained Concrete by Critical Dilution Procedures (Number of Weeks of Frost Immunity)		C682	06
Potential Alkali Reactivity of Cement Aggregate Combinations (Average Percent Expansion)	--	C227	07
Potential Reactivity of Aggregates (Reduction in Alkalinity-mmol/L)	--	C289	08
Test for Clay Lumps and Friable Particles in Aggregates (Percent by Weight)	T112	C142	09
Test for Potential Alkali Reactivity of Carbonate Rocks for Concrete Aggregates (Percent Change in Speciment Length)	--	C586	11

Table A.14. Codes for Asphalt Refiners and Processors in the United States.*

	Code
Belcher Refining Co.--Mobile Bay, Alabama	78
Hunt Refining Company--Tuscaloosa, Alabama	01
Chevron USA, Inc.--Kenai, Alaska	02
Mapco Alaska Petroleum--North Pole, Alaska	03
Intermountain Refining Cl.--Fredonia, Arizona	04
Berry Petroleum Company--Stevens, Arkansas	05
Cross Oil and Refining Company--Smackover, Arkansas	06
Lion Oil Company--El Dorado, Arkansas	07
McMillan Ring, Free Oil Cl.--Norphlet, Arkansas	08
Chevron USA, Inc.--Richmond, California	09
Conoco, Inc.--Santa Maria, California	10
Edgington Oil Co., Inc.--Long Beach, California	11
Golden Bear Division, Witco Chemical Corp.--Oildale, California	12
Golden West Refining, Co.--Santa Fe Springs, California	13
Huntway Refining Co.--Benicia, California	14
Huntway Refining Co.--Wilmington, California	15
Lunday-Thagard Co.--South Gate, California	79
Newhall Refining Co., Inc.--Newhall, California	16
Oxnard Refining--Oxnard, California	17
Paramount Petroleum Corp.--Paramount, California	80
Powerline Oil Co.--Santa Fe Springs, California	81
San Joaquin Refining Cl.--Bakersfield, California	18
Shell Oil Co.--Martinez, California	19
Superior Processing Co.--Santa Fe Springs, California	20
Colorado Refining Co.--Commerce City, Colorado	82
Conoco, Inc.--Commerce City, Colorado	21
Amoco Oil Co.--Savannah, Georgia	22
Young Refining Corp.--Douglasville, Georgia	23
Chevron USA--Barber's Point, Hawaii	24
Clark Oil and Refining Corp.--Blue Island, Illinois	25
Shell Oil Co.--Wood River, Illinois	26
Unacol Corp.--Lemont, Illinois	27
Amoco Oil Co.-- Whiting, Indiana	28
Laketon Refining Corp.--Laketon, Indiana	83
Young Refining Corp.--Laketon, Indiana	29
Derby Refining Co.-- El Dorado, Kansas	84
Farmland Industries, Inc.--Phillipsburg, Kansas	30
Total Petroleum, Inc.--Arkansas City, Kansas	31
Ashland Petroleum Co.--Catlettsburg, Kentucky	32
Atlas Processing Co.--Shreveport, Louisiana	33
Calumet Refining Co.--Princeton, Louisiana	34
Exxon Co.--Baton Rouge, Louisiana	35
Marathon Petroleum Co.--Garyville, Louisiana	36
Marathon Petroleum Co.--Detroit, Michigan	37
Ashland Petroleum Co.--St. Paul, Minnesota	38
Koch Refining Co.--Rosemount, Minnesota	39
Chevron USA, Inc.--Pascagoula, Mississippi	40
Ergon Refining Inc.--Vicksburg, Mississippi	41
Southland Oil Co.--Lumberton, Mississippi	42
Southland Oil Co.--Sanderson, Mississippi	43

Table A.14. Codes for Asphalt Refiners and Processors in the United States (Continued).*

	Code
Cenex--Laurel, Montana	44
Conoco, Inc.--Billings, Montana	45
Exxon Co.--Billings, Montana	46
Chevron USA, Inc.--Perth Amboy, New Jersey	47
Exxon Co., Linden, New Jersey	48
Giant Industries, Inc.--Gallup, New Mexico	85
Navahoe Refining Co.--Artesia, New Mexico	49
Cibro Petroleum Products Co.--Albany, New York	86
Ashland Petroleum Co.--Canton, Ohio	50
Standard Oil Co.--Toledo, Ohio	51
Sohio Oil Co (BP America)--Toledo, Ohio	87
Kerr-McGee Refining Co.--Wynnewood, Oklahoma	52
Sinclair Oil Corp.--Tulsa, Oklahoma	53
Sun Co. Inc.--Tulsa, Oklahoma	54
Total Petroleum Inc.--Ardmore, Oklahoma	55
Chevron USA, Inc.--Portland, Oregon	56
Atlantic Refining & Marketing Corp.--Philadelphia, PA	57
United Refining Co.--Warren, Pennsylvania	58
Mapco Petroleum Inc.--Memphis, Tennessee	59
Charter International Oil Co.--Houston, Texas	60
Chevron USA, Inc.--El Paso, Texas	61
Coastal Refining & Marketing, Inc.--Corpus Christi, Texas	88
Coastal States Petroleum Co.--Corpus Christi, Texas	62
Diamond Shamrock Corp.--Sunray, Texas	63
Exxon Co. USA--Baytown, Texas	64
Fina Oil and Chemical Co.--Big Spring, Texas	65
Fina Oil and Chemical Co.--Port Arthur, Texas	89
Hill Petroleum Co.--Houston, Texas	90
Shell Oil Co.--Deer Park, Texas	66
Star Enterprise--Port Arthur & Port Neches, Texas	91
Texaco Refining & Marketing Inc.--Port Arthur & Port Neches, Texas	67
Trifinery--Corpus Christi, Texas	92
Unocal Corp.--Nederland, Texas	68
Valero Refining Co.--Corpus Christi, Texas	69
Phillips 66 Co.--Woods Cross, Utah	70
Chevron USA Inc.--Seattle, Washington	71
Sound Refining, Inc.--Tacoma, Washington	72
US Oil and Refining Co.--Tacoma, Washington	73
Murphy Oil USA, Inc.--Superior, Wisconsin	74
Big West Oil Co.--Cheyenne, Wyoming	75
Little America Refining Co.--Casper, Wyoming	93
Sinclair Oil Corp.--Sinclair, Wyoming	76
Other	77

* Taken from Oil and Gas Journal, March 20, 1989, pp. 72-89.

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Table A.15 Asphalt Cement Modifier Codes

	Code
Stone Dust	01
Lime	02
Portland Cement	03
Carbon Black	04
Sulfur	05
Lignin	06
Natural Latex	07
Synthetic Latex	08
Block Copolymer	09
Reclaimed Rubber	10
Polyethylene	11
Polypropylene	12
Ethylene-Vinyl Acetate	13
Polyvinyl Chloride	14
Asbestos	15
Rock Wool	16
Polyester	17
Manganese	18
Other Mineral Salts	19
Lead Compounds	20
Carbon	21
Calcium Salts	22
Recycling Agents	23
Rejuvenating Oils	24
Amines	25
Fly Ash	26
Other	27

Table A.16 Grades of Asphalt, Emulsified Asphalt, and Cutback Asphalt Codes

	Code
Asphalt Cements	
AC-2.5	01
AC-5	02
AC-10	03
AC-20	04
AC-30	05
AC-40	06
AR-1000 (AR-10 by AASHTO Designation)	07
AR-2000 (AR-20 by AASHTO Designation)	08
AR-4000 (AR-40 by AASHTO Designation)	09
AR-8000 (AR-80 by AASHTO Designation)	10
AR-16000 (AR-160 by AASHTO Designation)	11
200-300 pen	12
120-150 pen	13
85-100 pen	14
60-70 pen	15
40-50 pen	16
Other Asphalt Cement Grade	17
Emulsified Asphalts	
RS-1	18
RS-2	19
MS-1	20
MS-2	21
MS-2h	22
HFMS-1	23
HFMS-2	24
HFMS-2h	25
HFMS-2s	26
SS-1	27
SS-1h	28
CRS-1	29
CRS-2	30
CMS-2	31
CMS-2h	32
CSS-1	33
CSS-1h	34
Other Emulsified Asphalt Grade	35
Cutback Asphalts (RC, MC, SC)	
30 (MC only)	36
70	37
250	38
800	39
3000	40
Other Cutback Asphalt Grade	99

Taken from MS-5, "A Brief Introduction to Asphalt," and Specification Series No. 2 (SS-2), "Specifications for Paving and Industrial Asphalts," both publications by the Asphalt Institute.

Table A.17 Maintenance and Rehabilitation Work Type Codes

	Code
Crack Sealing (linear ft.)	01
Transverse Joint Sealing (linear ft.)	02
Lane-Shoulder, Longitudinal Joint Sealing (linear ft.)	03
Full Depth Joint Repair Patching of PCC (sq. yards)	04
Full Depth Patching of PCC Pavement Other than at Joint (sq. yards)	05
Partial Depth Patching of PCC Pavement Other than at Joint (sq. yards)	06
PCC Slab Replacement (sq. yards)	07
PCC Shoulder Restoration (sq. yards)	08
PCC Shoulder Replacement (sq. yards)	09
AC Shoulder Restoration (sq. yards)	10
AC Shoulder Replacement (sq. yards)	11
Grinding/Milling Surface (sq. yards)	12
Grooving Surface (sq. yards)	13
Pressure Grout Subsealing (no. of holes)	14
Slab Jacking Depressions (no. of depressions)	15
Asphalt Subsealing (no. of holes)	16
Spreading of Sand or Aggregate (sq. yards)	17
Reconstruction (Removal and Replacement) (sq. yards)	18
Asphalt Concrete Overlay (sq. yards)	19
Portland Cement Concrete Overlay (sq. yards)	20
Mechanical Premix Patch (using motor grader and roller) (sq. yards)	21
Manual Premix Spot Patch (hand spreading and compacting with roller) (sq. yards)	22
Machine Premix Patch (placing premix with paver, compacting with roller) (sq. yards)	23
Full Depth Patch of AC Pavement (removing damaged material, repairing supporting material, and repairing) (sq. yards)	24
Patch Pot Holes - Hand Spread, Compacted with Truck (no. of holes)	25
Skin Patching (hand tools/hot pot to apply liquid asphalt and aggregate) (sq. yards)	26
Strip Patching (using spreader and distributor to apply hot liquid asphalt and aggregate) (sq. yards)	27
Surface Treatment, single layer (sq. yards)	28
Surface Treatment, double layer (sq. yards)	29
Surface Treatment, three or more layers (sq. yards)	30
Aggregate Seal Coat (sq. yards)	31
Sand Seal Coat (sq. yards)	32
Slurry Seal Coat (sq. yards)	33
Fog Seal Coat (sq. yards)	34
Prime Coat (sq. yards)	35
Tack Coat (sq. yards)	36
Dust Layering (sq. yards)	37
Longitudinal Subdrains (linear feet)	38
Transverse Subdrainage (linear feet)	39

Table A.17 Maintenance and Rehabilitation Work Type Codes (continued)

	Code
Drainage Blankets (sq. yards)	40
Well System	41
Drainage Blankets with Longitudinal Drains	42
Hot-Mix Recycled Asphalt Concrete (sq. yards)	43
Cold-Mix Recycled Asphalt Concrete (sq. yards)	44
Heater Scarification, Surface Recycled Asphalt Concrete (sq. yards)	45
Crack and Seat PCC Pavement as Base for New AC Surface (sq. yards)	46
Crack and Seat PCC Pavement as Base for New PCC Surface (sq. yards)	47
Recycled Portland Cement Concrete (sq. yards)	48
Pressure Relief Joints in PCC Pavements (linear feet)	49
Joint Load Transfer Restoration in PCC Pavements (linear feet)	50
Mill Off Existing Pavement and Overlay with AC (sq. yards)	51
Mill Off Existing Pavement and Overlay with PCC (sq. yards)	52
Other	53
Partial Depth Patching of PCC Pavement at Joints (sq. yards)	54

Table A.18. Maintenance location codes.

	Code
Outside Lane (Number 1)	01
Inside Lane (Number 2)	02
Inside Lane (Number 3)	03
All Lanes	09
Shoulder	04
All Lanes Plus Shoulder	10
Curb and Gutter	05
Side Ditch	06
Culvert	07
Other	08

Note: SHRP LTPP only studies outside lanes.

Table A.19 Maintenance Materials Type Codes

	Code
Preformed Joint Fillers	01
Hot-Poured Joint and Crack Sealer	02
Cold-Poured Joint and Crack Sealer	03
Open Graded Asphalt Concrete	04
Hot Mix Asphalt Concrete Laid Hot	05
Hot Mix Asphalt Concrete Laid Cold	06
Sand Asphalt	07
Portland Cement Concrete (overlay or replacement)	
Joint Plain (JPCP)	08
Joint Reinforced (JRCP)	09
Continuously Reinforced (CRCP)	10
Portland Cement Concrete (Patches)	11
Hot Liquid Asphalt and Aggregate (Seal Coat)	12
Hot Liquid Asphalt and Mineral Aggregate	13
Hot Liquid Asphalt and Sand	14
Emulsified Asphalt and Aggregate (Seal Coat)	15
Emulsified Asphalt and Mineral Aggregate	16
Emulsified Asphalt and Sand	17
Hot Liquid Asphalt	18
Emulsified Asphalt	19
Sand Cement (Using Portland Cement)	20
Lime Treated or Stabilized Materials	21
Cement Treated or Stabilized Materials	22
Cement Grout	23
Aggregate (Gravel, Crushed Stone or Slag)	24
Sand	25
Mineral Dust	26
Mineral Filler	27
Other	28

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Table A.20. Recycling agent type codes.

	Code
RA 1	42
RA 5	43
RA 25	44
RA 75	45
RA 250	46
RA 500	47
Other	48

Note: The recycling agent groups shown in this table are defined in ASTM D4552.

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Table A.21. Anti-stripping agent type codes.

	Code
Permatac	01
Permatac Plus	02
Betascan Roads	03
Pavebond	04
Pavebond Special	05
Pavebond Plus	06
BA 2000	07
BA 2001	08
Unichem "A"	09
Unichem "B"	10
Unichem "C"	11
AquaShield AS4115	12
AquaShield AS4112	13
AquaShield AS4113	14
Portland Cement	15
Hydrated Lime:	
Mixed Dry With Asphalt Cement	16
Mixed Dry with Dry Aggregate	17
Mixed Dry with Wet Aggregate	18
Slurried Lime Mixed with Aggregate	19
Hot Lime Slurry (Quick Lime Slaked and Slurried at Job Site)	20
Nostrip Chemicals A-500	21
No Strip Chemical Works ACRA RP-A	22
No Strip Chemical Works ACRA Super Conc.	23
No Strip Chemical Works ACRA 200	24
No Strip Chemical Works ACRA 300	25
No Strip Chemical Works ACRA 400	26
No Strip Chemical Works ACRA 500	27
No Strip Chemical Works ACRA 512	28
No Strip Chemical Works ACRA 600	29
Darakote	30
De Hydro H86C	31
Emery 17065	32
Emery 17319	33
Emery 17319 - 6880	34
Emery 17320	35
Emery 17321	36
Emery 17322	37
Emery 17339	38
Emery 1765-6860	39
Emery 6886B	40
Husky Anti-Strip	41
Indulin AS-Special	42

Table A.21. Anti-stripping agent type codes (continued).

	Code
Indulin AS-1	43
Jetco AD-8	44
Kling	45
Kling Beta ZP-251	46
Kling Beta L-75	47
Kling Beta LV	48
Kling Beta 1000	49
Kling Beta 200	50
Nacco Anti Strip	51
No Strip	52
No Strip Concentrate	53
Redi-Coat 80-S	54
Redi-Coat 82-S	55
Silicone	56
Super AD-50	57
Tap Co 206	58
Techni H1B7175	59
Techni H1B7173	60
Techni H1B7176	61
Techni H1B7177	62
Tretolite DH-8	63
Tretolite H-86	64
Tretolite H-86C	65
Tyfo A-45	66
Tyfo A-65	67
Tyfo A-40	68
Edoco 7003	69
Other	70

Table A.22 Distress Types

	Code
Asphalt Concrete Pavement	
Alligator Cracking	01
Block Cracking	02
Edge Cracking	03
Longitudinal Cracking	04
Reflection Cracking	05
Transverse Cracking	06
Patch Deterioration	07
Potholes	08
Rutting	09
Shoving	10
Bleeding	11
Polished Aggregate	12
Raveling and Weathering	13
Lane Shoulder Dropoff	14
Water Bleeding	15
Pumping	16
Other	17
Portland Cement Concrete Pavement	
Corner Breaks	20
Durability Cracking	21
Longitudinal Cracking	22
Transverse Cracking	23
Joint Seal Damage	24
Spalling	25
Map Cracking/Scaling	26
Polished Aggregate	27
Popouts	28
Punchouts	29
Blowouts	30
Faulting	31
Lane/Shoulder Dropoff	32
Lane/Shoulder Separation	33
Patch Deterioration	34
Water Bleeding/Pumping	35
Slab Settlement	36
Slab Upheavel	37
Other	38

APPENDIX C

SHRP PROTOCOL P69

DETECTION OF DELAMINATION OF BONDED PORTLAND CEMENT CONCRETE OVERLAYS BY SOUNDING

SHRP PROTOCOL P69
For SHRP Test Designation: PC09

DETECTION OF DELAMINATION OF BONDED CONCRETE OVERLAYS BY SOUNDING

This SHRP protocol covers the test method for detecting delaminations of bonded concrete overlays. The protocol is based on ASTM D 4580-86 (Measuring Delaminations in Concrete Bridge Decks by Sounding). The test shall be performed after overlay construction at the intervals noted in SHRP Operational Memorandum No. SHRP-LTPP-OM-024, Specific Pavement Studies Data Collection Guidelines for Experiment SPS-7, Bonded Portland Cement Concrete Overlays", July 1991.

1. SCOPE

This protocol covers the surveying of bonded concrete overlays using either chain drag or by tapping hammer or steel rod to detect delamination between the original and overlay concrete. In this test procedure, the sound produced when the chain is dragged across the surface or the concrete is tapped by a hammer or steel rod is used to determine the presence or lack of delamination between the concrete layers. A clear ringing sound indicates bonded concrete alyers while a dull or hollow sound indicates delaminated concrete layers.

NOTE 1 - The influence of variable field conditions such as traffic noise, vibration, moisture content of the concrete, and the like, are not completely known and additional investigation may be needed. It is generally agreed that the procedure should not be used on frozen concrete.

2. SIGNIFICANCE AND USE

This procedure is used to assess the extent of the interface bond between the overlay and the underlying pavement at those locations considered to be prone to early failure by delamination.

3. SUMMARY OF PRACTICE

Jointed Concrete Pavements: A map of the test section is developed to indicate the location of all joints using copies of the attached Delamination Testing Section Map. Each slab corner is then tested. If delamination is detected the testing should be continued at that location to determine the area that exhibits delamination. This area should then be depicted on the map.

Continuously Reinforced Pavements: A map of the test section is developed indicating the location of the transverse cracks using copies of the attached Delamination Testing Section Map. Testing is performed near the panel corners which are defined by the intersection of the transverse crack and the lane edge. Test locations will depend on the average spacing of the transverse cracks as outlined in Item 4. If delamination is

detected, the testing should be continued at that location to determine the area that exhibits delamination. This area should then be depicted on the map.

4. PAVEMENT SECTION LAYOUT

Jointed Concrete Pavements: For overlays constructed on jointed pavements all slab corners within the test section will be tested.

Continuously Reinforced Pavements: For overlays constructed on continuously reinforced pavements, the panels defined by the transverse cracks will be tested. Testing will be performed near the panel corners which are defined by the intersection of the transverse crack and the lane edge. If the average crack spacing is 3 to 8 feet, testing will be performed at 25 feet intervals. If crack spacing is greater than 8 feet, testing will be performed in each panel.

5. TEST PROCEDURE

At each test location the concrete will be sounded using either a hammer or steel rod. If delamination is suspected, the area that exhibits delamination will be determined by testing locations surrounding the first test point so as to define the boundaries of the delamination. The presence and boundaries of possible delamination determined from this testing will be indicated on the section map.

NOTE 2 - Commercially available electro-mechanical test equipment may be used to detect delamination if such equipment has been demonstrated to be reliable in detecting delamination.

6. DATA INTERPRETATION AND PLOTTING

Determine from the map sheets the total area that exhibits possible delamination.

7. REPORT

Record the following on Construction Data Sheet 36.

7.1 Identification information shall include: SHRP Region, State, State Code, SPS Experiment Number, SPS Project Code, Test Section Number.

7.2 Test identification shall include: test procedure and the test date.

7.4 Total area of pavement section that exhibits delamination as determined from the section map sheets (Construction Data Sheet 37).

7.5 For jointed concrete pavements, the total number of slabs exhibiting delamination.