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STRATEGIC HIGHWAY RESEARCH PROGRAM

SPECIFIC PAVEMENT STUDIES
GUIDELINES FOR NOMINATION AND EVALUATION OF CANDIDATE PROJECTS
FOR EXPERIMENT SPS-8
STUDY OF ENVIRONMENTAL EFFECTS IN THE ABSENCE OF HEAVY LOADS

STRATEGIC HIGHWAY RESEARCH PROGRAM
818 Connecticut Avenue NW
Washington, DC 20006

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SPECIFIC PAVEMENT STUDIES
GUIDELINES FOR NOMINATION AND EVALUATION
OF CANDIDATE PROJECTS FOR EXPERIMENT SPS-8,
STUDY OF ENVIRONMENTAL EFFECTS IN THE ABSENCE OF HEAVY LOADS

INTRODUCTION

This report provides guidelines and information for nominating candidate projects for the Specific Pavement Studies experiment SPS-8, "Study of Environmental Effects in the Absence of Heavy Loads," and outlines participation requirements. Detailed project nomination forms and instructions are included in this document. Details of the experimental design and study factors developed for this experiment through meetings and review by interested highway agencies and other concerned parties are contained in the SHRP document, "Specific Pavement Studies: Experimental Design and Research Plan for Experiment SPS-8, Study of Environmental Effects in the Absence of Heavy Loads," July 1991.

PARTICIPATION REQUIREMENTS

Highway agencies considering participating in the SPS-8 experiment must be willing to perform the following activities:

1. Construct at least the two flexible or two rigid test sections described in the experimental design during the same construction season. However, both flexible and rigid sections may be constructed at the same site if desired. It is desirable that all test sections be opened to traffic at the same time.

2. Purchase, install, and operate a traffic data collection station at or near the site to measure the same traffic that passes over the test sections. As a minimum, this station must be operated to obtain continuous automatic vehicle classification and provide four, one week sessions of seasonal weigh in motion measurements each year. However, it is desirable that the station provide continuous weigh in motion.

3. Purchase, install, and operate a weather station at the test site, if the site is not located in the proximity of an existing station. As a minimum, the weather station must be operated to measure air temperature and precipitation.

4. Perform and/or provide for drilling, coring, and sampling and testing of in-place pavement materials and materials used in the construction of the test sections. SHRP will provide sampling plans tailored to the site plus directives and standard protocols for laboratory tests. Costs for this work must be borne by the participating agency.

5. Prepare plans, specifications, quantities, and all other documents necessary as part of the agency's contracting procedures. The agency must also provide construction control, inspection and management in accordance with their standard quality control and assurance procedures.

6. Provide periodic traffic control for on-site data collection activities such as materials drilling and sampling, deflection measurements, and other monitoring activities.

7. Coordinate maintenance activities on the test sections to prevent application of premature treatments which alter the characteristics of the test sections and limit their use in the study. collect and report all maintenance on the test sections using the GPS maintenance data collection data forms.

8. Perform snow removal operations, as necessary, to keep the test sections open to traffic during the winter months.

9. Perform and report periodic skid resistance measurements in accordance with practices used for GPS test sections.

10. Provide and maintain signing and marking of test sites.

11. Notify SHRP prior to application of overlays or other such treatments when any of the test sections reach an unsafe condition or become candidates for rehabilitation. As much lead time as possible is needed to allow terminal condition of the test sections to be measured.

If highway agency personnel desire to discuss the details of these participating requirements with SHRP, they should contact SHRP regional offices or headquarters.

PROJECT SELECTION CRITERIA

It is anticipated that projects will be proposed from one of a number of different functional categories. In order of preference these are:

- A parallel lane constructed along an existing new construction project, possibly an SPS-1 or SPS-2 site.
- Port of Entry scales under 24 hour use with full truck diversion.
- Parkways and other roads with very limited truck traffic.
- Park roads.
- Low volume rural roads.
- Frontage roads.

Regardless of the functional category of the proposed project, the following criteria will be considered in evaluating candidate projects for inclusion in this experiment:

1. The project must include new construction of all pavement layers for a new route, realignment, reconstruction, or construction of an experimental parallel roadway. Projects in which the experimental sections are constructed as added lanes or as a partial

reconstruction (removal and replacement of surface layers only) are not acceptable.

2. The construction project must be of sufficient length to accommodate the experimental test sections. Transition zones are required between test sections. The length of these transitions depends on site conditions such as locations of cut and fill, but a minimum transition length of 100 feet should be provided between test sections.

3. It is desired that the test sections be located on subgrade soils of similar characteristics and classification. All test sections at one site must be constructed on soils classified as either inactive fine grained, active fine grained or coarse grained. Variation in soil characteristics at each site should be minimized as much as possible.

4. Test sections should be located on portions of the project which are relatively straight and have a uniform vertical grade. Horizontal curves greater than 3° and vertical grades greater than 4% should be avoided.

5. Ideally, all test sections should be located on shallow fills. The entire length of each test section, however, should be located completely on either a cut or a fill. Cut-fill transitions and side hill fills should be avoided.

6. It is highly desirable that all portions of the project that include test sections be opened to traffic at the same time.

7. Culverts, pipes, and other substructures beneath the pavement should be avoided within the limits of each test section. It is recommended that subsurface structures, if required, be located in the transition zones between test sections.

8. It is desired that the project be located on a route with an expected traffic volume in the study lane of at least 100 vehicles per day but not more than 10,000 ESAL/year.

9. Traffic flow over the test sections on the project should be uniform. All sections should carry the same traffic stream. Intersections, rest stops, on-off ramps, and weaving areas, even at the desired low traffic loading, should be avoided between test sections on a project.

These criteria and considerations will help identify projects in which the relative performance of the test sections at each site is due to the design parameters used for the test sections and not to other external factors such as changes in the subgrade or traffic patterns. They also serve to identify projects at different locations with relatively similar details so that differences in performance from one to another are primarily due to differences in climatic conditions and/or subgrade soil.

It is recognized that "perfect" projects containing all of the desired characteristics are rare. Each proposed site must be evaluated individually and compared to other candidates in order to select the best set of projects to satisfy experimental considerations. Some deviation from the desired project characteristics may be necessary in order to obtain sufficient projects for the experiment.

The criteria and considerations presented in this document will be used to evaluate and rank candidate projects in cases where more than the required number of projects are available. They can also be used as a guide by an agency to identify candidate projects in their jurisdiction that are most suitable for nomination.

NOMINATION PROCEDURE

Agencies desiring to participate in the SPS-8 experiment should review candidate projects and evaluate them against the criteria and considerations presented in this document. Two projects, one flexible and one rigid are being sought for each cell in the experimental design factorial as shown in Figure 1. However, both flexible and rigid sections may be constructed at the same project location if desired. Also, additional projects may be included into one or more of the experimental design cells.

Project acceptance will be performed sequentially over time. Decisions on acceptance will be made by the "Latest Date for Approval Notification form SHRP" to be furnished by the nominating agency. Nominating agencies should set this date as late as possible to allow review of other projects nominated for the same cell and selection of the best suited sites for this experiment. Agencies should coordinate their nomination of projects through the SHRP regional offices.

CANDIDATE PROJECT NOMINATION AND INFORMATION FORMS

The following are instructions for completion of the SPS-8 candidate project nomination and information forms. Each form is referenced according to a sheet letter designation.

Sheet A. General Project Information

This sheet includes information on project location, significant dates, a general project description, and design traffic.

State. State or province in which the project is located.

SHRP Project Number. This six digit SHRP project number is assigned by the SHRP Regional Coordination Office and is used as a project reference number.

Subgrade Type	Pavement Type	CLIMATIC REGION			
		WET-FREEZE	WET-NO-FREEZE	DRY-FREEZE	DRY-NO-FREEZE
Active	Flexible	1	1	1	1
	Rigid	1	1	1	1
Fine	Flexible	1	1	1	1
	Rigid	1	1	1	1
Coarse	Flexible	1	1	1	1
	Rigid	1	1	1	1

Figure 1. SPS-8 Site Selection Factorial

Project Location

This portion of the form provides information on the location of the candidate project. In this document, a project refers to the overall construction project. These sections refer to 600 foot portions on the project in which the experimental pavement structures are constructed and monitored over time.

Route Number. This is the number assigned to the route upon which the project is located. The common number used on maps and highway signs should be provided to avoid confusion.

Route Signing. Check the appropriate designation for the route the project is located on. If the route is other than an Interstate, U.S., State, or country please write in the appropriate designation in the space provided with a short explanation. For example, a Farm to Market signed route should be entered as: FM - Farm to Market. This designation should refer how the route is signed and indicated on general highway maps.

Project Location. Enter the start and end mileposts or milepoints of the portion of the project suitable for construction of test sections. The milepost or milepoint refer to reference locations signed or marked along the route in the field. If the route is signed with kilometer posts, enter the appropriate post numbers, scratch out milepost and write kilometer post on the form. The start and end station locations are not required but are requested for use in locating the portion of the project proposed for the experimental sections on the plans.

Project Location Description. This is a written description of the location of the start of the project referenced to a permanent landmark such as signed highway intersections, signed or labeled bridges, underpasses, overpasses, rest areas, and railroad crossings. The objective is to provide a reference for field crews to easily locate the section in the field. Distance from a landmark located prior to the section, in the direction of travel, and a landmark located past the start of the section should be specified. For example, "The start of

the project is 1.2 miles north of overpass 20-45-431; the intersection with I7-1 is located 2.3 miles north of the project" (assuming the direction of travel is northbound).

County. This is the county or governmental jurisdiction unit the project is located within. If a project occurs in more than one county, indicate the county first encountered in the direction of travel.

Highway Agency District Number. This number identifies the highway agency's district, division, or region in which the project is located.

SHRP Environmental Zone. Check the general environmental zone which is appropriate for the project. Figure 2 shows the distribution of general environmental zones. If the climate at the project deviates significantly from that shown in Figure 2, check the appropriate box on the form which best describes the actual environment and attach a sheet of paper to the form which provides a short explanation on the entry.

Subgrade Soil Category. Check the soil description appropriate for the project. Indicate the degree of activity for active fine grained soils and also indicate the frost susceptibility of coarse grained soils if applicable.

Type of Activity. Check the appropriate activity.

Degree of Activity. Check the relative degree or seriousness of the activity.

Significant Dates

Latest Date of Approval Notification from SHRP. This is the latest date that SHRP can notify the agency of acceptance of a project into the experiment. This date represents the latest date that an agency can start preparation of construction specifications and contractual documents in order to have the test sections constructed. This should be a realistic "drop dead date" that provides SHRP with the longest time possible to evaluate and coordinate other candidate

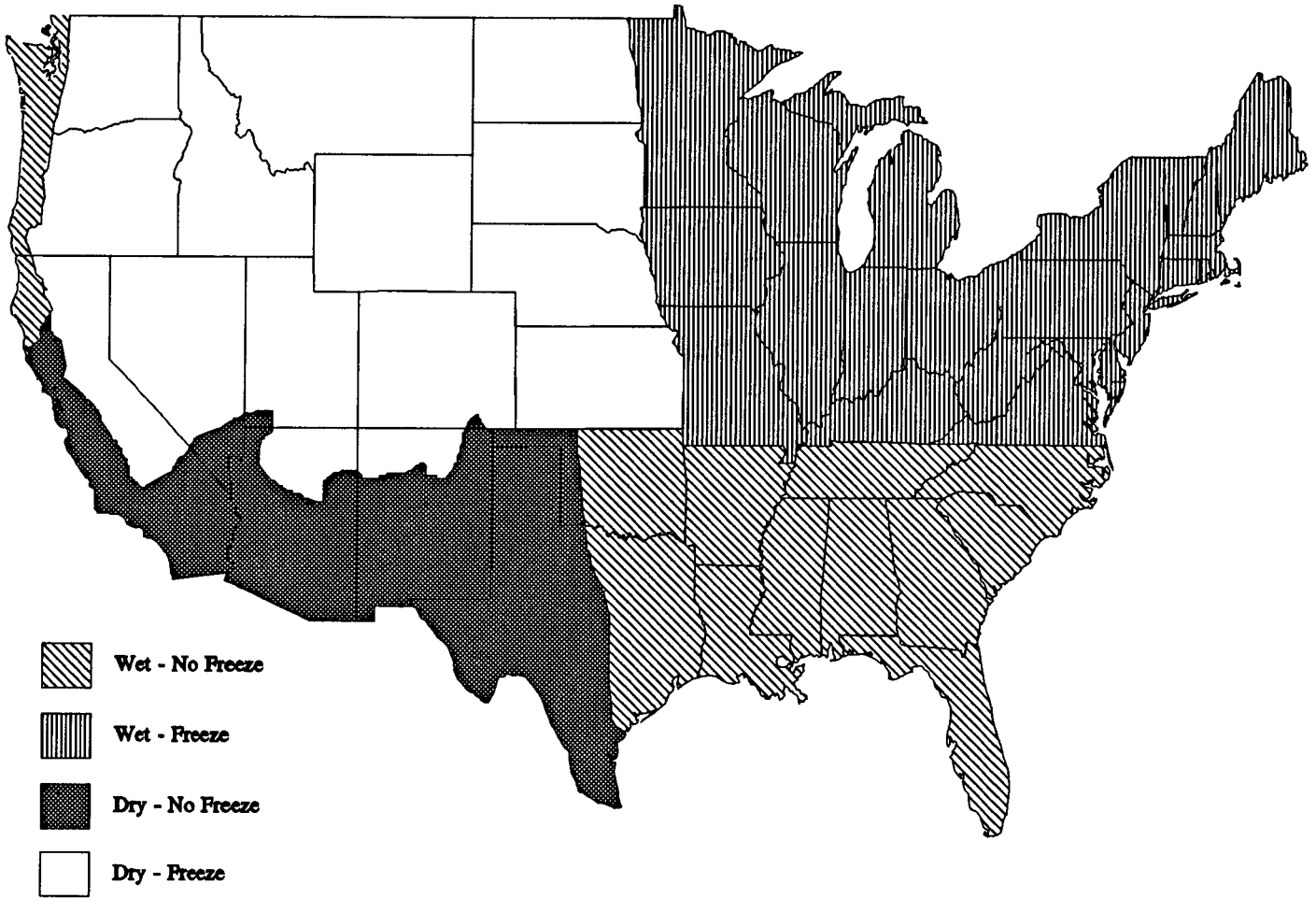

Figure 2. Environmental Zones for SHRP-LTPP Studies

projects so that the best spread and most suitable projects are included into the experiment.

Contract Letting Date. This is the actual date the contract is scheduled for letting.

Estimated Construction Start Date. This is the estimated date that construction on the test section portion of the project is to begin. This date is important for scheduling pre-construction activities, such as section marking, deflection tests, etc.

Estimated Date Test Sections Opened to Traffic. Indicate the expected date that the SHRP test sections will be opened to traffic.

Estimated Construction Completion Date. This is the date that construction of the project in which the SHRP test sections are located is scheduled for completion. In some instances the estimated date the test sections are opened to traffic and the construction completion date will be the same.

Project Description

Project Type. Indicate the type of construction project. If the project is not (1) a new route location, (2) removal and reconstruction of an existing route, or (3) construction of a roadway parallel to an existing route, provide a brief description in the space provided under other.

Facility. Check the appropriate box to indicate if the roadway is divided or undivided.

Number of Lanes. Indicate the total number of traffic lanes in the direction of travel proposed for the test sections.

Design Traffic Information

Average Annual Daily Traffic. This is the estimate of the annual average daily traffic (AADT), all vehicles, both directions, used in the design of the roadway at the location of the proposed project.

Percent Heavy Trucks and Combinations. This is the ratio of trucks and heavy combinations to total vehicles (AADT), expressed to the nearest tenth of a percent. This excludes all pickups, panels, and other two axle, four tired trucks. This is for traffic in both directions.

Estimated 18K ESAL Rate in Study Lane (1,000 ESAL/Yr). Provide the design average application rate of heavy truck loadings, in 18Kip equivalent single axle load applications, in the study lane of the proposed project. This should be the design number of ESAL applications divided by the duration of the design period.

Total Design 18K ESAL Applications in Design Lane. Enter the design number of total 18K ESAL application in the study lane over the design period. This should be the average of mean expected number of applications.

Design Period. Enter the length of the design period, in years, that the design traffic used in the pavement design is based upon.

Sheet B. Agency's Pavement Structure Design for Site

The purpose of this sheet is to provide information on the agency's typical pavement structure design for the project site. This should represent the pavement structure adjacent to the test section locations. The information requested on this form is primarily related to the AASHTO Guide for Design of Pavement Structures. If another design method was used to design the pavement structure at this site, please attach additional sheets to these forms providing information on the details of the basis of the design method used. Please provide equivalent AASHTO design inputs on this form, as appropriate, to allow comparison with other projects in the experiment.

Layer Number. This layer number convention starts with the naturally occurring subgrade as layer 1 and progresses to the pavement surface as the highest numbered layer. Each unique material layer above the subgrade is assigned a layer number and corresponding material type code, thickness and structural coefficient value. Nine or fewer layers can be identified with this form.

Layer Description Code. These codes, listed under note 2 on the form, indicate the general name and function of each layer identified in the proposed pavement structure.

Hot Mixed Asphalt Concrete (HMAC) layers of different mix characteristics than the surface layer should be identified as Code 4, Subsurface HMAC. These layers will be considered as part of the total thickness of the asphalt concrete surface layer. Where HMAC class materials are used as a base, they should be coded as a base layer (Code 05).

Many agencies cover poor subgrades with varying thicknesses of select material. Such embankments or shallow fills should be reported as a subbase layer (Code 06).

Material Type Class Code. The two digit codes identifying the type of material in each layer of the pavement structure are shown in Tables 1 through 4 of Appendix A. The intent is general identification of materials for classification and project selection purposes.

Thickness. Indicate the design thickness of each layer identified. Leave the depth of the subgrade layer blank unless the depth of the subgrade to a rigid layer is known.

Structural Coefficient. Provide the AASHTO structural layer coefficient used in the pavement design or an appropriate design estimate of this value for this type of material. If this value is modified for drainage effects, provide the modified value in this table. For the subgrade, provide a soil support value or resilient modulus value used for design purposes.

Structural Design Method. Indicate if the structural design method is based on (1) 1972 AASHTO Interim Guide for Design of Pavement Structures, (2) 1986 AASHTO Guide for Design of Pavement Structures, (3) an agency modification of the AASHTO Guide concepts and procedures, or (4) an other agency procedure not based on the AASHTO methodology. Please provide a brief description or title of the non-AASHTO design method on Sheet B and attach technical details of the basis of the design method used by the agency for this project. If a modified AASHTO design approach was used, please provide information on the significant technical details of this approach.

AASHTO Reliability Factors. If the 1986 AASHTO Guide for Design of Pavement Structures is used for the design of the pavement structure, please provide the value of the reliability level, R, in percent, and the overall design standard deviation, S_o, used in the design. Leave blank if not applicable.

Outside Shoulder Type. Check the appropriate box or describe the type of shoulder present on the project.

Outside Shoulder Width. Enter the approximate width of the outside shoulder in feet.

Subsurface Edge Drains. Check the appropriate box to indicate if subsurface drains are used.

Sheet D. Test Section Layout and Other Test Sections

This sheet includes details on layout of the SHRP experimental test sections, GPS test sections near the proposed project and supplemental test section of interest to the agency.

Test Section Layout

This information pertains to the locations of the SHRP experimental test sections on the candidate project. Guidelines for test section locations are presented in the project selection criteria portion of this document.

Number of Test Sections on Cut and Fill. The as-built plan and profile sheets for the candidate project should be reviewed to determine the nature of the suitable locations for the test sections. It is preferred that all test sections be located either entirely in a fill or a cut. For practical considerations, potential test sections should be 600 feet long to enable sampling of the subgrade and the pavement structure, if needed, outside the 500 foot monitoring length. If all test sections can be located completely in a cut or fill, place a check mark on the appropriate line. If it is not possible to locate all test sections entirely on fills or cuts and it is necessary to locate some test sections on cuts and some on fills within the project, indicate the number of potential locations on cuts and the number of potential locations on fills.

Shortest Transition Between Test Sections. Indicate the shortest transition required between two consecutive test sections in order to fit all of the test sections within the project limits.

Vertical Grade. Enter the average vertical grade slope that the test sections are located on in percent. Downgrades, in the direction of travel, should be indicated as a negative value. If the test sections are located on varying slopes, provide information under comments on deviations from desired site selection sites.

Horizontal Curvature. Check the box if the test sections are located on a tangent section or indicate the horizontal degree of curvature at the test site. Provide a brief description under deviation from desired site selection criteria if some sections are located on tangents and others on horizontal curves. Provide information on any differences in cross slope of test sections due to superelevations on horizontal curves.

Comments on Deviations from Site Location Criteria. Provide brief comments describing significant deviation from the desired site location criteria presented in this document. Include in these comments items such as:

Test section alignment.
Unusual traffic patterns.
Intersections between test sections.
Substructures beneath test sections.
Test section locations at cut-fill transitions.
Variations in subgrade along project.
Short transitions between test sections (<100 feet).
Long transitions between test sections (>1/2 mile).
Construction constraints.

Attach additional sheets to the form if more space is needed for comments.

Other SHRP Test Sections

Project Conformity to GPS-1 and GPS-3 Criteria. If the agency's pavement design for the project conforms to the criteria for either GPS-1 or GPS-3 projects check the yes box. Consideration will be given to establishing a GPS test section on the non-SPS portion of the project.

Distance to Nearest GPS Test Section on Same Route. If an existing GPS test section is located on the same route within the state or province, indicate the distance from the candidate project to the GPS section. If no GPS test sections are located on the same route, leave this space blank.

Test Section Number of Nearest GPS Section. Enter the SHRP test section number of the GPS test section referenced in the previous entry. Leave blank if no sections are located on the same route.

Supplemental Test Sections

This information pertains to supplemental test sections that the agency proposes to construct on the same project to investigate factors of direct interest to the agency. These test sections are in addition to the SHRP SPS-8 test sections.

Total Number of Supplemental Test Sections. Indicate the proposed number of additional supplemental test sections of interest by the agency.

Factors to be Investigated. For each proposed supplemental test section, indicate the experimental factors to be investigated. Attach additional sheets if more space is needed.

APPENDIX A
CANDIDATE PROJECT NOMINATION AND INFORMATION FORMS
FOR
SPS-8 STUDY OF ENVIRONMENTAL EFFECTS IN THE ABSENCE OF HEAVY LOADS

SHEET A. SPS-8 CANDIDATE PROJECT NOMINATION AND INFORMATION FORM

STATE _____ SHRP SECTION NO. _____

PROJECT LOCATION

ROUTE NUMBER _____

ROUTE SIGNING [ ] Interstate [ ] U.S. [ ] State [ ] County
Other _____

PROJECT LOCATION Start Milepost _____ End Milepost _____
Start Milepost _____ End Milepost _____

DIRECTION OF TRAVEL [ ] North B. [ ] South B. [ ] West B. [ ] East B.

PROJECT LOCATION DESCRIPTION _____

_____

COUNTY _____
HIGHWAY AGENCY DISTRICT NUMBER _____
SHRP ENVIRONMENTAL ZONE
[ ] Wet Freeze [ ] Wet No-Freeze [ ] Dry Freeze [ ] Dry No-Freeze

SUBGRADE SOIL CATEGORY
[ ] Active [ ] Fine Grained [ ] Coarse Grained

TYPE OF ACTIVITY DEGREE OF ACTIVITY

[ ] Swelling [ ] Frost Heave [ ] Low [ ] Moderate [ ] High

SIGNIFICANT DATES

LATEST DATE OF APPROVAL NOTIFICATION FROM SHRP _____
CONTRACT LETTING DATE _____
ESTIMATED CONSTRUCTION START DATE _____
ESTIMATED DATE TEST SECTIONS OPENED TO TRAFFIC _____
ESTIMATED CONSTRUCTION COMPLETION DATE _____

PROJECT DESCRIPTION

PROJECT TYPE [ ] New Route [ ] Removal and Reconstruction
[ ] Parallel Roadway
Other _____

_____

DESIGN TRAFFIC DATA

ANNUAL AVERAGE DAILY TRAFFIC (TWO DIRECTIONS) _____
% HEAVY TRUCKS AND COMBINATIONS (OF AADT) _____
ESTIMATED 18K ESAL RATE IN STUDY LANE (1,000 ESAL/YR) _____
TOTAL DESIGN 18K ESAL APPLICATIONS IN DESIGN LANE _____
DESIGN PERIOD (Years) _____

SHEET B. SPS-8 CANDIDATE PROJECT NOMINATION AND INFORMATION FORM

STATE _____ SHRP SECTION NO. _____

AGENCY'S PAVEMENT STRUCTURE DESIGN FOR SITE

LAYER[1] NO.	LAYER[2] DESCRIPTION CODE	MATERIAL TYPE[3] CLASS CODE	THICKNESS[4] (INCHES)	STRUCTURAL[5] COEFFICIENT
1	— —	— —	— —.—	_____
2	— —	— —	— —.—	_____
3	— —	— —	— —.—	_____
4	— —	— —	— —.—	_____
5	— —	— —	— —.—	_____
6	— —	— —	— —.—	_____
7	— —	— —	— —.—	_____
8	— —	— —	— —.—	_____
9	— —	— —	— —.—	_____

STRUCTURAL DESIGN METHOD [ ] 1972 AASHTO [ ] 1986 AASHTO [ ] Modified AASHTO
Other _____

AASHTO DESIGN RELIABILITY FACTORS R% _____ S_o _____

OUTSIDE SHOULDER TYPE

[ ] Turf [ ] Granular [ ] Asphalt Concrete [ ] Surface Treatment
[ ] PCC [ ] Curb and Gutter Other _____

OUTSIDE SHOULDER WIDTH (Feet) _____

SUBSURFACE EDGE DRAINS [ ] Yes [ ] No

NOTES

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

2. Layer description codes:

Surface Layer..... 03	Base Layer..... 05	Subgrade..... 07
Subsurface HMAC... 04	Subbase Layer... 06	Embankment (Fill)... 11

3. Refer to Tables 1 through 4 for material class codes.

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

5. Enter AASHTO structural layer coefficient value, as appropriately modified, used in pavement design or typical coefficient used by agency for this material. For the subgrade, enter either AASHTO soil support value or resilient modulus value (psi) used in design.

SHEET C. SPS-8 CANDIDATE PROJECT NOMINATION AND INFORMATION FORM

STATE _____ SHRP SECTION NO. _____

TEST SECTION LAYOUT

NUMBER OF TEST SECTIONS ENTIRELY ON: FILL _____ CUT _____

SHORTEST TRANSITION BETWEEN CONSECUTIVE TEST SECTIONS (Feet) _____

VERTICAL GRADE (Avg %) (+ upgrade; - downgrade) _____

HORIZONTAL CURVATURE (Degrees) [ ] Tangent _____

COMMENTS ON DEVIATIONS FROM DESIRED SITE LOCATION CRITERIA _____

_____

_____

_____

_____

_____

_____

OTHER SHRP TEST SECTIONS

FLEXIBLE - DOES AGENCY DESIGN CONFORM TO GPS-1 PROJECT CRITERIA?
[ ] Yes [ ] No

RIGID - DOES AGENCY DESIGN CONFORM TO GPS-3 PROJECT CRITERIA?
[ ] Yes [ ] No

DISTANCE TO NEAREST GPS TEST SECTION ON SAME ROUTE (Miles) _____

TEST SECTION NUMBER OF NEAREST GPS SECTION _____

SUPPLEMENTAL TEST SECTIONS

IF SUPPLEMENTAL EXPERIMENTAL TEST SECTIONS ARE PROPOSED, COMPLETE THE FOLLOWING

TOTAL NUMBER OF SUPPLEMENTAL TEST SECTIONS _____

FACTORS TO BE INVESTIGATED _____

_____

_____

_____

_____

_____

Table 1. 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
Jointed Plain Portland Cement Concrete	04
Jointed Reinforced Portland Cement Concrete	05
Continuously Reinforced Portland Cement Concrete	06
Prestressed Portland Cement Concrete	07
Fiber Reinforced Portland Cement Concrete	08
Plant Mix, Cold Laid, Emulsified Asphalt Material	09
Plant Mix, Cold Laid, Cutback Asphalt Material	10
Single Surface Treatment	11
Double Surface Treatment	12
Hot Recycled, Central Plant Mix, Asphalt Concrete	13
Central Plant Mix, Cold Laid, Recycled Asphalt Concrete	14
Mixed-in-place, Cold Laid, Recycled Asphalt Concrete	15
Heater Scarification/Recompaction, Recycled Asphalt Concrete	16
Jointed Plain Recycled Portland Cement Concrete	17
Jointed Reinforced Recycled Portland Cement Concrete	18
Other	20

Table 2. Base and Subbase Material Type Classification Codes

MATERIAL TYPE	CODE
No Base (Pavement Directly on Subgrade)	21
Uncrushed Gravel	22
Crushed Stone, Gravel or Slag	23
Sand	24
Soil-Aggregate Mixture, Predominately Fine-Grained Soil	25
Soil-Aggregate Mixture, Predominately Coarse-Grained Soil	26
Soil Cement	27
BITUMINOUS 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/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
Open Graded, Untreated Aggregate Drainage Layer	47

Table 3. Subgrade Soil Description Codes

MATERIAL TYPE	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 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

Table 4. Material Type Classification Codes for Thin Seals and Interlayers

MATERIAL TYPE	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 (Excluding Crumb Rubber)	81
Sand Seal	82
Asphalt Rubber Seal Coat (Stress Absorbing Membrane)	83
Sand Asphalt	84
Other	85