

IOWA SHRP UPDATE No. 5

Iowa Department of Transportation
Highway Division
Office of Materials
August 1990

Iowa Hosts National Meeting

On May 8 and 9, Iowa hosted a national SHRP meeting to review and finalize construction guidelines for the SPS-6 experiment. Iowa was asked to host the meeting because of our SPS-6 experience. The meeting was attended by thirty-seven persons representing several state highway agencies, SHRP, the FHWA, Canadian SHRP and the United Kingdom. Meeting participants discussed all aspects of the SPS-6 experiment design including site construction, data collection, and field sampling and testing, and were given the opportunity to provide input to the final SPS-6 guidelines. During the afternoon of the second day, participants visited Iowa's SPS-6 site on I-35. This was apparently a popular activity as many left vehicles to walk the site in spite of the unusually cool and windy weather.

SPS Activity

Iowa will continue to expand its participation in the SHRP SPS program in 1990 and 1991. An SPS-3 site has been established on Iowa 196 in Sac County and nomination forms for SPS-2, SPS-4 and SPS-7 sites have been sent to the SHRP North Central Regional Office. Regrettably, the SPS-1 site planned for I-80 in Cass/Pottawattamie County will not be constructed.

The SPS-1 experiment is designed to study structural factors for a.c.c pavements. The twelve special sections, each 500 feet in length, vary from a section consisting of 4 inches of a.c.c. pavement on a 12 inch aggregate base to 4 inches of a.c.c. on 12 inches of a.c.c. base over a 4 inch a.c.c. drainage layer. In comparison, the project design for the section of I-80 nominated for the SPS-1 site consists of a 4 inch a.c.c. surface on 13 inches of a.c.c base over a 6 inch granular subbase.

Some of the experimental sections would not normally be used for an interstate pavement with the heavy traffic which exists on this section of I-80. It was realized that some sections could experience high maintenance cost, a relatively short life cycle and ultimately result in early replacement. Iowa had agreed to construct all of the sections in the experiment, as designed, for the site to be included in the national SHRP study. This standard experimental design ensures that comparable data will be obtained on a regional and a national basis.

When the Cass/Pottawattamie County project (IR-80-1(174)40--12-15), including the SPS-1 site, went to letting on March 27, it was rejected because the bids received exceeded the engineers estimate by more than five percent. This combined with the expected high maintenance cost on some sections effected the decision to redesign and relet the project without the SPS-1 site. The project was subsequently let on May 1 for \$7,147,956.06.

The SHRP SPS-3 experiment is directed at studying maintenance effectiveness of asphalt pavements. Each SPS-3 site included in the national study will include a 500-foot section of chip seal, slurry seal, crack seal and thin overlay, as well as any special sections which states may want to include for independent evaluation. Each SPS-3 site will also include a companion GPS site.

A unique aspect of the SPS-3 study is the use of a regional contract for site construction. By using one contractor and one source of material to construct all SPS-3 sites in the North Central Region, greater consistency of materials and application will be maintained. Delta Asphalt Paving of Council Bluffs will be the SPS-3 contractor in the North Central Region.

Iowa again acted as a pilot state by being the first state scheduled for SPS-3 construction in the North Central Region. Rainy weather during the week of July 9 delayed completion of the site and contributed to the failure of the slurry seal section. Diluted by rain and a wet pavement surface, the slurry seal mix didn't achieve a proper set and was subsequently removed from the pavement. The contractor plans to return in August and complete the slurry seal section. The chip seal and joint seal sections were completed the following day with no problems. State maintenance forces placed the thin overlay section during the week of July 23.

SPS-4 is the PC paving counterpart to the SPS-3 study. The PC maintenance practices under study in the experiment presently include pavement undersealing and different intensities of joint cleaning, routing and sealing. As with the SPS-3 study, states may incorporate special sections for evaluation in the study. Iowa is considering expanding the study to evaluate various types of joint sealant materials. A site on US 20 in Hamilton County near the present GPS site has been nominated for inclusion in the SPS-4 study.

Iowa's SPS-6 site in addition to being the center of attention for a national SHRP meeting (see above) has also been the center of additional research activity. During the week of July 10, special instrumentation was installed in several places in the shoulder to measure the slab movement at pavement joints. This equipment was installed by the Materials Office research section in cooperation with the FHWA.

Other activity at the SPS-6 site includes the installation of WIM (Weigh-in-Motion) equipment and pavement patching in the CPR sections by Resident Maintenance forces. The WIM equipment, in-

stalled by Transportation Inventory personnel, will be operational as soon as the necessary cabling can be completed. Wet soil conditions have delayed the trenching required to complete the equipment hookup. WIM equipment will provide the vehicle classification and truck weight information required by SHRP for SPS-6 sites.

Since completion of the SPS-6 last year, pavement distress in the form of longitudinal cracking and spalling along the centerline joint have been noticed in the CPR and control section. Resident maintenance forces will be repairing these areas as routine maintenance activity. As noted in previous newsletters, routine maintenance is allowed in SHRP sections. If there is any question as to what would be considered routine maintenance consult the maintenance guidelines or call one of the phone numbers listed below.

SPS-2, structural factors for PC pavements, and SPS-7, bonded PC overlay of PC pavements, are additional SHRP studies in which Iowa may participate in the future. SPS-2, the PC paving counterpart to SPS-1, involves construction variations in pavement thickness, pavement strength, pavement base and drainage. The PC reconstruction of I-80 in Poweshiek County has been nominated for this study. The experimental design for SPS-7 is still under development but the test sections under consideration include two thicknesses of overlay, grouted and ungrouted sections, and two levels of surface preparation. The planned overlay of I-35 in Hamilton County has been nominated for this study.

GPS Sampling and Testing Activity

The regional sampling and testing contractor completed the initial sampling and testing at nine of Iowa's thirteen GPS/SPS sites this April. Sampling and testing at the other four sites was completed last fall. The sampling at each site included pavement coring, soil boring and soil samples. At six sites test pits were used to obtain the samples and nuclear densities of base and subgrade materials. At sites where test pits were not performed, large diameter cores (12 inch) were used to obtain the required samples. FWD (Falling Weight Deflectometer) data for pavement structural evaluation was also collected at each site.

This will complete the most intensive data collection effort at the GPS/SPS sites. Future data collection at the site will be limited to additional FWD testing and mobile testing such as PASCO and profilometer. The PASCO unit produces a high resolution strip photograph of the pavement surface. The Profilometer collects and records pavement profile information for smoothness evaluation and comparison.

Changes in GPS Sites

The Tama County site on IA 96 has been dropped from SHRP research. Pavement cores taken on the project revealed that additional surface treatments had been applied between the original pavement and the present surface. SHRP criteria for this experiment allows only

one resurfacing of the original pavement. The decision to drop this site was also affected by the limited history information available concerning the original paving project. It was felt that it would be extremely difficult to complete the project history information requested by SHRP with the information available.

A GPS site has been added in Sac County on IA 196 along with the SPS-3 site. For SPS-3 and SPS-4, SHRP requires a GPS site be established adjacent to the SPS sites. The SPS-4 site proposed in Hamilton County is being located near an existing GPS site, so an additional site will not be added in that location.

Reminders

Please review the table listing current GPS sites and be aware of the status of sites in your area. If maintenance activities are planned on pavements including SHRP sites, please review the SHRP maintenance guidelines to ensure appropriate action is taken. If you have questions about the current status of a site or need a copy of the guidelines, please contact central Materials.

All time and expenses related to SHRP activities should be reported to Function 777. Project Control No. 72-00-1054-000 should be used for all SHRP work except work pertaining to the SPS-3 in Sac County. SPS-3 related work should be charged to Project Control No. 72-00-1056-000. Types of work activities which should be reported may include traffic control, pavement testing activity, project history research, construction inspection, and materials sampling and inspection. This is not meant to be a complete list but just suggestive of the types of activities to be included. It is important that all time spent working on SHRP be recorded so that an accurate cost of the program can be established.

If you have any comments or concerns or require further information about items in the SHRP update or SHRP in general, please contact one of the following:

Bernie Brown - 515-239-1452
Jerry Bergren - 515-239-1130
John Heggen - 515-239-1604

SHRP GPS Sites

<u>SHRP#</u>	<u>DIST</u>	<u>COUNTY</u>	<u>ROUTE</u>	<u>DIR</u>	<u>MILEPOST</u>	
JOINTED PAVEMENTS						
193055	1	Hamilton	US 20	WB	152.04	151.95
193033	6	Johnson	US 218	NB	86.35	86.45
193006	6	Clinton	US 30	EB	317.30	317.40
193028	6	Johnson	US 218	NB	95.23	95.33
193009	6	Linn	I-380	NB	18.89	18.99
CONTINUOUS REINFORCED PAVEMENTS						
195046	2	Franklin	I-35	NB	155.40	155.50
195042	2	Wright	I-35	NB	152.20	152.30
ASPHALT PAVEMENTS						
196049	6	Cedar	I-80	WB	261.48	261.38
191044	6	Buchanan	US 20	EB	266.76	266.86
196150	3	Sac	IA 196	NB	Sta. 646	651
ASPHALT OVERLAY OF PC PAVEMENT						
199126	6	Scott	I-80	WB	303.38	303.29
199116	2	Worth	I-35	NB	216.75	216.84

SHRP SPS Sites

SPS-3	3	Sac	IA 196	NB	Sta. 657	710
SPS-6	1	Polk	I-35	SB	98.82	94.75

Acronyms

CPR - Concrete Pavement Repair
 FWD - Falling Weight Deflectometer
 GPS - General Pavement Study
 LTPP - Long Term Pavement Performance
 SHRP - Strategic Highway Research Program
 SPS - Specific Pavement Study
 WIM - Weigh-in-Motion

Numbers

SHRP Function Code - 777
 Project Control Number for
 all SHRP activity except SPS-3 72-00-1054-000
 Project Control Number for SPS-3 72-00-1056-000

