IOWA SHRP UPDATE No. 4

Iowa Department of Transportation
Highway Division
Office of Materials
10-89

SPS-6 Project Status

The construction of SPS-6 on I-35 in Polk County is now complete but the sampling, testing and collection of information will continue as it did prior to and during construction. The collection of samples began in July when the North Central Regional sampling and testing contractor visited the site to collect pavement cores, soil samples and Falling Weight Deflectometer (FWD) deflection data. At the same time, the DOT Materials Office Special Investigations section collected Road Rater information with Iowa's model 400 Road Rater. The Road Rater and the FWD measure pavement deflection for use in structural evaluation but use different methods to produce the deflections. The information gathered from the FWD and Road Rater will be analyzed to learn how well the deflection measurements and resulting structural evaluations compare between the two machines.

Also in July, test pits were opened in three locations at the SPS site. The purpose of test pits are to obtain in-place nuclear density, moisture samples, and bulk samples of the base and subgrade. The pits were opened by the patching subcontractor and the samples were collected by Iowa DOT personnel. These samples will be shipped to the regional SHRP contractor.

During construction of the overlay materials samples of the aggregate, asphalt and asphalt mix were collected. The samples collected include 1000 lbs. of binder and surface aggregate, 55 gallons of liquid asphalt, and 50 lbs of binder and surface mix. These samples will be shipped to the University of Texas at Austin for storage in a Materials library and distributed to researchers studying the performance of asphalts and asphalt mixes.

Additional deflection data was collected during the crack and seating operation using the Road Rater. Data was collected after the cracking operation and again after the seating operation. This information will be analyzed to determine the effectiveness of the cracking and seating and for structural comparisons of before and after cracking and seating, and before and after overlay. The North Central Regional contractor plans to collect additional FWD deflection data this fall to document the post overlay structural condition.

During the second week in September the paint lines marking the test sections were restored so PASCO could make an additional survey of the SPS-site before winter. The PASCO unit produces a high resolution strip photograph of the pavement surface recording cracks and surface defects. The first PASCO survey took place prior to construction in early June. The second was completed in September following the construction of the overlay and completion of the work on the CPR

sections. It was highly desirable to complete the second survey at that time to document the pavement condition after construction but prior to the freeze thaw cycles of the coming winter. The PASCO surveys will be repeated in the future and will constitute an ongoing visual record of the pavement condition.

Additional SPS Sites

Iowa is considering participation in additional SPS studies. Participation is dependent on construction scheduling, final SPS experiment design, and acceptance of proposed sites by SHRP. SPS studies currently under consideration include: SPS-1 structural factors of asphalt pavements, SPS-2 structural factors of concrete pavement, SPS-3 & 4 maintenance effectiveness studies, SPS-5 restoration and overlay of asphalt pavement, and SPS-7 bonded PC overlay.

SPS-1 and SPS-2 if undertaken will involve construction of new asphalt and portland cement pavement respectively. The intent of the SPS-1 is to study the effects of drainage, in combination with variation in structural factors such as surface and base thickness. SPS-2 will address similar questions for PC pavements. It will involve newly constructed PC pavements with variation in drainage, pavement thickness, pavement strength, and subbase type.

Maintenance effectiveness studies, SPS-3 and 4, will study the relative merits of current and possibly innovative maintenance practices. SPS-3 will deal with asphalt pavements and study the effectiveness of chip seals, thin overlays, slurry seals and crack sealing. SPS-4 will study maintenance practices for PC pavements involving joint and crack sealing and undersealing.

SPS-5 and SPS-6 are designed to study restoration techniques for AC and PC pavements. SPS-5 studies various restoration and overlay preparation techniques for AC pavements combined with various overlay thickness. SPS-6 is the companion PC pavement project to SPS-5, involving various restoration techniques and overlay preparation techniques for PC pavements in combination with various AC overlay thickness. Iowa constructed an SPS-6 pilot study this summer in Polk County.

Additional SPS studies 7,8,9 and 10 will involve bonded PC overlay of PC pavements, environmental effects on pavements, asphalt related studies, and PC related studies respectively. These studies are in the very early stages of development with few details available.

GPS Status

A GPS section has been added in Wright County. This site is located in the northbound lane of I-35 at Milepost 152.20 to 152.30 (station 113 to 118). This section was added as a replacement section for the I-74 section dropped earlier this year. An updated table showing current GPS and SPS sites is included in this news letter along with a current map.

SPS-6 TEST SITE
I-35 Polk County

SHRP ID	STATIONING	MILEPOST	LENGTH (FT)	REHABILITATION
190602	598+06 - 588+06	98.82 - 98.63	1000	CPR W/MIN PREP
			296	TRANSITION
190601	585+10 - 580+10	98.57 - 98.48	500	CONTROL SECTION
			985	TRANSITION
190605	570+25 - 560+25	98.29 - 98.10	1000	CPR W/MAX PREP
			10419	TRANSITION
190607	458+76 - 453+76	96.18 - 96.08	500	CRACK/SEAT W/4"OL
			262	TRANSITION
190608	451+14 - 446+14	96.03 - 95.94	500	CRACK/SEAT W/8"OL
			725	TRANSITION
190609*	438+89 - 433+89	95.80 - 95.70	500	STAND, PREP. W/4"OL
			867	TRANSITION
190603	425+22 - 420+22	95.54 - 95.45	500	MIN PREP W/4"OL
			1104	TRANSITION
190604	409+18 - 404+18	95.24 - 95.14	500	MIN PREP W/S&S W/4"OI
			1568	TRANSITION
190606	388+50 - 383+50	94.85 - 94.75	500	MAX PREP W/4" OL

SHRP GPS Sites

SHRP#	**	DIST	COUNTY	ROUTE	DIR	MILEPOST	
JOINTED PAVEMENTS							
193055	C	1	Hamilton	US 20	WB	152.04	151.95
193033	N	6	Johnson	US 218	NB	86.35	86.45
193006	N	6	Clinton	US 30	EB	317.30	317.40
193028	N	6	Johnson	US 218	NB	95.23	95.33
183009	N	6	Linn	I-380	NB	18.89	18.99
CONTINUOUS REINFORCED PAVEMENTS							
195046	C	2	Franklin	I-35	NB	155.40	155.50
195042*	N	2	Wright	I-35	NB	152.20	152.30
ASPHALT PAVEMENTS							
196041	N	1	Tama	IA 96	WB	12.60	12.50
196049	N	6	Cedar	I-80	WB	261.48	261.38
191044	N	6	Buchanan	US 20	EB	266.76	266.86
ASPHALT OVERLAY OF PC PAVEMENT							
199126	N	6	Scott	I-80	WB	303.38	303.29
199116	C	2	Worth	I-35	NB	216.75	216.84

*Additions and changes since last update was published.
**Status of coring and boring - C Complete N - Not Complete

TESTING SCHEDULE

The sampling and testing of the remaining GPS sites in Iowa was scheduled to take place in late October. It now appears that this will not take place until next spring. This will include pavement coring, soil boring, soil sampling, test pits and structural evaluation with the Falling Weight Deflectometer (FWD). Completion of all the tests requires approximately 8 hours, therefore, a lane closure of that duration will be required at each site. If the site includes a test pit, (non CRC pavements only) equipment for removing the slab and repairing a 4'x12' area of pavement will need to be provided for by maintenance forces. Material for repair of core holes will also be required. The saw cutting for pavement removal is performed by the sampling and testing contractor. Sites which have yet to be sampled and tested are shown in the table of current GPS sites.

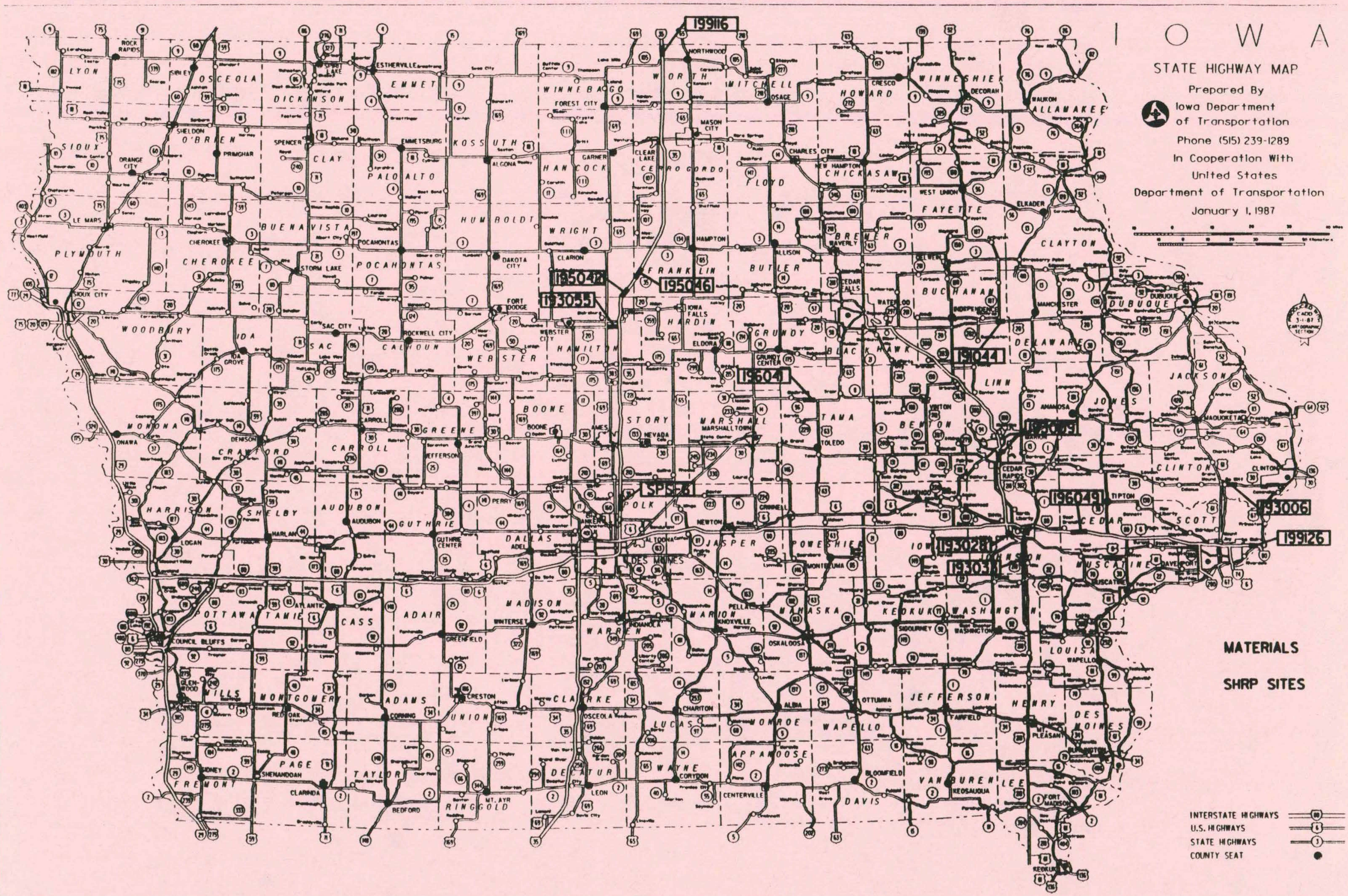
Reminders

Before performing maintenance at or near a GPS or SPS site, please check the Maintenance Data collection guidelines (revised June 26, 1989). If there is any doubt about what can be considered routine maintenance or whether contact with SHRP is required, contact one of the persons listed below. If additional copies of guidelines are needed contact John Heggen at 515-239-1604.

All time and expenses related to SHRP activities should be reported to Function 777, Project Control No. 77 00 1054-000.

If you have any comments or concerns or require further information about items in this 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


I O W A
STATE HIGHWAY MAP
Prepared By
Iowa Department
of Transportation
Phone (515) 239-1289
In Cooperation With
United States
Department of Transportation
January 1, 1987
MATERIALS
SHRP SITES
199116
195042
195046
193055
191044
196041
195009
SPSE81
196049
193006
199126
193028
193031
INTERSTATE HIGHWAYS
U.S. HIGHWAYS
STATE HIGHWAYS
COUNTY SEAT