State of Wisconsin/Department of Transportation

RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: December 31, 2005

Program: SPR-0010(36) FFY99	**Part: II Research and Development**
Project Title: Portland Cement Concrete Pavement Over Rubblized PCC	**Project ID**: 0092-00-11
Administrative Contact: Nina McLawhorn	**Sponsor:** WHRP
WisDOT Technical Contact: James Parry	**Approved Starting Date:** Mar 28, 2000
Approved by COR/Steering Committee: $39,857	**Approved Ending Date:** Dec 31, 2006
Project Investigator (agency & contact): Marquette University, James A. Crovetti	

Percent Complete: 87%

Project Description:
This project is investigating the feasibility of placing PCC pavements over rubblized PCC pavements with or without interlayers. Finite element analyses of PCC pavement systems were conducted to investigate the contributions of rubblized PCC base layers of variable stiffness to stress reductions in the PCC surface layer under loadings. Field investigations of constructed test sections will also be included to document performance results and to validate the results of computer modeling.

Progress This Quarter:
(Includes project committee mtgs, work plan status, contract status, significant progress, etc.)

FWD testing was conducted along the southbound lanes of I-39 on November 10, 2005 using the WisDOT KUAB 2m-FWD. Tests were conducted at mid-lane transverse joint and central slab locations. Eight consecutive slabs (9 transverse joints) were randomly selected from with each of 7 separate test sections. A record of joint/slab distress was also obtained during testing.

Test sections were established based on the base materials remaining prior to pavement construction. 500 foot monitoring sections were established within each test section. Reference information for each monitoring section is provided in Table 1. All tests sections include an 11" doweled JPCP pavement plus 4" CABC-Open Graded #2 overlying the listed base materials.

Table 1: I-39 SB Monitoring Sections

Section ID	North End Station	South End Station	Base Materails
1R	1940+37	1935+32	8" Rubblized PCC over 6" CABC
1H	1926+30	1921+30	7" HMA over 6" CABC
2H	1900+20	1895+20	4" HMA over 10" CABC
1C	1885+20	1880+20	4" HMA over 9" PCC
2C	1801+00	1796+00	4" HMA over 10" PCC
3C	1780+00	1775+00	4" HMA over 9" PCC
2R	1759+90	1754+90	9" Rubblized PCC over 6" CABC

Deflection data was used to compute total joint deflection and load transfer efficiency and to backcalculate structural slab parameters including effective slab thickness and foundation dynamic k-value. Figures 1 – 5 present summaries of the results obtained for each test section

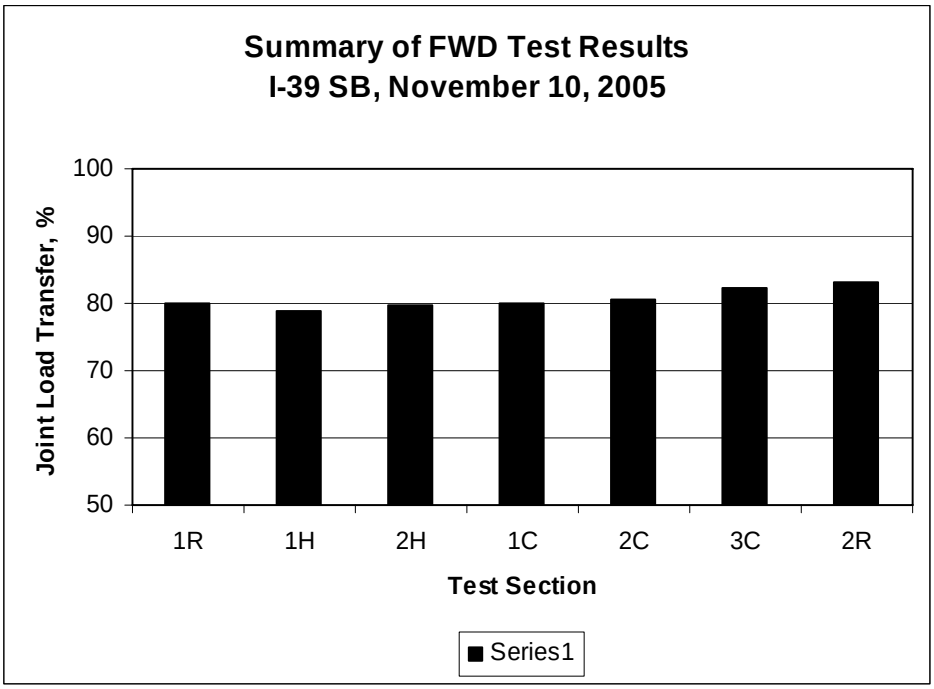

Figure 1: Transverse Joint Load Transfer Efficiencies

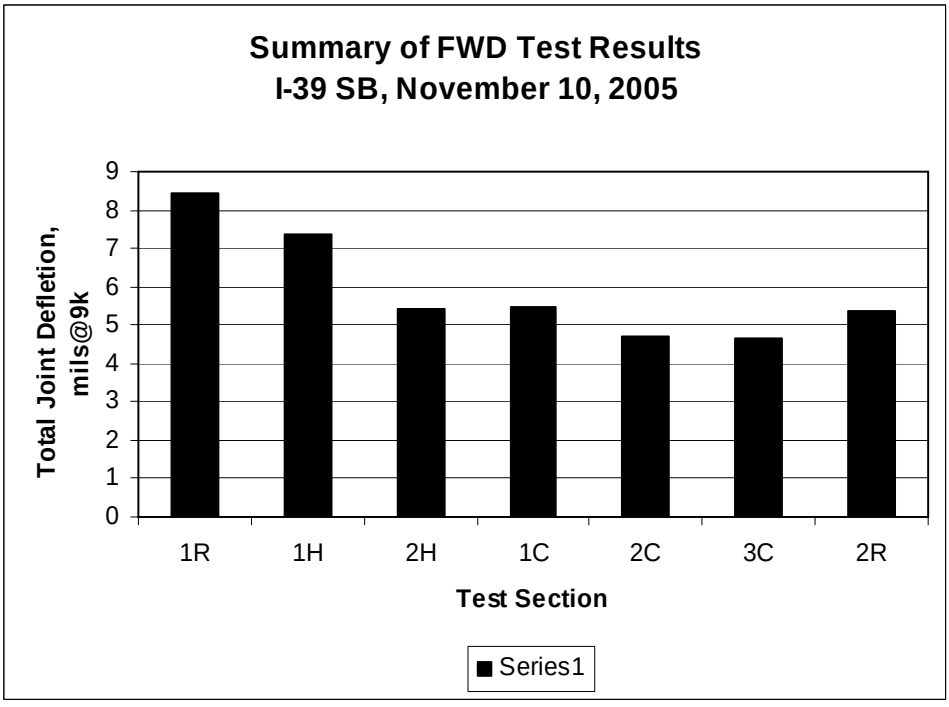

Figure 2: Total Transverse Joint Deflection

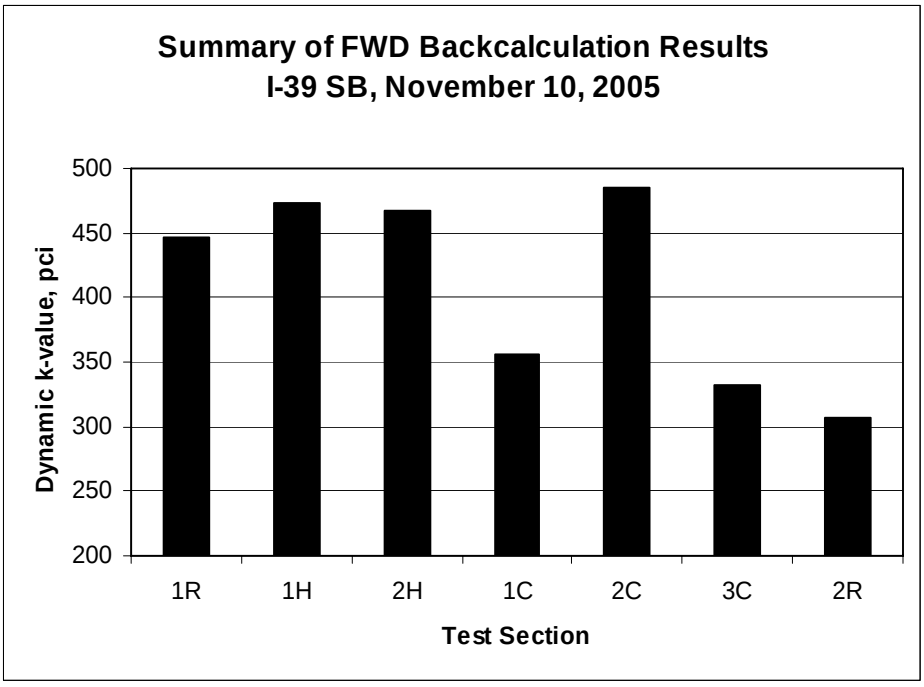

Figure 3: Backcalculated Dynamic k-values

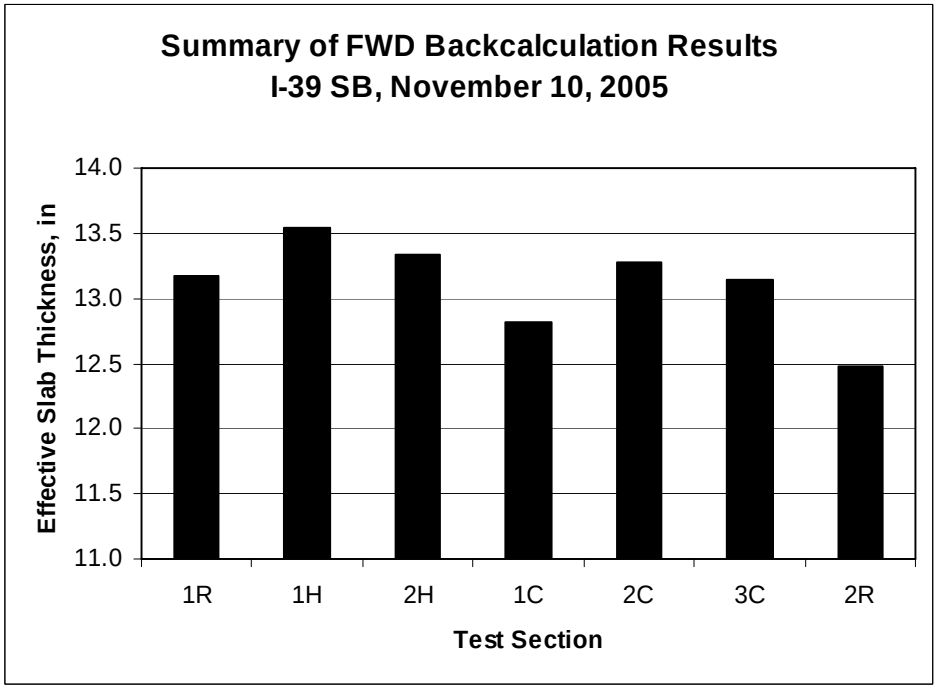

Figure 4: Backcalculated Effective Slab Thicknesses

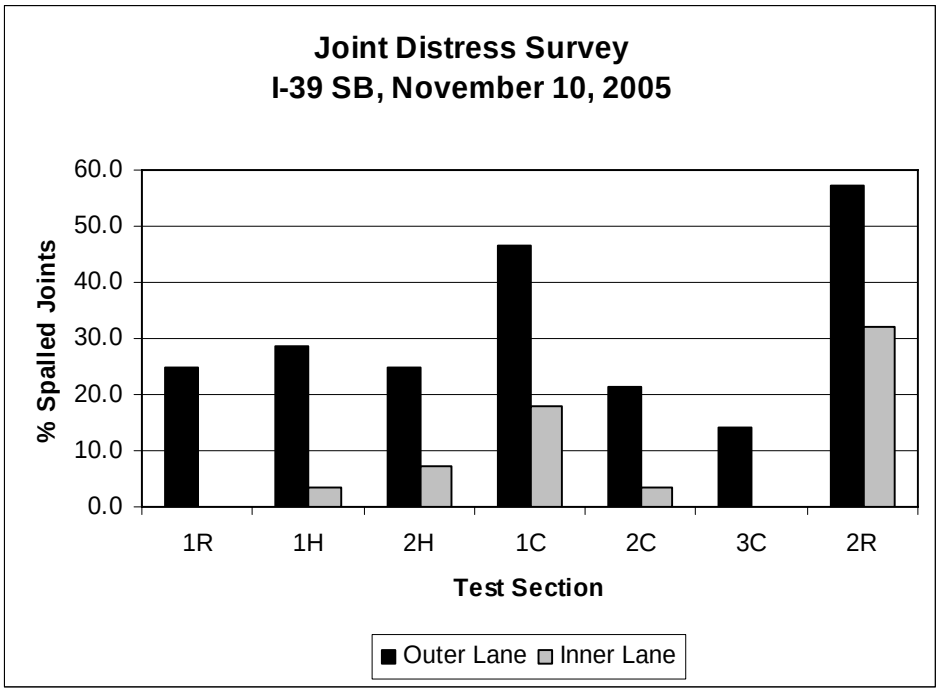

Figure 5: Transverse Joint Distress

Work Next Quarter:

Work on the final report will be conducted. Additional field testing will be scheduled between March 1 – May 31, 2006, depending on weather conditions. FWD tests will be conducted to investigate structural parameters during spring conditions. Pavement cores may also be obtained to document PCC layer thickness and compressive strength. Hydraulic testing of the subsurface drainage systems may also be conducted.

Circumstances Affecting Progress/Budget:

Test sections were constructed in Spring 2004, therefore it was not possible to have 5-year performance data within to the originally proposed study period. The project duration has been extended to December, 2006 to allow for the collection and reporting of 3-year performance data.

Gantt Chart:

Task	CY 2005			CY 2006											
	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1 – Literature Review - Complete (13% of total)															
2 – Data Refinement - Complete (14% of total)															
3 – Test Section Construction - Complete (15% of total)															
4 – Performance Monitoring (40% of total)		P				P	P	P							
		A													
5 – Final Report (18% of total)					P	P			P	P	P	P	R	P	P
			A												

P – Proposed (Revised)
A – Actual
R – WisDOT Review