

# RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: 1st

Wisconsin Department of Transportation  
DT1241 2009

<b>Research, Development and Technology Transfer</b>	
<b>Program:</b> (Choose One)	
<input type="checkbox"/> <b>Policy Research</b>	<input type="checkbox"/> <b>Pooled Fund TPF #</b>
<input checked="" type="checkbox"/> <b>Wisconsin Highway Research Program</b>	<input type="checkbox"/> <b>Other</b>
<b>Project Title:</b> Performance Evaluation of Open Graded Base Course with Doweled and Nondoweled Transverse Joints on U.S.H. 18/151 and S.T.H. 29	
<b>Administrative Contact/Phone #:</b> Peg Lafky, 608-266-3663	<b>WisDOT Project ID(s):</b> 0092-09-03
<b>WisDOT Technical Contact/Phone #:</b> James Parry, 608-249-7939	<b>Other Project ID:</b>
<b>Project Investigator/Phone # (agency &amp; contact):</b> Robert Schmitt, UW-Platteville, 608-342-1239	<b>Approved Starting Date:</b> 10/6/2008
<b>WisDOT Comments:</b>	<b>Original End Date:</b> 4/6/2010
	<b>Current End Date:</b> 4/6/2010
<b>Sponsor:</b> Wisconsin Department of Transportation	<b>Number of Extensions:</b> 0

**Schedule Status:**

- On schedule       Ahead of schedule  
 On revised schedule       Behind schedule (Please explain below)

Total Project Budget	Expenditures Current Quarter	Total Expenditures	% Funds Expended	% Work Completed
\$72,000.00	\$4,000.00	\$13,500.00	19%	20%

**Project Description:**

The objective of this study is to investigate the performance of 17 test sections along USH 18/151 in Iowa and Dane counties, and 4 sections along STH 29 in Brown County applying the following analytical tools:

- (1) WisDOT Pavement Surface Distress Survey Manual and the Pavement Distress Index (PDI);
- (2) International Ride Index (IRI);
- (3) Falling Weight Deflectometer (FWD) testing to evaluate support conditions; and
- (4) Additional analysis tools as detailed in this work proposal.

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

**Task 1. Literature Review**

The objectives of Task 1 are to conduct a comprehensive literature review and investigate factors affecting PCC performance in doweled and undoweled pavements having varying base conditions.

Task 1 is 100% complete; however, developments will continually be monitored during the study.

## **Task 2 – Experimental Design**

The objective of Task 2 is to design a field experiment to collect and analyze field data from the seventeen USH 18/151 test sections, four STH 29 test sections, and five USH 151 test sections. This data will allow a comparison of unique features of each section to determine whether there is an effect between subgrade support, drainability, load transfer, joint seal, and overall performance. Table 1 provides a summary of the 3 project test segments. A break down of work is provided in the following subtasks: (1) Data Overlay and (2) Adjustment to Research PDI.

**Table 1. Project Test Segments**

Project Location (1)	Test Sections (2)	Lane Direction (3)
USH 18/151 Iowa and Dane Counties	17	Eastbound, 14 sections Westbound, 3 sections
USH 151 Columbia County	5	Westbound
STH 29 Brown County	4	Eastbound

### **Subtask 2.1 Data Overlay**

This quarter, the specific location of each test section was identified with respect to traditional RP system. As-built construction locations and collected performance data for each segment were overlaid on single project maps using MSN Maps Live™. Five data sets were overlaid on each project map, as provided in Table 2. These data sets include: (1) as-built test section end points **BROWN**, (2) WisDOT distress and profile data collected in November 2008 **BLUE**, (3) Reference Points for each Sequence Number **RED**, (4) the 0.1-mile WisDOT PDI location that is typically 0.3 to 0.4 miles from starting Reference Point **YELLOW**, and (5) the 0.1-mile test Research PDI location where Falling Weight Deflectometer (FWD) and permeability testing will occur in summer 2009 that is 0.3 miles from the butt joint in the direction of traffic **GREEN**. The location of the Research PDI segment was chosen using current WisDOT practice of measuring performance 0.3 miles from a reference point, in this case, 0.3 miles from the butt joint.

**Table 2. Data Sets overlaid on Maps**

Color (1)	Data Set (2)	Notes (3)
<b>BROWN</b>	Construction as-built sections	Construction stationing was used to identify paving butt joints (end points)
<b>BLUE</b>	WisDOT distress and profile data	Each project was driven in November 2008. This raw data requires adjustment to the Research PDI section, where field FWD testing will occur summer 2009.
<b>RED</b>	Reference Points for each Sequence Number	The endpoints for a section of pavement where performance is measured.
<b>YELLOW</b>	WisDOT PDI	The 528-foot segment where performance distresses and roughness are measured. This is located 0.3 to 0.4 miles from a starting Reference Point, such as intersection.
<b>GREEN</b>	Research PDI	A 528-foot segment of pavement where the performance of the test section is measured. This is located 0.3 to 0.4 miles from the butt joint of each unique test section.

Figures 1 through 5 provide the overlay maps for each project including STH 29/32, USH 151, and USH 18/151, respectively. Each of these maps has the overall project length, along with the 5 data sets. Circles are designated end points of each data set feature.

In Figure 1, the STH 29/32 project indicates a general agreement between the construction butt joints and WisDOT profiler van measurements. However, the RP and Sequence Number termini do not align with the test sections.

Figure 2 illustrates the USH 151 project in Dane and Columbia Counties. This figure illustrates a disagreement between the construction butt joints and WisDOT profiler van measurements. This project will require an adjustment in the raw data to 0.3 miles from the butt joint, as described in the following subtask.

Figures 3 through 5 illustrate USH 18/151 in Iowa and Dane Counties. These figures indicate a disagreement between the construction butt joints and WisDOT profiler van measurements. Many of the construction joints were found between intersections, while the profile measurements originated and terminated at intersections. The following subtask provides the adjustment in the profiler data to the Research PDI locations.

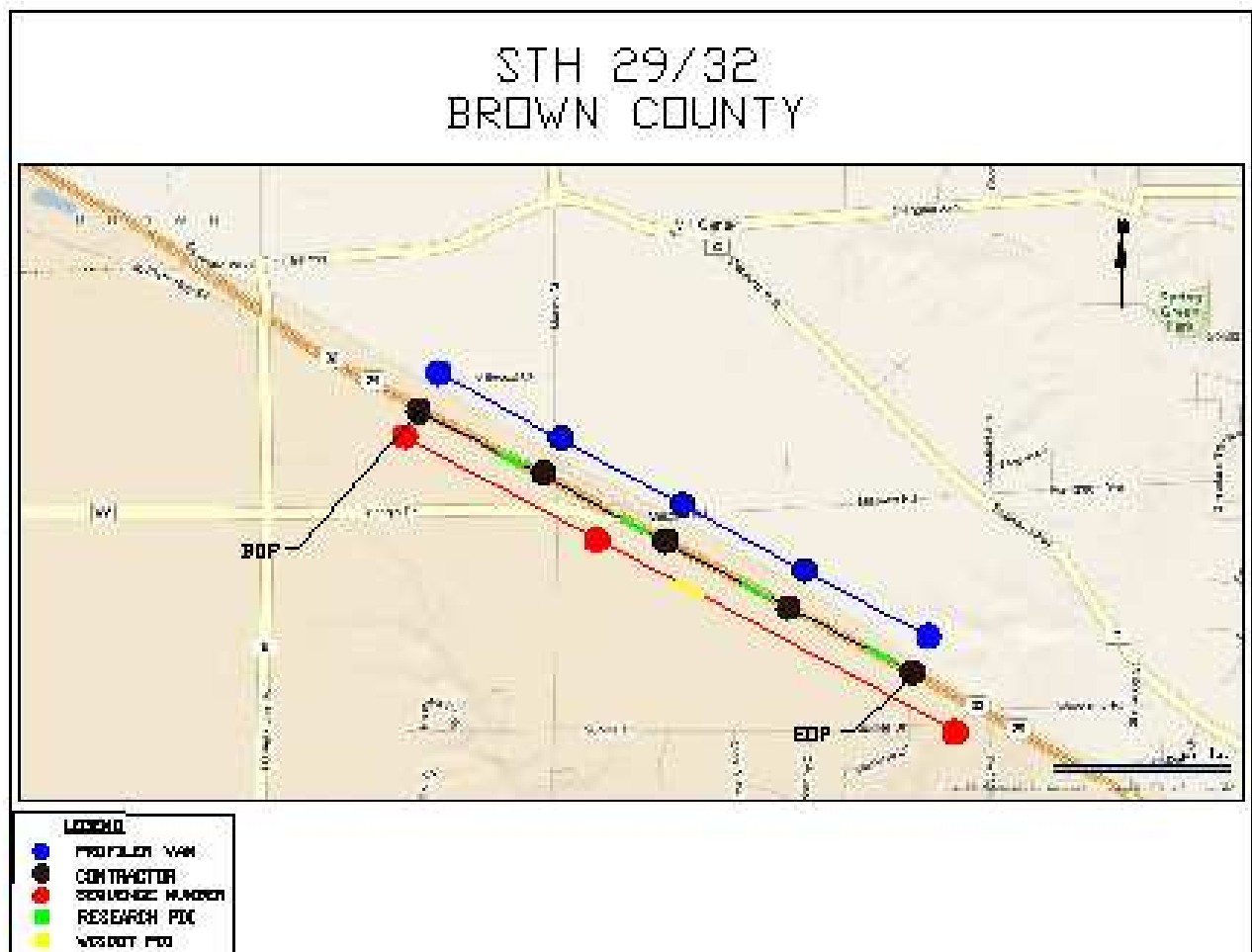


Figure 1. Test Sections on STH 29/32 in Brown County

USH 151  
DANE/COLUMBIA COUNTY



- LEGEND**
- PROFILER VAN
  - CONTRACTOR
  - SEQUENCE NUMBER
  - RESEARCH PID
  - WISDOT PID

Figure 2. Test Sections for USH 151 Dane and Columbia Counties

# USH 18/151 IOWA COUNTY

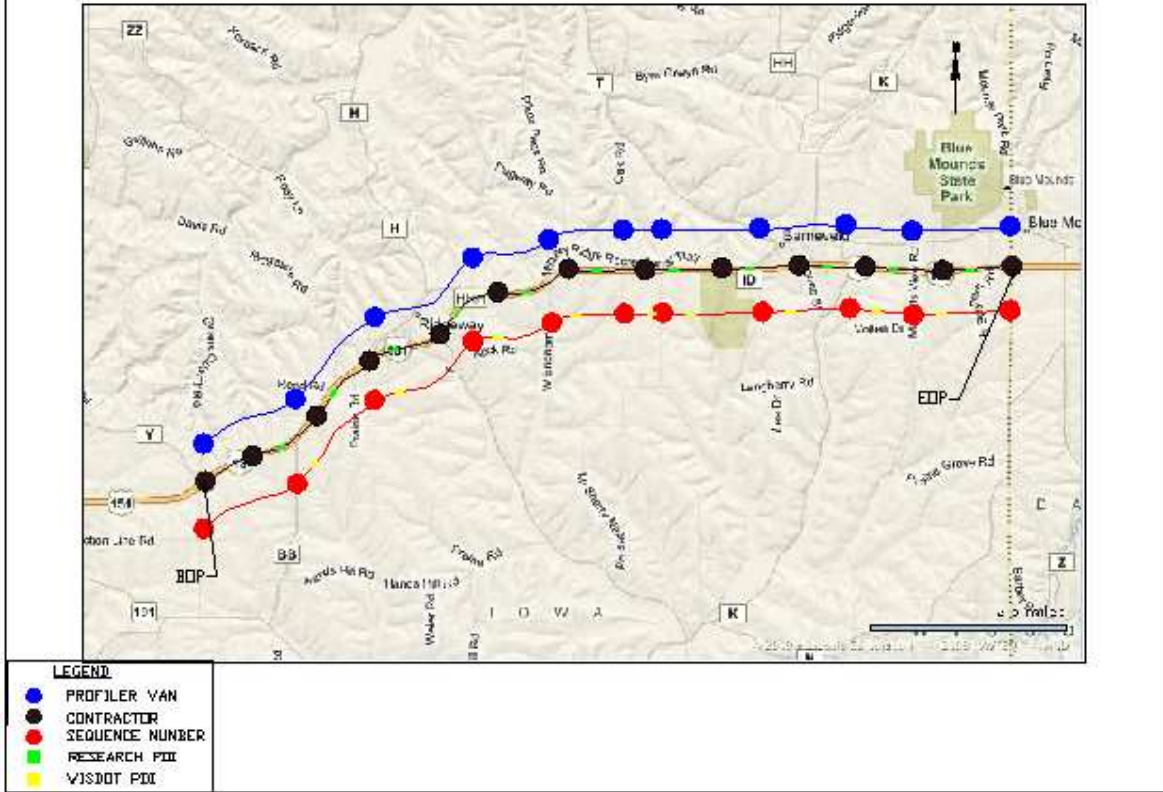


Figure 3. Test Sections for USH 18/151 in Iowa County

# USH 18/151 DANE COUNTY

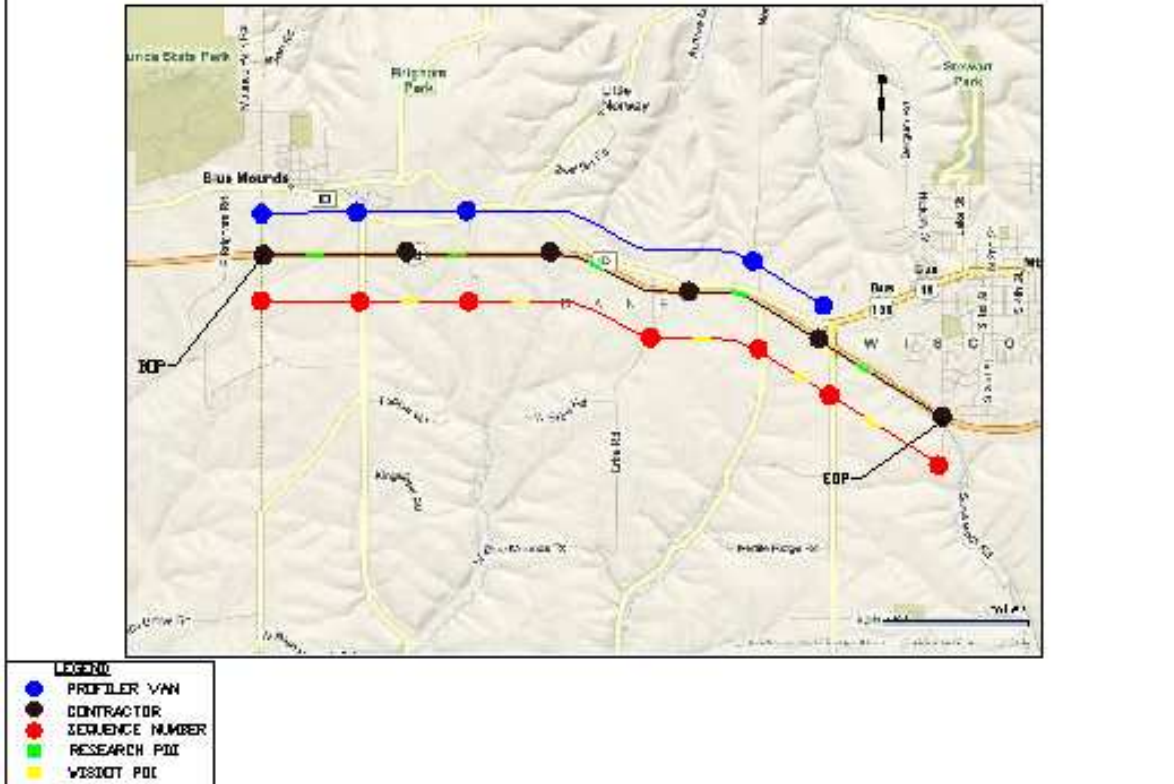
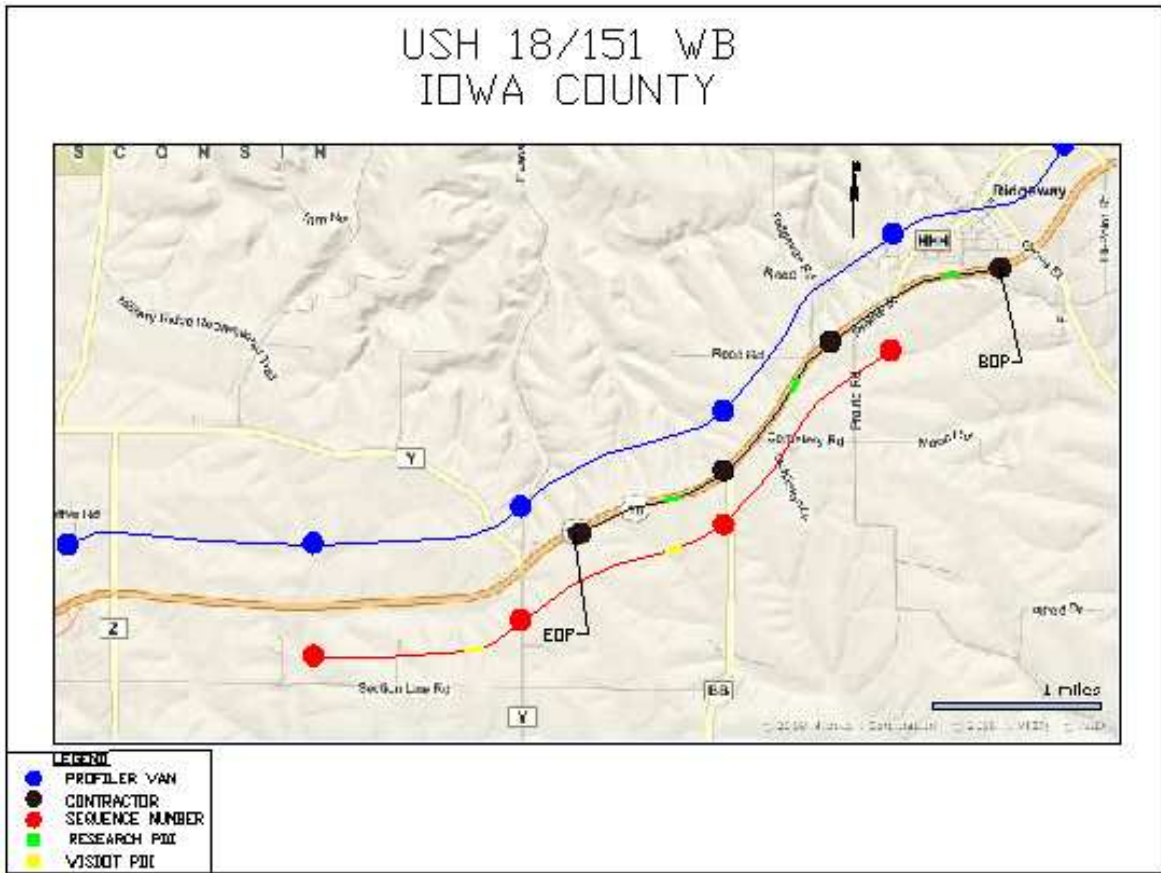


Figure 4. Test Sections for USH 18/151 in Dane County



**Figure 5. Test Sections for USH 18/151 WB in Iowa County**

Tables 3 through 5 provide the raw location data from WisDOT profile van used in Figures 1 through 5. Table 3 is raw data for STH 29/32, Table 4 is USH 151 in Dane and Columbia Counties, and Table 5 is USH 18/151 in Iowa and Dane Counties.

**Table 3. STH 29/32 Data Set Locations of Pathway Profiler Van**

Index (1)	Distance to PDI Survey Segment (2)	Reference Point Number (3)	Road Name (4)	Reference Point From Feature (5)	Reference Point To Feature (6)	PIF Section Length (7)	Lane (8)
29				SITE	DELIMITER		
30	1.0	284K 0.0	029E	CTH U	TEST 1	3229.0	Driving Lane
31	1.0	001 0.0	029E	TEST 1	TEST 2	2500.0	Driving Lane
32	1.0	002 0.0	029E	TEST 2	TEST 3	2500.0	Driving Lane
33	1.0	003 0.0	029E	TEST 3	CONTROL	2500.0	Driving Lane
34	1.0	004 0.0	029E	CONTROL	END	2500.0	Driving Lane
35				SITE	DELIMITER		

**Table 4. USH 151 Data Set Locations of Pathway Profiler Van**

Index (1)	Distance to PDI Survey Segment (2)	Reference Point Number (3)	Road Name (4)	Reference Point From Feature (5)	Reference Point To Feature (6)	PIF Section Length (7)	Lane (8)
35				SITE	DELIMITER		
36	1.0	95K 0.0	151S	STH 73 OH (LEAD IN)	TEST 1	8052.0	Driving Lane
37	1.0	001 0.0	151S	TEST 1	SKIP	528.0	Driving Lane
38	1.0	002 0.0	151S	SKIP	TEST 2	3473.0	Driving Lane
39	1.0	003 0.0	151S	TEST 2	SKIP	528.0	Driving Lane
40	1.0	004 0.0	151S	SKIP	TEST 3	1972.0	Driving Lane
41	1.0	005 0.0	151S	TEST 3	SKIP	528.0	Driving Lane
42	1.0	006 0.0	151S	SKIP	TEST 4	1353.0	Driving Lane
43	1.0	95K 0.9	151S	TEST 4	END	528.0	Driving Lane
44				DIRECTION	DELIMITER		
45	1.0	95K 0.0	151S	STH 73 OH (LEAD IN)	TEST 1	8052.0	Passing Lane
46	1.0	001 0.0	151S	TEST 1	SKIP	528.0	Passing Lane
47	1.0	002 0.0	151S	SKIP	TEST 2	3473.0	Passing Lane
48	1.0	003 0.0	151S	TEST 2	SKIP	528.0	Passing Lane
49	1.0	004 0.0	151S	SKIP	TEST 3	1972.0	Passing Lane
50	1.0	005 0.0	151S	TEST 3	SKIP	528.0	Passing Lane
51	1.0	006 0.0	151S	SKIP	TEST 4	1353.0	Passing Lane
52	1.0	95K 0.9	151S	TEST 4	END	528.0	Passing Lane
				SITE	DELIMITER		

**Table 5. USH 18/151 Data Set Locations of Pathway Profiler Van**

Index (1)	Distance to PDI Survey Segment (2)	Reference Point Number (3)	Road Name (4)	Reference Point From Feature (5)	Reference Point To Feature (6)	PIF Section Length (7)	Lane (8)
1				SITE	DELIMITER		
2	6125.0	108G 0.0	18 W	CTH HHH INT	BEGIN TEST 3 ( CTH HHH )	8237.0	Driving Lane
3	5702.0	106K 0.0	18 W	TEST 3 ( CTH HHH )	TEST 2 ( CTH BB )	7814.0	Driving Lane
4	5227.0	103G 0.0	18 W	TEST 2 ( CTH BB )	TEST 1 ( CTH Y )	7339.0	Driving Lane
5	4699.0	101K 0.0	18 W	TEST 1 ( CTH Y )	END TEST 1 ( Dodge BR Stream STR )	6811.0	Driving Lane
6	5333.0	101K 1.2	18 W	END TEST 1 ( Dodge BR Stream STR )	USH 151S INT	7973.0	Driving Lane
7				SITE	DELIMITER		
8	1584.0	101K 0.0	18 E	CTH Y	BEGIN TEST 1 ( CTH BB )	7339.0	Driving Lane
9	1584.0	103G 0.0	18 E	TEST 1 ( CTH BB )	TEST 2 ( CTH HHH )	7814.0	Driving Lane
10	1584.0	106K 0.0	18 E	TEST 2 ( CTH HHH )	TEST 3 ( CTH HHH )	8237.0	Driving Lane
11	1584.0	108G 0.0	18 E	TEST 3 ( CTH HHH )	TEST 4 ( W. Brigham Rd )	5650.0	Driving Lane
12	1584.0	110M 0.0	18 E	TEST 4 ( W. Brigham Rd )	TEST 5 ( Thompson Rd )	5122.0	Driving Lane
13	1584.0	111K 0.0	18 E	TEST 5 ( Thompson Rd )	TEST 6 ( CTH T )	2640.0	Driving Lane
14	1584.0	112D 0.0	18 E	TEST 6 ( CTH T )	TEST 7 ( CTH ID OH )	6758.0	Driving Lane
15	1584.0	113M 0.0	18 E	TEST 7 ( CTH ID OH )	TEST 8 ( CTH K )	6019.0	Driving Lane
16	1584.0	115G 0.0	18 E	TEST 8 ( CTH K )	TEST 9 (Mound View Rd)	4488.0	Driving Lane
17	1584.0	117M 0.0	18 E	TEST 9 (Mound View Rd)	TEST 10 (Co Line)	6706.0	Driving Lane
18	1584.0	117M 0.0	18 E	TEST 10 (Co Line)	End Test 10	6706.0	Driving Lane
19				SITE	DELIMITER		
20	879.0	119K 0.2	18 E	DANE CO LN (TEST 1)	CTH F	3749.0	Driving Lane
21	2139.0	121K 0.0	18 E	CTH F (TEST 2)	CAVE OF MOUNDS RD	3960.0	Driving Lane
22	5404.0	122G 0.0	18 E	CAVE/MOUNDS RD(T #3)	CTH E	11035.0	Driving Lane
23	417.0	126D 0.0	18 E	CTH E (TEST 4)	STH 78 OH	3062.0	Driving Lane
24	542.0	127K 0.0	18 E	STH 78 OH (CONTROL)	SANDROCK RD STR	4805.0	Driving Lane
25	0.0	128M 0.0	18 E	SANDROCK RD STR(SKIP)	CTH "JG" OH	4171.0	Driving Lane
26	680.0	129G 0.0	18 E	CTH "JG" OH (TEST 5)	STH 92 STR	3062.0	Driving Lane
27	0.0	130D 0.0	18 E	STH 92 STR (SKIP)	CTH "ID" OH	5386.0	Driving Lane
28	2246.0	131K 0.0	18 E	CTH "ID" OH (TEST 6)	TOWN HALL RD OH	3010.0	Driving Lane
29				SITE	DELIMITER		

Figures 1 through 5 indicated that the existing RP and Sequence Number system did not align with the concrete test sections. As a result, it is not possible to develop a performance history of the sections on a biannual basis. Tables 6 through 10 provides the locations of the RP and Sequence Numbers for the three projects, along with a comparison of the Sequence Number length with as-built construction stationing. The purpose of this comparison was to verify that the traditional Sequence Number was compatible with the construction plans during the overlay process.

The beginning and ending limits for STH 29 and USH 151 projects did not extend to the limits of the Sequence Number, thus, a verification was not possible. It was possible to compare all Sequence Number locations with as-built stationing on USH 18/151, and the comparison proved that the lengths were within 1/100<sup>th</sup> of a mile. This is important, since it confirms that the stationing and RP overlay are compatible.

**Table 6. STH 29/32 Sequence Number Locations**

Section Name (1)	Start Description (2)	End Description (3)	Length, feet (4)	Length, mile (5)	Station, mile (6)	As-built Start Sta. (7)	As-built End Sta. (8)
Seq 36180	Center CTH 'U'	Center 'VV'	7181	1.36	out limits	out limits	559+50
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	out limits	out limits
Seq 36190	Center CTH 'VV'	Center Sunlite Dr	7210	1.39	1.37	559+50	631+60
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	575+34	580+62

**Table 7. USH 151 Sequence Number Locations**

Section Name (1)	Start Description (2)	End Description (3)	Length, feet (4)	Length, mile (5)	Station, mile (6)	As-built Start Sta. (7)	As-built End Sta. (8)
Seq 126370	STH 73 OH	STH 73 STR	11563	2.19	---	out limits	out limits
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	---	out limits	out limits
Seq 126350	STH 73 STR	Columbia / Dane Co. Line	4649	0.92	0.88	1202+98	1156+49
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	---	---	---
Seq 126360	Columbia / Dane Co. Line	CTH 'V' OH	8659	1.64	---	1156+49	---
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	---	---	---

**Table 8. USH 18/151 Iowa County EB Sequence Number Locations**

Section Name (1)	Start Description (2)	End Description (3)	Length, feet (4)	Length, mile (5)	Station, mile (6)	As-built Start Sta. (7)	As-built End Sta. (8)
Seq 21000	Center CTH 'Y'	Center CTH 'BB'	7266	1.39	1.38	358+65	521+01
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	374+49	379+77
Seq 21010	Center CTH 'BB'	Center HHH to Ridgeway	7733	1.48	1.46	521+01	599+42
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	536+85	542+13
Seq 21020	Center HHH to Ridgeway	Center HHH to Ridgeway	8769	1.56	1.58	599+42	687+11
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	615+26	620+54
Seq 21030	Center HHH to Ridgeway	Center West Brigham Rd	5614	1.07	1.06	687+11	743+25
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	702+95	708+23
Seq 21040	Center West Brigham Rd	Center Thompson Dr.	5279	0.97	1.00	743+25	796+04
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	759+09	764+37
Seq 21050	Center Thompson Dr.	Center CTH 'T'	2651	0.50	0.50	796+04	822+55
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	811+88	817+16
Seq 21060	Center CTH 'T'	Center CTH 'ID' Overpass	9571	1.28	1.28	822+55	818+42
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	838+39	843+67
Seq 21070	Center CTH 'ID' Overpass	Center CTH 'K'	3108	1.14	1.12	818+42	849+50
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	834+26	839+54
Seq 21080	Center CTH 'K'	Center Mounds View Rd	4500	0.85	0.85	849+50	894+50
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	865+34	870+62
Seq 21090	Center Mounds View Rd	Dane / Iowa Co. Line	6672	1.27	1.26	894+50	961+22
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	910+34	915+62

**Table 9. USH 18/151 Dane County EB Sequence Number Locations**

Section Name (1)	Start Description (2)	End Description (3)	Length, feet (4)	Length, mile (5)	Station, mile (6)	As-built Start Sta. (7)	As-built End Sta. (8)
Seq 21100	Dane / Iowa Co. Line	Center CTH 'F'	3739	0.71	0.71	961+22	998+61
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	977+06	982+34
Seq 21110	Center CTH 'F'	Center Cave of the Mounds R	3941	0.75	0.75	998+61	1038+02
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	1014+45	1019+73
Seq 21120	Center Cave of the Mounds R	Center Erbe Road	6964	1.33	1.32	1038+02	1220+61
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	1053+86	1059+14
Seq 21130	Center Erbe Road	Center CTH 'E'	4022	0.76	0.76	1220+61	1260+83
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	1236+45	1241+73
Seq 21140	Center CTH 'E'	Center STH '78'	3075	0.58	0.58	1260+83	1291+58
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	1276+67	1281+95
Seq 21150	Center STH '78'	Center Sand Rock Road	4712	0.91	0.89	1291+58	1221+70
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	1307+42	1312+70

**Table 10. USH 18/151 Iowa County WB Sequence Number Locations**

Section Name (1)	Start Description (2)	End Description (3)	Length, feet (4)	Length, mile (5)	Station, mile (6)	As-built Start Sta. (7)	As-built End Sta. (8)
Seq 22140	Center HHH to Ridgeway	Center HHH to Ridgeway	8769	1.56	1.58	687+11	599+42
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	702+95	697+67
Seq 22130	Center HHH to Ridgeway	Center CTH 'BB'	7733	1.48	1.46	599+42	521+01
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	615+26	609+98
Seq 22120	Center CTH 'BB'	Center CTH 'Y'	7267	1.39	1.38	521+01	358+65
WISDOT PDI	0.3 mile past intersection	0.4 mile past intersection	528	0.10	0.10	536+85	531+57

### Subtask 2.1 Adjustment to Research PDI

The previous subtask mapped the location of the five data sets for the three projects, and a comparison of Reference Points with Sequence Number were compatible with as-built construction stationing. However, the maps indicated that the construction butt joints were in disagreement with the WisDOT profile van measures. In response to this difference, a series of tables were used to adjust the performance data with the actual as-built sections. The Research PDI location was treated as the controlling location for the adjustment, since these 0.1-mile segments will be used to conduct FWD testing and water permeability testing. The WisDOT profiler data will be aligned with these 528-foot segments to understand the distresses and ride roughness associated with the combination of base types, dowel bars, and drainage system.

Tables 11 through 15 provide the adjustment of profile measures with a known reference point along the project. The research team will meet with the Pavement Management Unit of WisDOT in the next quarter to adjust the raw data to the specific Research PDI location within each unique test section.

**Table 11. STH 29/32 Research PDI Location Relative to RP**

Section Name	Start Description	End Description	Start Sta	Distance to Butt Joint, mile	Length, feet	Length, mile	End Sta.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	E. of CTH 'U'	---	520+00	0.61	2500	0.47	545+00
Research PDI	E. of CTH 'U'	---	540+00	0.99	500	0.09	545+00
2	E. of CTH 'U'	---	545+00	1.08	2500	0.47	570+00
Research PDI	E. of CTH 'U'	---	545+00	1.08	500	0.09	550+00
3	E. of CTH 'VV'	---	570+00	0.20	2500	0.47	595+00
Research PDI	E. of CTH 'VV'	---	590+00	0.58	500	0.09	595+00

**Table 12. USH 151 Research PDI Location Relative to RP**

Section Name	Start Description	End Description	Start Sta	Distance to Butt Joint, mile	Length, feet	Length, mile	End Sta.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
4	W. of '73'	---	1250+00	1.33	3500	0.66	1215+00
Research PDI	W. of '73'	---	1240+00	1.52	500	0.09	1235+00
3	W. of '73'	---	1215+00	1.99	2000	0.38	1195+00
Research PDI	W. of '73'	mi W. of W. end Deansville Rd Ov	1205+00	2.18	500	0.09	1200+00
2	W. of W. end of Dean. Rd Overpass	---	1195+00	0.15	2800	0.53	1167+00
Research PDI	W. of W. end of Dean. Rd Overpass	---	1175+00	0.53	500	0.09	1170+00
1	W. of W. end of Dean. Rd Overpass	---	1167+00	0.68	2800	0.53	1139+00
Research PDI	W. of Dane Co. Line	---	1155+00	0.03	500	0.09	1150+00

**Table 13. USH 18/151 Iowa County EB Research PDI Location Relative to RP**

Section Name	Start Description	End Description	Start Sta	Distance to Butt Joint, mile	Length, feet	Length, mile	End Sta.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Control			361+80		3683	0.70	488+32
1	E. of CTH 'Y'	E. of Cemetery Road	488+32	0.76	5280	1.00	541+12
Research PDI	Past Butt Joint		504+16	0.30	528	0.10	509+44
2	E. of Cemetery Road	500' West of HHH to Ridgeway	541+12	0.09	5280	1.00	595+00
Research PDI	Past Butt Joint		556+96	0.30	528	0.10	562+24
Control			595+00		5184	0.98	651+31
Bridge			651+51				652+96
Control			653+23		200	0.04	655+23
3	E. of W. End of CTH 'H' Overpass	E. of HHH to Ridgeway	655+23	0.04	5200	0.98	707+23
Research PDI	Past Butt Joint		655+23	0.30	528	0.10	660+51
4	E. of HHH to Ridgeway	E. of W. Brigham Road	707+23	0.38	5200	0.98	760+70
Research PDI	Past Butt Joint		707+23	0.30	528	0.10	712+51
5	E. of W. Brigham Road	E of Boe Harris Road	760+70	0.33	5200	0.98	812+70
Research PDI	Past Butt Joint		760+70	0.30	528	0.10	765+98
6	E of Boe Harris Road	W. of CTH 'ID'	812+70	0.06	5200	0.98	864+70
Research PDI	Past Butt Joint		812+70	0.30	528	0.10	817+98
7	E. of W. Industrial Drive	W. of S. Jones St. Overpass	864+70	0.10	5201	0.98	816+86
Research PDI	Past Butt Joint		864+70	0.30	528	0.10	869+98
GAP	W. of S. Jones St. Overpass		816+86	0.01	295	0.06	819+81
8	E. of S. Jones St. Overpass	E. of CTH 'K'	819+81	0.00	4740	0.90	867+21
Research PDI	Past Butt Joint		819+81	0.30	528	0.10	825+09
9	E. of CTH 'K'	E. of E. Mounds View Road	867+21	0.34	4700	0.89	914+21
Research PDI	Past Butt Joint		867+21	0.30	528	0.10	872+49
10	E of Mounds View Road	Dane Co. Line	914+21	0.37	4701	0.89	961+22
Research PDI	Past Butt Joint		914+21	0.30	528	0.10	919+49

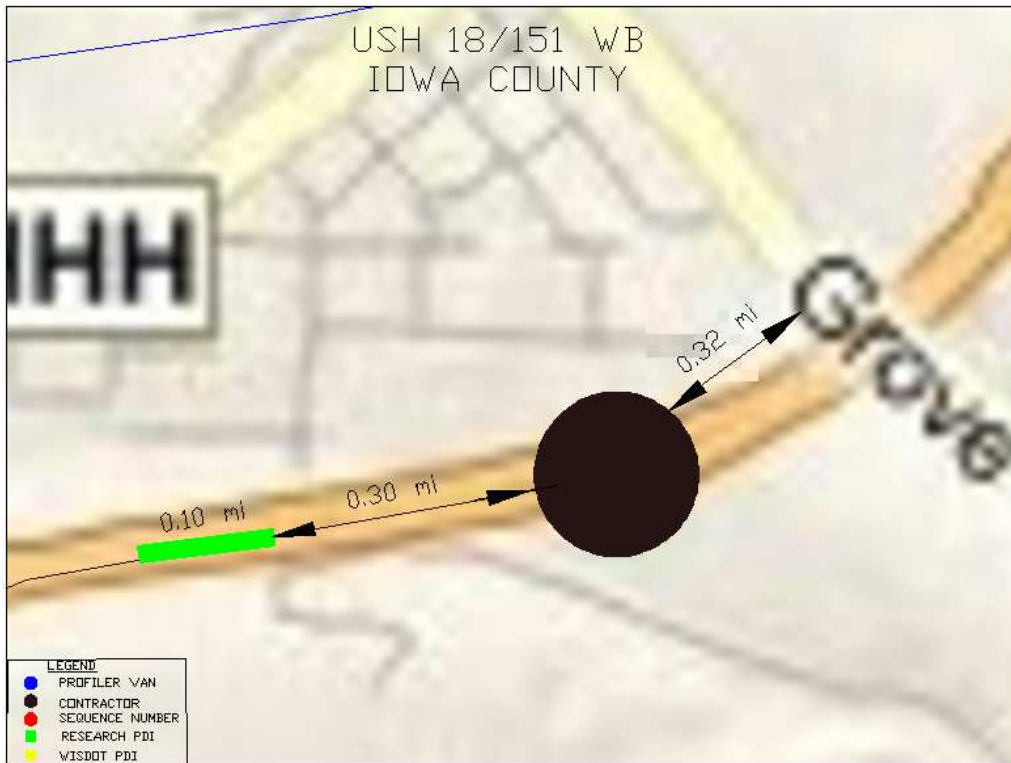
**Table 14. USH 18/151 Dane County EB Research PDI Location Relative to RP**

Section Name	Start Description	End Description	Start Sta	Distance to Butt Joint, mile	Length, feet	Length, mile	End Sta.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
11	Iowa Co. Line	E. of CTH 'F'	961+22	---	5280	1.00	1014+02
Research PDI	past butt joint		961+22	0.30	528	0.10	966+50
12	E. of CTH 'F'	E. of Cave of the Mounds Road	1014+02	0.29	5280	1.00	1066+82
Research PDI	past butt joint		1014+02	0.30	528	0.10	1019+30
13	E. of Cave of the Mounds Road	E. of Erbe Road	1066+82	0.55	5280	1.00	1232+57
Research PDI	past butt joint		1066+82	0.30	528	0.10	1072+10
14	E. of Erbe Road	STH 78	1232+57	0.23	5280	1.00	1285+37
Research PDI	past butt joint		1232+57	0.30	528	0.10	1237+85
15	E. of CTH 'E'	Sand Rock Road	1285+37	0.46	5313	1.01	1221+50
Research PDI	past butt joint		1285+37	0.30	528	0.10	1290+65

**Table 15. USH 18/151 Iowa County WB Research PDI Location Relative to RP**

Section Name	Start Description	End Description	Start Sta	Distance to Butt Joint, mile	Length, feet	Length, mile	End Sta.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3	W. of E. end of CTH 'H' Overpass	HHH to Ridgeway	634+74	0.32	6294	1.19	573+80
Research PDI	past butt joint		634+74	0.30	528	0.10	629+46
2	E. of Ridgeview Road	Center of CTH 'BB'	573+80	0.07	5280	1.00	521+00
Research PDI	past butt joint		573+80	0.30	528	0.10	568+52
1		CTH 'Y'	521+00	CL CTH 'BB'	5281	1.00	378+50
Research PDI	past butt joint		521+00	0.30	528	0.10	515+72

An example of adjusting the performance data to the Research PDI is provided in Figure 6. This example is provided for Section 3 located in the west bound lane of USH 18/151, which begins 0.32 miles west of CTH 'H' (Grove Street) overpass. The butt joint is located here and the research PDI starts 0.3 miles from this point and runs 0.1 miles west along USH 18/151.



**Figure 6. Locating Research PDI for Section 3 in Westbound USH 18/151**

Anticipated Work Next Quarter:

**Task 1. Literature Review**

Any new research or literature will be monitored.

**Task 2 – Experimental Design**

WisDOT profiler van data will be adjusted to the as-built test sections.

GPS data points will be identified for the as-built butt joints, and the 0.1-mile Research PDI sections.

A field visit to each of the 3 segments will mark the specific test sections, and 0.1-mile Research PDI location.

The WisDOT FWD test device will be calibrated for field testing.

**Task 3 – Field Data Collection**

Field data collection is planned on all 3 segments in June.

**Task 4 – Data Analysis**

No work is planned on Task 4.

**Task 5 – Final Report**

No work is planned on Task 5.

Circumstances Affecting Progress and/or Budget:

None

