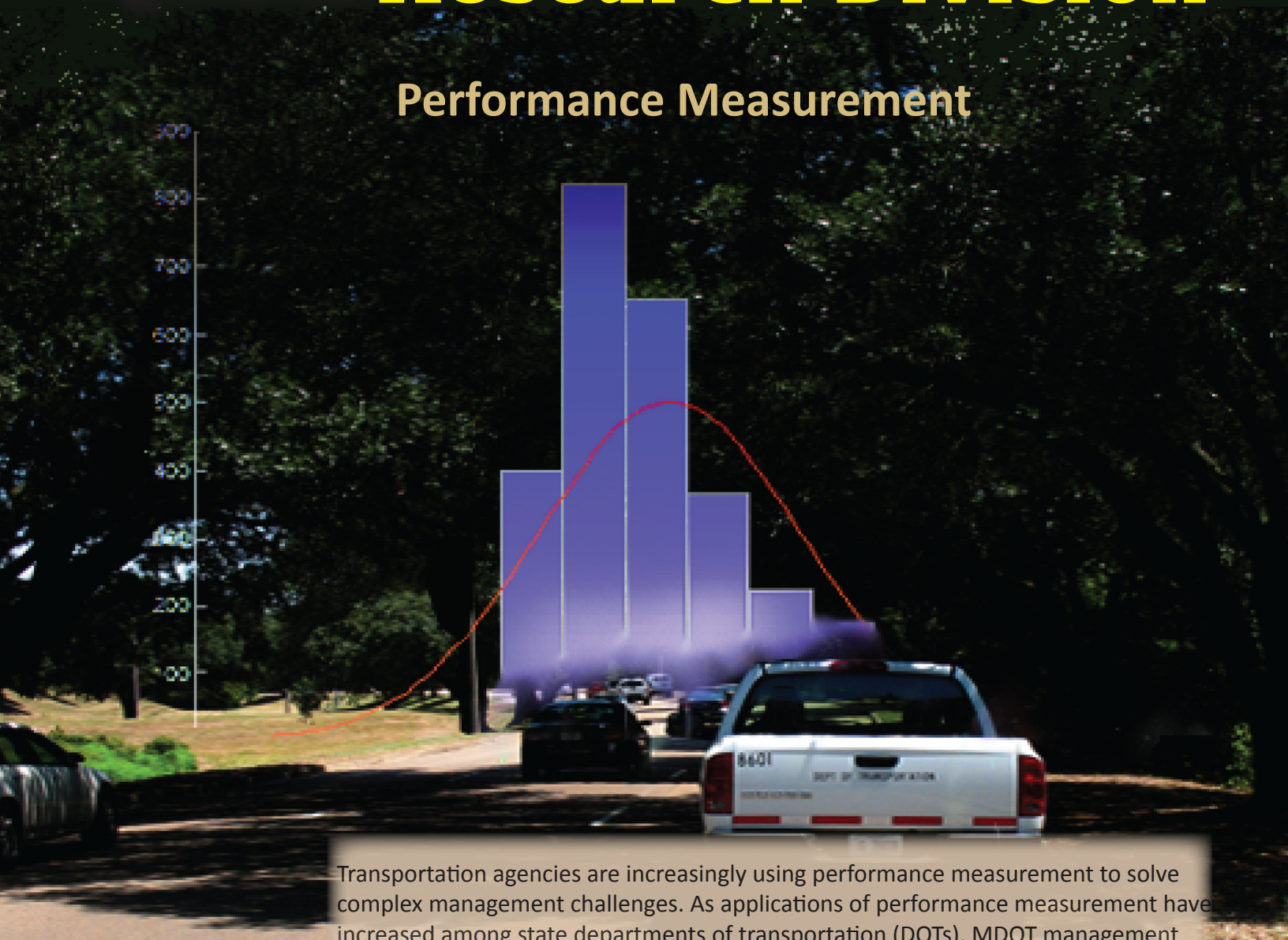
the profiler

Research Division

Performance Measurement



Inside

Transportation agencies are increasingly using performance measurement to solve complex management challenges. As applications of performance measurement have increased among state departments of transportation (DOTs), MDOT management recently has increased their share of interest in learning about the performance measurement system.

Performance measure is the use of hard data and facts to quantify progress toward specific defined organizational objectives and goals. This includes both quantitative (such as saving money and lives) and qualitative (such as public satisfaction and perception) evidence. In addition, performance measures are tools that can be used to determine whether the Mississippi Department of Transportation (MDOT) is successfully meeting the state's transportation goals, as defined by the agency's plan and to determine if the agency is going in the right direction to best serve our public.

The Research Division will conduct initial activities to advance the implementation and practice of performance measures operation on state and local levels. For more information contact: **Imad Aleithawe at (601) 359 7645 or email to: aaleithawe@mdot.state.ms.us**

Smoothness Pay Incentives for MDOT's Specification

One of the major changes that MDOT's new Mean Roughness Index (MRI) specification will make to road construction projects is the process of pay incentive for road smoothness. The current Profilograph Index (PI) specification is based upon fixed interval lengths of 528 feet. However, the MRI spec uses a continuous, or 'moving average', scale that calculates the average MRI over a given length from every data point collected. The Transtec Group's ProVAL software can produce the 'Long Continuous' MRI data at 528 foot intervals from a given road profile in table form. The table's results will stem from the Long Continuous MRI threshold and its class interval (5 inches/mile). An example of ProVAL's results can be found on Figure 1.

Total % Out of Spec (No Grinding)	0.00

Max MRI (in/mi)	Min MRI (in/mi)	No Grinding (%)
∞	120.00	0.00
120.00	115.00	0.00
115.00	110.00	0.00
110.00	105.00	0.00
105.00	100.00	0.00
100.00	95.00	0.00
95.00	90.00	0.00
90.00	85.00	0.00
85.00	80.00	0.00
80.00	75.00	0.64
75.00	70.00	1.35
70.00	65.00	1.39
65.00	60.00	8.35
60.00	55.00	19.76
55.00	50.00	29.70
50.00	45.00	30.68
45.00	40.00	8.15
40.00	35.00	0.00
35.00	30.00	0.00
30.00	25.00	0.00
25.00	20.00	0.00
20.00	15.00	0.00
15.00	10.00	0.00
10.00	5.00	0.00
5.00	0.00	0.00

Figure 1. Long Continuous Table

Each of the percentages correlate to a pay factor that depends upon what category the project falls under. MDOT's research division has developed pay incentive templates for each category in Microsoft Excel. The tables produced by the ProVAL software can be copied into the spreadsheet. The only items that must be added are the unit price of asphalt (per ton) and the total tonnage used for that particular segment. This method allows Project Engineers to calculate pay incentive for smoothness in a more efficient manner. Currently MDOT is piloting the spec in Districts 3, 5, and 7, and will deploy the spec for the entire state during the 2012 construction season. An example of a completed pay incentive spreadsheet can be found on Figure 2.

	A	B	C	D	E	F
1	CATEGORY C		• 80 in/mi	← Project Category		
2						
3			Total # of tons =	2617	← Primary Inputs	
4			Unit Price =	65		
5						
6	Max MRI (in/mi)	Min MRI (in/mi)	No Grinding (%)	# Tons	Price Before Adjustment	Price After Adjustment
7	∞	120	0	0.000	0.00	0.00
8	120	115	0	0.000	0.00	0.00
9	115	110	0	0.000	0.00	0.00
10	110	105	0	0.000	0.00	0.00
11	105	100	0	0.000	0.00	0.00
12	100	95	0	0.000	0.00	0.00
13	95	90	0	0.000	0.00	0.00
14	90	85	0	0.000	0.00	0.00
15	85	80	0	0.000	0.00	0.00
16	80	75	0.6433256	16.836	1094.36	1094.36
17	75	70	1.349203	35.310	2295.12	2341.02
18	70	65	1.38656	36.287	2358.67	2453.01
19	65	60	8.345424	218.405	14196.34	15048.13
20	60	55	19.75805	517.081	33610.29	36299.11
21	55	50	29.6968	777.185	50517.03	54558.39
22	50	45	30.67547	802.797	52181.84	56356.38
23	45	40	8.145171	213.165	13855.70	14964.15
24	40	35	0	0.000	0.00	0.00
25	35	30	0	0.000	0.00	0.00
26	30	25	0	0.000	0.00	0.00
27	25	20	0	0.000	0.00	0.00
28	20	15	0	0.000	0.00	0.00
29	15	10	0	0.000	0.00	0.00
30	10	5	0	0.000	0.00	0.00
31	5	0	0	0.000	0.00	0.00
32						
33				TOTAL =	$ 170,109.33	$ 183,114.55
34						
35			Result →	Incentive Pay =	$ 13,005.22	
36						

Category A | Category B | Category C

Figure 2. Completed Pay Incentive Spreadsheet

For more information contact: **Alex Middleton at (601) 359 7650 or email to: amiddleton@mdot.state.ms.us**

Work Program

On August 9, 2011, the MDOT Research Division met with the MDOT Research Advisory Committee and FHWA to discuss and approve the budget for FY 2012. Nine new projects were added to the 80% / 20% program. The entire FY 2012 work program can be found at:
http://www.gomdot.com/Divisions/Highways/Resources/Research/pdf/Reports/WorkProgram/2012FY.pdf

State Study	Study Title	Start Date	Completion Date	Principal Investigator
248	Cost-Effectiveness Study of the Pavement Warranty Program in Mississippi	02/01/12	06/30/14	Yan Qi, JSU
250	Full Depth Reclamation for High Traffic Applications	02/01/12	06/30/14	Isaac Howard, MSU
251	In-House Support to Full-Depth Reclamation for High Traffic Application	02/01/12	06/30/15	William Barstis, MDOT
252	Acceptable Vibrations on Green Concrete	02/01/12	06/30/13	Seamus Freyne, MSU
253	Driver Speed Limit Compliance in School Zones: Assessing the Impact of Sign Saturation	02/01/12	06/30/13	Lesley Strawderman, MSU
254	Optimizing Roadway Vertical Alignment Design with Microstation and Geopak	02/01/12	06/30/14	Li Zhang, MSU
255	A Synthesis Study of Noncontact Nondestructive Evaluation of Top-down Cracking in Asphalt Pavements	02/01/12	06/30/13	Waheed Uddin, UM
256	Simulation of Emergency Evacuation for Grand Gulf Nuclear Power Plant at Port Gibson, Mississippi	02/01/12	06/30/14	Feng Wang, JSU
257	Improved Characterization of Truck Traffic Loading for MDOT Pavement Design	02/01/12	06/30/14	Chetana Rao, ARA

100 % Federally Funded FY 2012 Pooled Funds

Highway Safety Manual Implementation	Federal Highway Administration
Full Scale Shake Table Testing to Evaluate Seismic Performance of Soil Walls	Utah Department of Transportation
2012 Multi-State Asset Management Implementation Workshop	California Department of Transportation
Traffic Signal System Operation and Management	Indiana Department of Transportation
Regional Sustainable Pavement Consortium	Virginia Department of Transportation
Real Time Current Velocity (RTCV) Pilot Project for Mississippi River Bridges	Mississippi Department of Transportation
Next-Generation Transportation Construction Management	Colorado Department of Transportation

Calendar of Events		
September 27 - 29, 2011	23rd Annual Road Profile Users' Group (RPUG) http://www.rpug.org/index.php?q=node/92	Stateline, NV
October 13 - 17, 2011	American Association of State Highway and Transportation (AASHTO) Annual Meeting http://www.michigan.gov/aashto	Detroit, MI
November 1 - 3, 2011	Mississippi Transportation Institute (MTI) http://www.mstransportationinstitute.org/agenda.html	Biloxi, MS
November 14 - 17, 2011	Southeastern Asphalt User/Producer Group (SEAUPG) Annual Meeting http://www.seaupg.org/events-current.shtml	Savannah, GA
January 22 - 26, 2012	Transportation Research Board (TRB) 91st Annual Meeting http://www.trb.org/AnnualMeeting2012/AnnualMeeting2012.aspx	Washington, DC

For more information , you can find us at

http://gomdot.com/Divisions/Highways/Resources.aspx?Div=Research

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