



Project Information Form

Project Title	Full-Scale Wall of Wind Testing of Variable Message Signs (VMS) Structures to Develop Drag Coefficients for AASHTO Supports Specifications
University	Florida International University
Principal Investigator	Arindam Gan Chowdhury, PhD
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Funding Source(s) and Amounts Provided (by each agency or organization)	Georgia Institute of Technology FIU: \$90,000 UTC + \$90,000 Matching UAB: \$70,000 UTC + \$70,000 Matching
Total Project Cost	\$160,000.00 + \$160,000 Matching
Agency ID or Contract Number	DTRT12GUTC12 AWD000000002293
Start and End Dates	1/8/12 to 1/31/14 (No cost extension requested for June 30, 2014)
Brief Description of Research Project	The overall scientific objective of this project is to develop accurate drag coefficients for incorporation in the AASHTO Support Specification to foster safer and more economic design of VMS structures. This project will facilitate the development of new drag coefficients for fatigue design under service load conditions and ultimate strength design under extreme wind conditions.
Describe Implementation of Research Outcomes (or why not implemented) (Attach Any Photos)	<p>Wall of Wind (WOW) tests on VMS were completed in July 2013. Data analyses have been completed. A report with the WOW results is under preparation and will be sent to UAB.</p> <ul style="list-style-type: none"> Based on the results of FEM Analysis at UAB, new drag coefficients recommendations will be sent for incorporation into AASHTO specs. Instead of one single value, a table will be proposed with

different drag coefficients as a function of the depth ratio and aspect ratio to facilitate economic and safe design of VMS.

- Significant reduction in drag by simple corner modifications (as much as 30% reduction in loading) has been achieved. Such information will be disseminated to VMS manufactures through DOT and Florida Turnpike personnel.



(photo courtesy of D. Meyer)

Impacts/Benefits of Implementation (actual, not anticipated)

The expected significance and benefits of the research results is attributed to: (i) safety and economic benefits that can be realized when using large-scale test-based realistic drag coefficients for fatigue and extreme wind and rain, (ii) development of realistic design loads on critical ITS infrastructure, and (iii) advancement of fundamental knowledge of 3D sign structure aerodynamics.



Web Links	<ul style="list-style-type: none">• Reports• Project website <p>http://nctspm.gatech.edu/pi/full-scale-wall-wind-testing-variable-message-signs-vms-structures-develop-drag-coefficients</p>
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