



American Association for Wind Engineering

# THE WIND ENGINEER

NEWSLETTER OF AMERICAN ASSOCIATION FOR WIND ENGINEERING

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### AHSAN KAREEM AWARDED THE ALAN G. DAVENPORT MEDAL

The International Association for Wind Engineering has named Ahsan Kareem as an inaugural recipient of the Alan G. Davenport Medal. Kareem is the Robert M. Moran Professor of Civil Engineering and Geological Sciences and director of the NatHaz Modeling Laboratory at the University of Notre Dame. Cited for fundamental contributions to quantification, modeling, simulation and analysis of wind load effects for structural design, he received the award during the 12th International Conference on Wind Engineering in Cairns, Australia, in July, 2007.

The Davenport Medal is awarded in recognition of distinguished achievement in wind effects on structures. It honors Professor Alan G. Davenport of the University of Western Ontario, who among his many contributions pioneered the study of wind effects on tall buildings in boundary layer wind tunnels and first application of this methodology was the

Prof. Alan Davenport presenting Ahsan Kareem with inaugural Davenport Medal in Cairns during 12ICWE

World Trade Center Towers in NY. This has led to contributions to the scientific understanding and many innovative design studies for major structures. Prof. Davenport has acted as engineering consultant on many major structures, including the world's tallest and longest; the World Trade Center in New York City, the Sears Tower in Chicago, the CN Tower in Toronto, the planned new 3,300-metre span Messina Straits Crossing in Italy, Normandy bridge in France, the Storebaelt bridge in Denmark and the Tsing Ma bridge in Hong Kong. His consulting activities have extended to major buildings, towers, offshore structures and pipelines throughout the world. He has also contributed internationally to design standards.

Dr. Kareem's research interests cover a wide spectrum of topics in Structural Engineering, with his primary work focusing in probabilistic structural dynamics, fluid-structure interactions, risk assessment and structural safety, and particularly the mitigation of natural hazards—specifically earthquakes, waves and wind. The



Americas Conference on Wind Engineering to be held in beautiful Puerto Rico.



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research findings of Dr. Kareem and his 38 doctoral students and post doctoral fellows are having a major influence on the following areas of engineering: Redevelopment of ASCE 7 for wind sensitive structures; development of e-technologies for web-enabled analysis and design of structures and the establishment of a cyber-based collaboratory for research and education in wind effects, VORTEX-Winds a virtual organization; Real-time monitoring of land-falling hurricane winds and their modeling, damage assessment from field observations, satellite imagery and aerial photography; Modeling of uncertainty and risk; Developing comprehensive framework for dynamic response prediction addressing previously intractable issues like the influence of non-Gaussianity and non-stationarity for evaluating the performance of tall buildings, long-span bridges and compliant-offshore structures under extreme winds and service loads to improve their safety and serviceability; Full-scale monitoring of signature structures including low-rise & high-rise buildings, industrial structures, bridges and offshore platforms; Developing design provisions for enhancement and refinement of ASCE 7 and advancement of its global implementation as a benchmark standard; Promoting harmonization of international codes and standards in Asia-Pacific region; Developing passive and semi-active liquid dampers, their design considerations and implementation. His graduate students and post doctoral fellows are well placed both in academia and industry.

In the following excerpts of Ahsan's description of his journey to Davenport Medal is presented, which appeared as a part of an article written by Prof. Giovanni Solari and several of his colleagues honoring Professor Alan Davenport: The Davenport Medal: A tribute from the International Association for Wind Engineering to Alan Garnett Davenport, *Journal of Wind Engineering and Industrial Aerodynamics*, 96 (2008) 459–470.

“.....The journey began during my master's study at MIT, where I was introduced to the issue of human response to the motion of tall buildings under winds by Professor Robert Hanson of MIT. This topic sounded very intriguing and quite extraordinary for someone who came to the U.S. to study classical structural engineering. I quickly realized that the wind-induced motion of tall buildings was an essential pre-requisite to study this area and Professor Alan G. Davenport had made major contributions to this field. I wrote a short note to Professor Davenport requesting a copy of one of his papers and also expressed interest in exploring the possibility of continuing my doctorate at Western. Shortly thereafter, I received a package from him containing a number of papers, reports and a letter promising me admission and financial assistance. At the same time, I was in touch with the father of wind engineering, Professor Jack E. Cermak, who also offered me the same opportunity.

Consultation with friends left me with the impression that Western was always under a deep cover of snow blanket, which led to decide in favor of joining Colorado. During the course of studies, I continued to read and enjoy Alan's talks and he became my inspirational icon to emulate. I recall vividly, his paper at the ICWE-5

in Colorado soon after I started my career as assistant professor. It was very unusual consisting of a dialogue among a sage wind expert Monsieur Gustaf Eiffel; an erudite researcher, Dr. Ventus Explorator, an assistant professor who had recently completed his Ph.D. thesis entitled, “Random Vibration of Random Structures in Random Wind”; and a construction specialist, Mr. Ingenius Constructus. It was quite an exchange and I recommend its reading to my younger colleagues and students, it is available in the proceedings. In my own mind, I would relate to that young researcher, educated in new technologies, who saw everything as random, and who had in his own way a keen insight into every difficult engineering problem, which unfortunately did not appear to garner the approval of Monsieur Eiffel and Mr. Constructus.

My own career advanced over the years, thanks to Jack Cermak, Bob Scanlan and Alan Davenport for their inspirational roles. I moved from the University of Houston to Notre Dame without realizing the frequent blankets of lake-effect snow and the proximity of Western. At both schools, I was blessed with some outstanding students, post doctoral and visiting fellows who made path-breaking contributions in a wide range of topics. Most of this was initiated by the opportunity afforded by the inaugural Presidential Young Investigator award from the White House Office of Science and Technology. The work of “TeamKareem” led to the honors of receiving ASCE's inaugural Jack E. Cermak Medal for contributions to wind engineering and Robert H. Scanlan Medal for contributions to engineering mechanics. Last summer, I was truly thrilled to learn that I will be receiving one of the inaugural Alan G. Davenport Medals introduced by IAWE as a senior award. It was even more humbling to learn that two out of three junior inaugural IAWE awards went to my former students, Professors K. Gurley (at University of Florida) and L. Carassale (at University of Genoa).

I could not be any more fortunate to have this unique triple distinction that honors three giants and pioneers of my field of research. Last summer in Cairns, it was a very moving experience to receive the Davenport Medal from Alan in person. While he was handing me the medal, it brought back vivid memories of his lecture at the Colorado conference. I could finally see in the eyes of this modern day Monsieur Eiffel, an avant garde, a positive nod to “Ventus Explorator”! What more can one ask!.....”



Prof. Kareem with his former students, Profs. Gurley and Carassale in Cairns at 12ICWE who received IAWE Junior Research Awards

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## A NEW AWARD-WINNING NAIL

The work of Ed Sutt, during his Ph.D. studies, has resulted in a new nail that is considerably more resistant to pull-out from high wind loads. Testing at Clemson University showed that the new nail shank design approximately doubled the resistance to wind loads. The nail, called a HurriQuake nail, has angled barbs, a twisted shank and a larger head. The nail is now made by Bostitch, where Dr. Sutt now works. The new product can still be applied via a standard nail gun and the incremental cost increase for the nail's use on a modest 2000 square foot house is about \$15. This product has won the Popular Science Innovation of the Year for 2006

*By Leighton Cochran*

NEW FRONTIER OF EDUCATION AND RESEARCH  
IN WIND ENGINEERING:

## A GLOBAL CENTER OF EXCELLENCE

The Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan, recently announced the names of the successful proposals for establishing the "Global COE (Centers of Excellence)". This initiative was launched based on the success of the "21st Century Center of Excellence (COE) Programs" introduced in 2002 by MEXT, which is similar in scope and funding to NSF's Engineering Research Centers (ERC). The next level of centers, named the Global COE, are intended to provide funding support for establishing education and research centers that perform at the apex of global excellence to elevate the international competitiveness of the Japanese universities. The program is intended to strengthen and enhance the education and research functions of graduate schools. In addition, it will foster highly creative young researchers who will go on to become world leaders in their respective fields through experience and practice in research at the highest international standard.

Tokyo Polytechnic University (TPU) was among the initial recipients of the 21st Century Center of Excellence Program with a proposal titled: Wind Effects on Buildings and Urban Environment, directed by Professor Yukio Tamura. The selection for the Global COE initiative was very competitive and included several layers of evaluation processes as well as the final phase involving presentations and a question and answer session before a blue ribbon panel of experts. The number of Global COE awards was set to be much lower than the original 21st Century COE program, but was allocated a higher level of funding to conduct the next level of



**Professor Yukio Tamura Tokyo Polytechnic University Director, Global COE**

transformative research and education. On June 17th, 2008, Tokyo Polytechnic University (TPU) was awarded the Global Center of Excellence titled: New Frontiers of Education and Research in Wind Engineering. This project will be conducted under the direction of Professor Yukio Tamura (also President of the IAWE) and the researchers at Tokyo Polytechnic University in collaboration with the NatHaz Modeling Laboratory at the University of Notre Dame. The members of the research team include the following researchers from TPU: Yukio Tamura; Takashi Ohno; Masaaki

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Ohba; Ryuichiro Yoshie; Kunio Mizutani; Masahiro Matsui; Aki-hito Yoshida; Takeshi Ohkuma and Ahsan Kareem from the NatHaz Modeling Laboratory, University of Notre Dame.

Another award includes a center dealing with earthquake engineering at the Tokyo Institute of Technology in collaboration with the University of California at Berkeley. Dr. Yukio Tamura and his team should be commended for this singular accomplishment which promises not only to advance the knowledge base in wind engineering and promote wind engineering education, but also to facilitate a number of educational and outreach activities in the Asian and Pacific-rim regions and beyond. The following note provides a synopsis of the program.

### BACKGROUND

From the global perspective, approximately 80-85% of the economic losses due to natural disasters are caused by extreme winds. The risk of future disasters continues to escalate with population shifts towards urban centers (in part caused by economic growth in China and Southeast Asia), many of which are located in the paths of typhoons. An impending threat of increased hurricane intensity and frequency has also been hypothesized by potential climate change. Realizing that these extreme wind events cannot be prevented, it is therefore critical to focus on mitigating the impact of wind induced damage worldwide. Urbanization has also led to the deterioration of regional and global environmental quality with far reaching impacts to public health. This calls for a sustainable society that emphasizes reduced energy consumption and improved environmental quality.

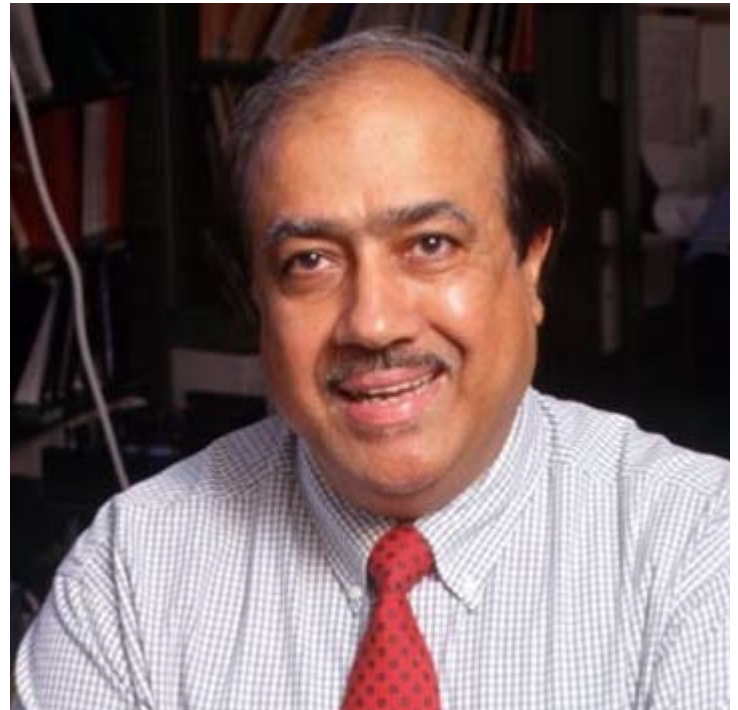
### OBJECTIVES

The overarching vision of GLOBAL COE is to build a sustainable urban environment that is resilient to extreme wind events and is in harmony with regional local climate. Its focus will be on developing an integrated education and research program that spans over a wide spectrum of problems to address wind-related challenges of the next frontiers in urban regions of Asia and beyond. The GLOBAL COE plans to focus on carrying out education and research on the wind effects on buildings and the urban environment with emphasis on three fields: Wind-Resistant Design of structures, Natural/Cross Ventilation and Wind Environment/Air-pollution.

### SALIENT FEATURES OF PROPOSED GLOBAL COE

From the global perspective, a novel feature concerns the establishment of an Engineering Virtual Organization (EVO). This organization will utilize cyber infrastructure to share intellectual and physical infrastructures among the participating member countries and organizations through its collaboration with the NatHaz Laboratory at the University of Notre Dame. This cyber-based collaboratory named VORTEX-Winds (Virtual Organization for Reducing the

Toll of EXtreme Winds on society) will house design and analysis modules and knowledge bases involving, for example, aerodynamic databases, wind resistant design databases, and wind hazard databases pooled together from different participants. A windwiki will also be developed for advancing research, knowledge and education in cyberspace. Successful examples of similar collaboratories exist in various fields of the sciences, meteorology and earthquake engineering. The current prototype VORTEX-Winds will be expanded in its scope, capabilities and network of collaborators under the



Ahsan Kareem University of Notre Dame Collaborator Global COE

### GLOBAL COE PROGRAM.

The proposed GLOBAL COE will be housed in the Wind Engineering Research Center (WERC) of TPU and core activities of the GLOBAL COE will be conducted at the Asia Pacific Economies (APEC) Wind Hazard Mitigation Center (WHMC), the Wind Engineering Information Center (WEIC), and the WERC. It will contribute to the advancement of education and research in wind engineering with focus on urban areas in Asian countries and beyond. The current challenges to urban issues caused by wind are far too complex and multi-disciplinary to be addressed by yesterday's simplified, compartmentalized approaches. Accordingly, today's challenges can be best answered by the empowerment of engineering researchers and designers through the formation of virtual organizations backed by cyber infrastructure. They have the ability to transcend barriers to enable integrated discovery and innovation by leveraging the combined capabilities of the global community. In this context, the VORTEX-Winds will aid in shifting the conven-

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tional single-center-based paradigm to global center-to-center-based education and research.

### NEW STRATEGIES FOR EDUCATION AND RESEARCH

In view of the globalization, the TPU team has long believed that it is very critical to train researchers and engineers in Asia-Pacific countries. To realize this vision, the applicant launched a number of initiatives, namely: the APEC Short-term Fellowships, COE Open Seminars, International Internship Programs for PhD students, Wind Engineering International Advanced Schools in the Asian region, etc. Following this tradition, the GLOBAL COE will promote global wind engineering education and research activities by building upon the success of these established initiatives and augment these through the establishment of the virtual organization VORTEX-Winds. These developments will serve as a spring board to transforming engineering education through a comprehensive wiki-knowledge base. E-continuing education will also facilitate interactive global distance-learning, which will especially benefit those in developing countries who generally lack such educational capabilities locally. Based on the past and recent accomplishments of the 21st Century COE and juxtaposition of facilities and resources at TPU and its collaborator, NatHaz Modeling Laboratory, it is envisaged that the GLOBAL COE will become a center of intellectual excellence which will attract the best minds from around the world to collectively focus on the challenges of the next frontiers in wind engineering. Similarly, on the education front, the GLOBAL COE will serve as the central hub of providing wind engineering education. It will play a prominent role in building a diverse, globally aware workforce for the future and disseminate related information/databases to research centers worldwide.

VORTEX-Winds will enable new collaborative initiatives involving cyber infrastructure which will provide an unprecedented platform that will not only aid in introducing innovations in design but also enhance efficiency through real-time sharing and complementing of individually owned intellectual and physical resources. These capabilities will benefit society by developing the scientific underpinning of risk-based, performance design and enhanced environmental quality under winds and launching a culture of disaster resilient communities.

### RESEARCH PLANS :WIND-RESISTANT DESIGN

The overarching objective is to develop a gateway of knowledge bases aimed at increasing understanding of wind loads and their effects and making modeling more efficient at the laboratory and full-scale levels and on computational platforms. This will lead to robust and cost effective wind-resistant design for urban disaster prevention. The main target areas in wind disaster prevention and mitigation are: to develop rapidly deployable wind observation systems aimed at improving understanding of the wind field

characteristics in extreme wind events; to establish robust damage identification schemes at the urban level using satellite imagery and aerial photography; to understand and model the effects of gust events, including tornadoes, on structures; to develop advanced testing procedures for building exteriors/cladding and components for windborne debris impact and repeated cyclic loadings under buffeting; to enhance understanding and modeling of the aerodynamic characteristics of buildings situated in complex urban environments; to improve the wind resistance of green roofing systems and thermal insulation of roofs for environmental protection and energy savings; to establish a web-based network of GPS monitoring systems to enhance urban disaster prevention; and to develop wind-resistant construction methods including retrofitting and repair for Asia-Pacific countries and beyond. These topics will be encapsulated in an overarching theme under the umbrella of VORTEX-Winds virtual organization, which involves a host of analysis and design modules and knowledge bases. The continued population of the domain knowledge and enhancement of the state-of-the-art analysis and design modules and their maintenance will ensure availability of a world class virtual environment to researchers, students and practitioners from around the globe.

### RESEARCH PLANS :NATURAL/CROSS VENTILATION

The GLOBAL COE will develop an evaluation model combining a macro model for cross ventilation (quantitative energy evaluation) and an unsteady-state human heat balance model (thermal sensory evaluation). These models will be used to develop a method for designing natural/cross ventilation for sustainable buildings utilizing natural wind. It will also develop a hybrid system for dehumidifying and cooling with natural draft and radiating heat compatible with the weather conditions and attentive to local ethnicity of Asia-Pacific countries. Furthermore, it will develop analysis and design modules and a natural/cross ventilation database for augmenting VORTEX-Winds.

### RESEARCH PLANS :WIND ENVIRONMENT/AIR-POLLUTION

The GLOBAL COE will develop assessment methods with high accuracy and fidelity using numerical analysis for urban heat island and air pollution problems. It will also recommend measures as guidelines to improving the heat and atmospheric environment by improving natural cross ventilation efficiency of urban spaces, a common necessity experienced by many major metropolises in Japan and Asia.



## ISSUES WITH FLORIDA SHELTER DESIGN

By John Bakota

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The definition of a shelter is a haven, refuge or protection from the weather. This definition is consistent with the general public's perception of a shelter. When an order is given to evacuate and take shelter, it is taken for granted that the shelter is stronger and safer than all other structures in the community. Owners, sponsors, code officials and professionals are collectively responsible to construct the safest structure possible.

At the outset of design, the professionals must review the governing codes to establish the design criteria. Wind speeds, special structural requirements and building usage are some critical issues. The structural requirement related to hurricane shelter design is sparse in the Florida Building Code (FBC). The only criterion is found in paragraph FBC 423.25.4, Structural standard for wind loads. According to the document cited in this paragraph, Emergency Shelter Design Criteria for Educational Facilities by the University of Florida for the DOE, "it is highly recommended by the department that the shelter be designed using the map wind speed plus 40 mph with an importance factor of 1.0." In FBC paragraph 423.25.4.1, "the building enclosures, including walls, roofs, glazed openings, louvers and doors, shall not be perforated or penetrated by flying objects. For walls, and roofs, the missile criterion is as provided in SBC/SSTD 12."

For educational facilities, the loads created by the base mapped wind speed with an importance factor of  $I=1.15$  should be considered. This case is no more than the loads for any other structure in the same mapped wind speed zone that can potential house more than 300 people (ASCE 7-05, Table 1-1).

The design criterion for shelters is unclear for hospitals, dormitories, community centers, jails and geriatric centers. These uses are not specifically addressed in the FBC so it is uncertain if they should have the same wind speed criterion as shelters in educational facilities.

A school district requested that their new educational facility be designed as a hurricane shelter (see photograph). At the outset of the project, they requested that the facility be designed for the wind speed of  $V = 140 \text{ mph} + 40 \text{ mph} = 180 \text{ mph}$ . When the project was bid out, it came in over budget and the chief building official insisted that he requested that the facility be designed for only  $V = 140 \text{ mph}$  and an importance factor of 1.15. Fortunately his original directive was minuted, but it still became an issue throughout the construction of the project. Components of the project were ordered with only an NOA that met the base wind speed of  $V = 140 \text{ mph}$ . The school district was autonomous and not under any other local building department. Florida is unlike other states, where the city or county building departments have jurisdiction.

Controversy exists about the language of paragraph FBC 423.25.4. There is constant dissension among officials who argue that the +40 mph criterion is not required. Paragraph FBC 423.25.4 states that the +40 mph is "highly recommended" and not "required". The intent of the +40 mph criterion is to design and construct a shelter that is safer than all other buildings.

In a hypothetical case, a new residence and drug store were constructed next to an educational facility which was declared to be a shelter. All structures were adjacent to the same athletic fields, parking lots and municipal parks. The Florida terrain was level. Importance factors of 1.15 and 1.0 were assigned to the shelter and other buildings, respectively. Excluding the +40 mph criteria means

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that the design wind speed for all three structures would be the same base mapped wind speed of 140 mph. The shelter would be approximately 15% safer than the other buildings.

According to "In the Design and Construction Guidance for Community Shelters", FEMA 361/July 2000, First Edition, hundreds of communities have adopted the guideline to become disaster resistant. In Figure 2-2 of that document, design wind speeds for community shelters establishes a Zone III and base wind speed of 200 mph for the design of shelters in Florida. This compares with the mapped wind speed +40mph criteria recommended in the FBC.

In Design Guidelines for Community Shelters for Extreme Wind Events, Journal of Architectural Engineering, June 2002, the authors recommended using the base wind speed map of FEMA 361 for hurricanes (200 mph) in addition to the 15 requirements in the Standards for Hurricane Evacuation Shelter Selection, American Red Cross: Storm Surge; Flooding; Hazardous material; Lay-down hazards; Load path; Building Condition; Exterior Wall Construction; Roof span; Roof drainage; Interior safe space; Roof construction; Wind/debris exposure; Wind design verification; Windows/doors; Emergency generator.

In The Wind Engineer, Newsletter of American Association for Wind Engineering, May, 2004 issue, the author of the article entitled Florida's Hurricane Shelter for Safety Enhancement Program states that "Florida school board officials successfully protested the increase in base wind speed (base wind map speed +40 mph), so the minimum design criteria was reduced to ASCE 7 at base map wind speed with an essential facility importance factor  $I=1.15$ . The 40 mph increase in base wind speed is still recommended within the code, but not required." This language in the FBC makes the +40 mph criterion optional and reduces the margin of safety for shelters.

A communication came from the project architect on a county penal institution/shelter. An importance factor of  $I=1.0$  and a wind design speed of 170 mph (+40 mph) was specified for this shelter in the structural notes. This same criteria was specified in the schematic design narrative, but it still was unclear to the architect what wind speed and importance factor should be specified for the louvers, windows, doors and roof. He insisted that the code reviewer would require an importance factor of 1.15. To further substantiate our design criterion, we investigated the FBC appendix and its documents. Neither ARC documents nor FEMA 361 were present in the appendix, even though these agencies are responsible for shelter classification and funding.

The importance factor is set equal to 1.0 for shelter design. The importance factor for wind loads in ASCE 7-98 is designed to adjust the velocity pressure to different annual probabilities of being exceeded. Since the design wind speeds +40 mph are based upon low

annual exceedance probabilities, they do not need to be adjusted by increasing the importance factor.

Areas along the east coast are susceptible to both hurricanes and tornados. Florida has some of the documented highest counts of tornados per year so it is obvious that FBC's base mapped wind speed should be increased for shelter design.

In addition to wind pressures, shelters must be designed to resist flying missiles and projectiles. Missile and projectile penetration tests are conducted to determine the resistance of assemblies. Missiles with specific weights and velocities are used in the tests. According to FEMA 367, the standard missile and velocity recommended for the determination of impact resistance for all wind conditions is a 15 pound, 2x4 at 12 feet long propelled at 100 mph horizontally. For missiles traveling vertically the speed should be 67 mph. Both missile speeds correspond to the 200 mph mapped wind speed in FEMA 367. The objective is to prevent the missile from breaching the building envelope. If the missile were to breach the envelope, wind would enter the building, resulting in an over pressurization of the building that often leads to structural and cladding failures. Because of the complex nature of missile and debris impacts, there is no design criterion readily available for designers that provide design criteria that can be used to calculate the static force of a missile impact on any part of the shelter.

In the 2006 Shelter Retrofit Report, the Florida Division of Emergency Management specifies the basic windborne debris impact standard, SSTD 12, is a 9 pound, 2x4 at 34 mph. Table 3.3 of FEMA 367 is a summary of previous research on probable missile speeds. In this table and for a design wind speed of 130 mph, the missile speeds are 80 mph horizontal and 53 mph vertical. There is a very significant difference in the missile speeds required by both agencies. Missile speeds correspond to specific design wind speeds. The 34 mph missile speed obviously corresponds to a design wind speed well below the base mapped wind speed +40 mph and raises concern about its adequacy.

There is an insufficient amount of direction in the Florida Building Code for shelter design. The base mapped wind speed +40 mph design wind speed is not required in the code as a result of a lobby. The design criteria for shelters in non-educational facilities is not addressed and in limbo. Wind missile speeds required by Florida agencies are low when compared to the research and recommendations of FEMA. The challenge before the FBC is to establish clear design criteria that can be used by design professionals and understood by owners and sponsors of shelters.

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## PRESIDENT'S CORNER



In this issue we have some discussion of success stories in our small wind engineering community within North America and overseas. There is also a fascinating note of concern presented by a practitioner who works in the hurricane shelter field. Next month we will have a comprehensive discussion from Bogusz Bienkiewicz of the political machinations at the federal level regarding the wind engineering research legislation being discussed in some Senate Committees (evidence given by AAWE members, David Prevatt and Marc Levitan, in recent weeks). Some of what these gentlemen said to our lawmakers can be read on the news portion of our webpage.

It is only a few weeks until many of us meet at the Vail Marriott Resort and Spa for our first AAWE Workshop. To those coming to Vail, consider staying an extra day or two for some mountain biking, ballooning, horseback riding or other summer activity in the Rockies. So far we have 29 papers submitted and 56 people registered. We have also given, to date, nine \$500 AAWE Bursaries to students attending the Workshop. The event is evolving into a slightly bigger gathering than was initially imagined, but that is far better than the reverse! I hope everyone making the journey to

the Rockies for this summer gathering has a great time and that it becomes a precursor to many future Workshops. Once again many thanks to the three major sponsors below, and to the team here at CPP working so hard to make sure it goes smoothly. See you all in Vail.

The new AAWE website has been operating for a few months now. Several members have made suggestions which have either been acted upon or are being explored. It is interesting to see how the membership has changed since the on-line payment and database was developed. We now have more overseas members and much higher proportion of practising engineers and wind-oriented manufactures. Please email [lcochran@cppwind.com](mailto:lcochran@cppwind.com) for your password to access the members section if you are currently paid up for 2008. Annual (2008) dues and Workshop registration payments may be made via credit card on our secure server. After the Workshop is finished the registration page will be changed to the ACWE-11 meeting to be held in beautiful Puerto Rico in 2009.

This Newsletter continues to need articles from the members. Please send publishable items to me at [lcochran@cppwind.com](mailto:lcochran@cppwind.com) as Word files and image files for us to review and place in future editions. I would also ask the members to encourage others interested in wind engineering to join AAWE, either as individuals or as a corporation. Pass this newsletter on to them so they can see what we do and encourage them to visit the website to become a member (note that the membership calendar year of 2008 now applies).

**Leighton Cochran**

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for Wind Engineering**

**Objectives:**

- The advancement of science and practice of wind engineering.
- The solution of national wind engineering problems through transfer of new knowledge into practice.

**Established in 1966**

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