AMERICAN ASSOCIATION FOR WIND ENGINEERING
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American Association
for Wind Engineering

THE WIND ENGINEER

NEWSLETTER OF AMERICAN ASSOCIATION FOR WIND ENGINEERING

Bogusz (Bo) Bienkiewicz, Editor
May 2002

2002 Tornadoes Update

According to NOAA's Storm Prediction Center, April 2002, has generated 100 tornadoes. The April U.S. average is 140 tornadoes. Overall 140 tornadoes and seven tornado-related

(from NOAA, at www.noaanews.gov)

In this issue:

National Hurricane Awareness Week Declared by President

President Bush has declared May 19-25 as National Hurricane Awareness Week, encouraging all Americans to learn about the devastating impact these storms have on our communities, and consider actions that can help reduce damages and loss of life in future storms. Among the actions recommended in the proclamation are: to consider making simple constructive improvements (such as installing storm shutters), to encouraging state and local governments to adopt wind- and flood-resistant building codes and implement sound land-use planning to reduce vulnerabilities to wind and flood hazards.

As we have reported in previous issues of this Newsletter, a legislation was introduced in Congress that calls for a significant increase in federal funding for research into methods of reducing the impact of wind-related hazards on built structures. The Hurricane, Tornado and Related Natural Hazards Research Act (H.R. 3592) was introduced by Reps. Dennis Moore (D-KS) and Melissa Hart (R-PA). It seeks to bring funding for research on wind-related hazards up to par with funding of similar research into earthquake and seismic hazards.

F4 Tornado Reported in Maryland

On April 28, 2002, a strong tornado outbreak hit southern Maryland. It began as a severe thunderstorm in West Virginia. The first tornado had F2 strength and it touched ground in Shenandoah County, VA. As the system crossed the Potomac River, it intensified. It peaked at the F4 level in La Plata (Charles County), MD, where three people were killed and 120 people were injured. The tornado damage path stretched nearly 70 mi.

Leslie E. Robertson Earns First Henry C. Turner Prize

Leslie E. Robertson has been named the first recipient of the Henry C. Turner Prize for Innovation in Construction Technology, established by the Nat. Bldg. Museum and Turner Construction Co., for notable advances and outstanding achievement in the process of construction. He is responsible for the structural design and construction of 3 of the world's 6 tallest buildings, including the WTC.

Jack E. Cermak Receives the 2002 Ernest E. Howard Award

The 2002 Ernest E. Howard Award was presented to Dr. Jack E. Cermak for his pioneering research in wind engineering and his advances in assessing the effect of wind on the built environment. Dr. Cermak was honored during this year's Structural Engineering Institute awards luncheon, held in Denver on April 5 during the Structures Congress.

The HAZUS Hurricane Preview Model

J. Minor (U. of Missouri-Rolla), P. Vickery (Applied Res. Assoc.), P. Schneider & B. Schauer (NIBS)

Background

HAZUS is a nationally applicable standardized methodology and software program for estimating potential losses from earthquakes, floods, and wind. The Hurricane Preview Model of HAZUS is being developed by the National Institute of Building Sciences (NIBS) under agreements with the Federal Emergency Management Agency (FEMA). NIBS maintains a committee of wind experts to provide technical oversight to model developers at Applied Research Associates, Inc. Wind Committee members include: Dr. J. Minor, Professor A. Chiu, Dr. R. McComb, Dr. K. Mehta, Dr. M. Powell, Dr. D. Smith, and Dr. M. Zadeh.

The HAZUS wind model will be an improvement over existing loss estimation models through use of a wind hazard-load-damage-loss framework. The model will address windborne debris, progressive failure, and the effects of rain entering the building, and will have the following features:

- A building classification system based on the characteristics of the building envelope and frame.
- Capability to compute damages for residential, commercial, and industrial buildings.
- Capability to compute damage to building structure, contents, and interior.
- Capability to estimate building debris quantities and post-storm shelter needs.
- Ability to estimate direct economic loss due to damaged buildings.
- Ability to test reduction in potential damage to certain building classes by using mitigation measures such as shutters and improved roof connections.

Overview of the Hurricane Preview Model

The Hurricane Preview Model (HPM) will be released in early 2003. The HPM will be bundled with a complete Flood Model and revised earthquake model into the first integrated multihazard version of HAZUS to be called HAZUS$^{®MH}$. A substantial national inventory database will be available to the HPM from HAZUS$^{®MH}$. This initial version of the hurricane model will allow users in the Atlantic and Gulf Coast regions of the U.S to estimate potential damage and loss to residential, commercial, and industrial buildings from user prescribed hurricane winds. It will also allow users to estimate direct economic loss, and building debris quantities. Wind hazard definitions, economic data, a building classification system, and damage algorithms will be included with the HPM.

The HPM will use ESRI’s ArcGIS as a platform to map and display hurricane hazards and damage and loss results. Three levels of analysis will be performed using default data, user-supplied data, or expert-supplied techniques. Disaster response personnel will be able to generate loss estimates immediately before and during hurricanes.

Hurricane Wind Field Model

Hurricanes in the model are based on the National Science Foundation sponsored research performed by Applied Research Associates that produced wind speed contours in ASCE-7 (ASCE, 1998). The hurricane wind field model has been validated through comparisons to full-scale hurricane wind speed records obtained from more than 90 wind speed traces recorded during twelve hurricanes. Comparisons between simulated and observed wind speeds were performed separately for stations located offshore, at the coastline, and inland. The comparisons show good agreement between the simulated and observed wind speeds, particularly for the offshore and coastal stations. Agreement for the land-based stations is more difficult because of errors associated with estimating the surface roughness and the effects of upstream terrain and nearby buildings. The comparisons to the wind speeds measured offshore and near the coast are the best measures of the ability of the hurricane wind field model to reproduce the observed wind speeds since wind speeds measured at these stations are not affected by local terrain and roughness effects.

Terrain Modeling

A critical component in the modeling of wind effects, damage and loss to buildings and facilities is the assessment of terrain roughness. As the ground surface becomes rougher, the wind speeds near the ground decrease while the upper level wind speeds remain the same. The wind loads experienced by structures located in typical suburban, treed, or urban environments are much lower than those experienced by buildings in relatively unobstructed regions such as waterfronts and open fields. The wind loads experienced by one- and two-story buildings located in forested areas may be as low as one half of those experienced by similar buildings in open environments.

The ground roughness is defined using a characteristic roughness length, denoted as z_0, and is a function of the height and spacing of buildings, trees, and other obstructions on the ground. The HAZUS hurricane model yields estimates of wind speed at any location for open terrain conditions, and given information on the upstream fetch and associated surface roughness length, the wind speed at any location and any height can be determined.

Estimating local surface roughness is important because it has a major impact on the magnitude of possible wind loads experienced by a structure. Currently, no direct database exists that describes the distribution of surface roughness over regions in the U.S. The approach used in HAZUS is to obtain information on land use and land cover (LULC), and then estimate for each LULC class a value of the surface roughness. The mean wind speeds and gustiness can then be reasonably estimated at any surface location within a storm. The LULC databases used in HAZUS are the Land-Use-Land-Cover databases maintained by the five Water Management Districts of Florida, and for the remainder of the Atlantic and Gulf Coast, the National Land Cover Data (NCLD) currently being compiled by the Multi-Resolution Land Characteristics Consortium (MRLC).

Damage Modeling

The building damage model is component based and utilizes technology derived from university and industrial research. Loss estimates are based on predictions of physical damage and repair costs, and are validated using records of insured losses. The damage model predicts pressure damage to windows, doors, wall cladding, roof cladding, and roof cover. It predicts glazing failure due to impacts from wind-borne debris. Wall failure due to inward and outward pressure loads are modeled for masonry and wood frame walls. Failure of the connections between the roof frame and the perimeter walls are modeled for both wood and steel roof framing systems. In addition, the model predicts foundation failures such as sliding, overturning and uplift for manufactured houses.

Damage is predicted by comparing loads to resistances. The loads are computed by spatially integrating estimated pressure coefficients at each point on a uniform grid covering the appropriate building surface. The resistance associated with each failure mechanism for the building components is defined by a probability function from which resistances are sampled for a given storm simulation.

Building damage is predicted by monitoring wind speed and direction at 15-minute intervals over the duration of a storm. At each time step, the wind loads are compared to resistances to predict damage. At the same time, the number of missiles impacting the building walls is computed to predict glazing damage and damage to wall finish.

Internal pressurization is also considered and is computed as the sum of the external suction acting on the outside of the window and the internal pressure acting on the inside of the window. The internal pressure is estimated based on the number and size of wall breaches due to failed windows, doors and wall cladding. In a given time step, if additional envelope breaches occur, the internal pressure is re-computed as is the net loads associated with each of the failure mechanisms, which again are compared to the resistances in each time step to assess additional building damage.

Loss Modeling

The loss model is a physically-based damage to loss model that computes building dollar losses using a combination of explicit and implicit costing techniques. The model subdivides structures into costing subassemblies and provides significant costing flexibility and the capability to process a wide range of building types. It is conducive to processing detailed building envelope damage states and provides the added capability to estimate building interior and content dollar losses by directly taking into account the volume of water penetrating through failed windows, doors, garage doors, etc. This approach is also well-suited for estimating loss of use and repair time.

Real Time Wind Fields

Application of a real-time wind field model (H*Wind) developed by the NOAA Hurricane Research Division (HRD) will be integrated into the HPM. The H*Wind Model will be run at NOAA HRD and provide landfall gust swaths based on NESDIS wind measurements. Data from H*WIND will be downloaded directly into the HPM from either a secure website or secure FTP site.

Future Developments

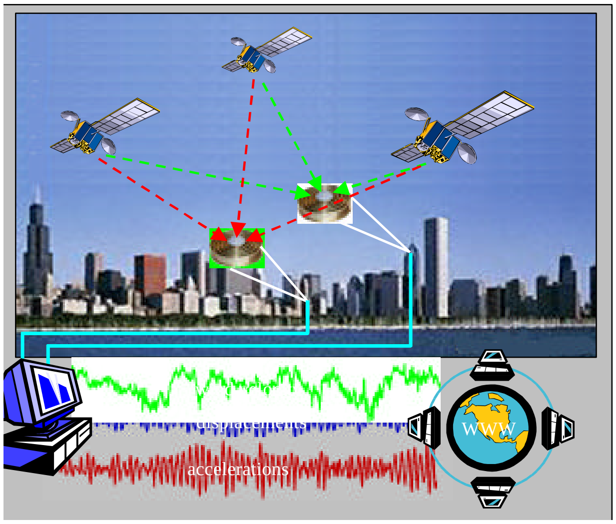
Further development of the model planned for subsequent releases of HAZUS$^{®MH}$ and will cover other states and U.S. Territories and include coastal surge modeling and loss estimation capability for lifelines, indirect economics losses, and tree debris.

Users

HAZUS$^{®MH}$ and the Hurricane Preview Model are anticipated to be used by federal officials and emergency managers from a significant number of states for planning and mitigation purposes. The HPM will enhance efforts to reduce losses and to prepare for emergency response before natural disasters and in decision support following them. Private organizations that are expected to use HAZUS for research and mitigation purposes include academics, engineering consultants, and insurance industry professionals. Additionally, several foreign countries will use HAZUS as a model for their own development of a hurricane loss estimation product and for multi-hazard disaster planning. An estimated seven thousand users are expected to use HAZUS when the flood and hurricane modules are included in the multihazard version

Real-Time Response Monitoring of Tall Buildings

T. Kijewski and A. Kareem, Univ. of Notre Dame



Chicago has been home to many important strides in high-rise evolution, with its groundbreaking structures serving as the prototype for tall building design around the world. Since their erection, the urban climate has continued to develop worldwide, making these cathedrals of commerce an integral component of modern society and one of its most challenging undertakings. As high-rise dwellings gain more international prominence, their impacts upon the global society and economy will become more pronounced, necessitating a new frontier in design fully equipped to address the emerging issues of performance, economy and efficiency. However, in order to usher in new design frontiers, the frontiers of structural understanding must be first advanced through full-scale investigations for validation and improvement of current techniques.

In the present NSF-funded study, traditional monitoring devices for wind-induced excitation, including anemometers and accelerometers, are supplemented by cutting edge technology understood and used widely by the public to provide valuable insight into a variety of response characteristics for tall buildings. To further this objective, Global Positioning Systems (GPS) with Real Time Kinematic (RTK) potential are incorporated to allow for complete dynamic monitoring of displacements at up to 10 Hz. The inclusion of a reference GPS system mounted on a low-rise structure near the observed structure permits differential GPS (DGPS) monitoring to reduce errors to as little as 5 mm, capturing not only dynamic displacements but also static measures that cannot be recovered from accelerations.

This study not only exploits the latest technological developments, but also lays the foundation for the next-generation of investigative teams – one that combines the unique talents of academe and industry with research and consulting laboratories – by joining forces with a leading structural design firm and wind tunnel laboratory. The inclusion of these partners permits the systematic validation of existing design practice through the comparison of analytical and wind tunnel response estimates with full-scale observations. These efforts are further complimented by the guidance of an international advisory board comprised of leading experts in structural behavior under the action of wind and designers of some of the world's tallest buildings. Based upon these findings and additional sensitivity studies, modern analytical approaches and wind tunnel testing procedures will be calibrated systematically for the first time using full-scale data in order to provide more reliable predictions for future design. Associated with these efforts, the extraction of time-evolving frequency and damping estimates, obtained using multi-resolution wavelet-based system identification, will shed new light on the dynamic characteristics at varying response levels.

By including secured web-based interfaces using e-solutions like common gateway interfaces (CGI) and JAVA scripts, these findings can be accessible to the building's owners and engineers, as well as the worldwide advisory team who can evaluate the performance of the structure on a regular or even real-time basis. Such accessibility is of particular interest as the issues of an aging urban environment evolve in the new millennium, where the assessment and rehabilitation of older high-rise structures will become paramount. Further, the packaging of engineering measurements using e-technologies encourages the continuous involvement of the owner and building management.

Just as Chicago's skyline set the precedent for tall building design, these historic buildings now continue that innovative tradition in this study by ushering in a new era in the US high-rise community – one that embraces full-scale monitoring as a tool to enhance the current state-of-the art in design, maintaining the competitive edge for US designers at the forefront of the burgeoning high-rise industry.

Partners in this projects are: Skidmore, Owings & Merrill, LLP, Chicago, IL; and Boundary Layer Wind Tunnel Laboratory, University of Western Ontario, London, Ontario, Canada.

Next-Generation Wind Tunnel for Simulation of Straight-Line Wind

P. P. Sarkar & F. L. Haan, Jr., Iowa State Univ.

Researchers at Iowa State University (ISU) are developing next-generation wind tunnels for studying wind effects on structures. The Wind Simulation and Testing Laboratory in the Department of Aerospace Engineering and Engineering Mechanics will house facilities that simulate straight-line, thunderstorm- and tornado-like winds. This article will describe the latest design details of the closed-circuit wind tunnel that will be constructed at ISU.

The ISU Aero/ABL wind tunnel will be used for both general aerodynamic needs and for model testing in atmospheric boundary layer (ABL) wind. While there are numerous wind tunnels for aeronautics-related testing in the United States, there are very few university-based boundary layer wind tunnels dedicated to education and research (Table 1). Boundary layer wind tunnels have played an integral role in the design of wind sensitive structures for decades. Capable of simulating the lower portion of the earth's atmospheric boundary layer, these tunnels have enabled the safe design of long-span bridges, tall buildings, towers, and a host of other unique structures. The design of the ISU wind tunnel addresses two primary issues.

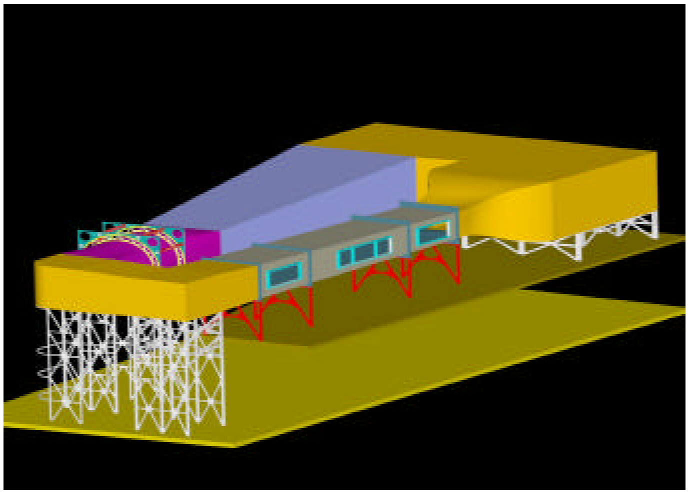


Fig. 1. Rendering of the ISU Aero/ABL wind tunnel

The first concerns the capabilities of existing ABL tunnels. The primary assumption in current boundary layer wind tunnel testing is that atmospheric velocity variations can be adequately modeled by stationary mean and turbulent flow properties. However, extreme wind loads result primarily from extreme weather events (such as gust fronts, hurricanes, etc.) where non-stationary gusts, transitional flow structures and rapid wind directionality changes might play a significant role. The current state-of-the-art boundary layer wind tunnels are incapable of simulating the effects of such events. In addition to non-stationary flow phenomena, a number of modeling issues warrant further investigation. Further work is necessary to understand how bluff body flows are modified by large-scale velocity fluctuations and small-scale turbulence. Turbulent energy at small scales depends on Reynolds number and is known to alter separated flow structures. To consider these modeling concerns, a fairly good-sized test section along with the capability to generate high wind speed is required of a boundary layer

Table 1. List of university-based wind tunnels that are comparable in size and speed to ISU wind tunnel

Name	**Width (ft)**	**Height (ft)**	**Total Area (ft^2)**	**Max. Speed (ft/s)**	**Max. Mach No.**	**Aero/ ABL**
Univ. of Washington	8.00	12.00	96.0	200	0.18	Aero
Univ. of Southern California (Dryden)	4.50	20.00	90.0	98	0.09	Aero
Univ. of Maryland	7.75	11.00	85.25	337	0.30	Aero
MIT	7.00	10.00	70.0	402	0.36	Aero
Texas A&M	10.00	7.00	70.0	290	0.26	Aero
Wichita State University	7.00	10.00	70.0	235	0.21	Aero
Georgia Tech	7.00	9.00	63.0	220	0.20	Aero
Iowa State Univ., Test Section I	8.00	6.00	48.0	160	0.14	Aero
Iowa State Univ., Test Section II	8.00	7.25	58.0	117		ABL
Colorado State Univ., EWT	12.00	8.00	96.0	40		ABL
Colorado State Univ., MWT	6.00	6.00	36.0	120		ABL
Colorado State Univ., IWT	6.00	6.00	36.0	80		ABL
Univ. of Minneapolis, Test Section II	8.00	8.00	64.0	62		ABL
Univ. of Minneapolis, Test Section I	5.00	5.60	28.0	148		ABL
Texas Tech University	6.00	5.25	31.5	110		ABL
Clemson University	Unavailable data	ABL				
Univ. of Western Ontario, BLWT I*	7.87	6.89	54.2	50		ABL
Univ. of Western Ontario, BLWT II/ I*	11.15	8.20	91.4	98		ABL
Univ. of Western Ontario, BLWT II/ II*	16.40	13.12	215.2	33		ABL

**Canadian; Aero: Aerodynamic; ABL: Atmospheric Boundary Layer; 1 Mach No. = 1117 ft/s.*
The above data have been compiled from the web sites. The authors are not responsible for the accuracy of this data.

wind tunnel. Greater understanding of these flow structure interactions fits well with the mission of a university. This leads to the second issue addressed by the ISU wind tunnel design.

To the authors' knowledge, very few U.S. universities maintain *major* boundary layer wind tunnels (Table 1). With losses due to wind damage increasing at an alarming rate, it is essential to invest in the necessary research and education infrastructure to meet the challenge of reducing wind-related hazards. It is proposed that a new generation of boundary layer wind tunnel is required to meet such a challenge.

The College of Engineering at Iowa State University has committed significant resources to address this need. In addition to committing resources on faculty and other personnel, it has made a significant commitment to this project including partial funding for the wind tunnel, a model workshop, and 12,000 square feet of laboratory space. While two-thirds of the total cost ($475k) of constructing the wind tunnel and building modification has been raised from private and university sources, the U.S. National Science Foundation has recently approved matching funds of $160K for this project.

The wind tunnel is in the final stages of design. This design incorporates non-stationary flow capabilities and a high velocity capacity of 49 m/s (110 mph) in the large aerodynamic test section that can accommodate fairly good-sized models. Sizing and layout of various components including the test sections, turning sections, and fan have been completed (Figure 1). The wind tunnel will be of closed-circuit type with the option of running it in an open-circuit mode. It will have two test sections, one for aerodynamic testing (requiring low-turbulence flow) that is 2.44 m (8 ft) wide by 1.83 m (6 ft) high followed by a test section to simulate atmospheric boundary layer wind that is 2.44 m (8 ft) wide by 2.21 m (7.25 ft) high. The maximum speed in the ABL test section will be 36 m/s (80 mph). Increased velocity capability will allow relatively larger Reynolds numbers—with the accompanying increase in small-scale turbulent spectral content (Maximum Reynolds Number: 1×10^6/ ft). A relatively large working cross section will accommodate both large-scale models and large-scale velocity structures. Being located in the Department of Aerospace Engineering and Engineering Mechanics, this boundary layer wind tunnel will be unique in solving problems in wind engineering. While most wind engineering programs originate from civil engineering departments, the program at Iowa State benefits from an environment of broad aerodynamics expertise. The wind engineering group includes researchers with backgrounds in civil, mechanical, and aerospace engineering as well meteorology - complementary backgrounds for interdisciplinary wind engineering work. The proposed wind tunnel will constitute one component of the Wind Simulation and Testing Laboratory (WiST) that will also consist of a *large tornado simulator* and a *large microburst simulator*, an open-return wind tunnel (0.91 m by 0.78 m, max. speed 80 m/s) and an undergraduate closed-circuit tunnel (0.30 m by 0.30 m, max. speed 80 m/s). While the proposed wind tunnel will be primarily used for research, it will be also used to complement the education and outreach missions of the university.

The major component remaining to be designed is the gust front generator and an active turbulence generator. As part of the gust front generator, a by-pass vent will connect a portion of the tunnel upstream of the fan section with a portion downstream. Computer-controlled valves will be used to control how much air is vented through the test section, thus almost instantaneously modifying the mean velocity in the test section. A scaled working model of the wind tunnel with the by-pass vent is shown in Figure 2. Measurements with this model and calculations show that variations in flow velocity of up to 25% of the mean wind speed can be obtained in the test section.

Other design details include final specifications for all parts including the contraction, diffusers, fan, motor, turning vanes, turbulence screens, honeycomb sections, etc. The contraction has a cubic profile with a 5.06 area ratio. The selected fan is of 2.74 m (9ft) diameter with capability of 220 m^3/s (465,000 cfm) flow rate driven by a 260 kW (350 hp) AC motor. The open circuit mode of operation will be achieved by removing the set of turning vanes at the two successive corners that follow the test sections. The turning vanes will be moved on rails to the duct that connects these corners and this duct will be isolated from rest of the wind tunnel to make the flow circuit U-shaped. It is also planned to use a number of hollow flat plates as a heat exchanger that are spaced at regular intervals and aligned with the flow to minimize the pressure losses in the tunnel.

Just like designing any wind tunnel, the major challenge has been in optimizing the size and capabilities of the ISU wind tunnel to meet the budget and laboratory space and layout requirements. The laboratory-layout for this project is not a clean rectangular shape but has inclined and slightly curved walls. This layout has forced the turning angles at two of the four corners of the wind tunnel to be slightly off from the desired angle of 90 degrees. The available floor space is on a mezzanine level which is not continuous over the entire plan area of the desired wind tunnel, and hence portions of it need to be supported from the first floor. The choice of closed-circuit design over open circuit was dictated by availability of space in relation to the desired specifications of the test sections, expected noise-comfort level, and the total budget that was needed to achieve the desired wind speed.

Prof. Cesar Farell, Professor Emeritus, University of Minnesota is the design consultant for this project. The authors of this article are closely working with Prof. Farell and the ISU Facilities, Planning and Maintenance department to make this project a reality by the end of this calendar year.

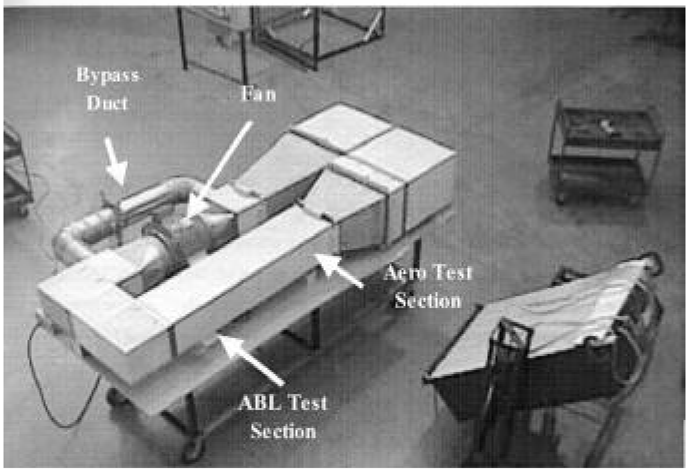


Fig. 2. Scaled Working Model to Test By-Pass Duct Concept

President's Message

Help! We need volunteers to help with some of the association activities and to work toward becoming more active in some areas. In particular help is needed in collecting items for the Newsletter and in writing them up in a form suitable for insertion in the Newsletter. If anyone is able to help out please contact Bo Bienkiewicz, any board member or myself. We would also like to hear any ideas on how AAWE could play a more active role in advancing wind engineering knowledge and practice.

There seems to be confusion concerning when to pay AAWE dues and what period is covered. This is due to the decision to have memberships extend over the calendar year rather than starting at midyear, as had previously been the case. The midyear date had come about to try to ease the burden on the secretary/treasurer who works on a volunteer basis and the thought was to set the date in the academic summer break As many people were unhappy with this it was decided to switch to a calendar year and one outcome of this is that memberships were extended an extra six months to the end of 2001 which provided a six months bonus. It was planned that then things would then return to a regular one-year cycle. We are sorry if this has caused a problem.

Looking into the future there are two events that the wind engineering community should plan for. One is the forthcoming International Conference on Wind Engineering in June 2003 being organized through Texas Tech University. The other is the next Americas Conference on Wind Engineering, 2005, being organized through the Hurricane Research Center at Louisiana State University. Although these dates may seem far away we urge all of our members to plan to attend the meetings and to work toward technical involvement in the conferences. One item under discussion is how to involve students in the conferences. You will be hearing more on this subject as plans develop.

One thing I find of interest is the possible confusion that occurs in specifying something called the "wind speed". The specification of design wind speeds is still a work in progress. The situation is

(continued on p. 11)

AMERICAN ASSOCIATION FOR WIND ENGINEERING

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AAWE

American Association
for Wind Engineering

OBJECTIVES

The American Association for Wind Engineering (AAWE) was established in 1966. The objectives of AAWE are: (1) the advancement of the science and practice of wind engineering and (2) the solution of national wind engineering problems through transfer of new knowledge into practice.

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WHY YOU SHOULD JOIN:

AAWE provides networking opportunity with U.S. wind engineering community through regular and special publications, e-mail communication, internet resources, and technical meetings.

HOW TO JOIN

Fill–in the Membership Application/Renewal Form and forward it to AAWE Secretary/Treasurer. For more information visit AAWE web site or contact Mike Gaus (E-mail: aawe@aawe.org, Ph: 757-258-1273 or Bo Bienkiewicz (E-mail: bogusz@engr.colostate.edu, Ph: 970-491-8232).

Get involved in formulating
National Wind Hazard Reduction Program

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American Association
for Wind Engineering

Membership Application/Renewal

Membership Year: January 1, 2002 - December 31, 2002

Dues (Check appropriate category):

Individual Membership: $50___, Student $10 ____

Corporate Membership; $500 or more: ___ . Corporate membership can include up to five individual members. Complete one form for each individual member.

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Your Wind Engineering Interests_____________________________
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probably even more confusing for the general public as they get reports on the news after wind storms that the wind speed was xxx miles per hour. (Recent reports quoted ground level speeds up to 316 mph) Some light should be cast on just what is being reported, where the report comes from and how the reported values relate to wind loads on structures, and not at points that have no relation to the impacts from wind. Any volunteers to prepare an article that we could post on our web pages to help clarify the situation?

Florida Passes Statewide Building Code

The new statewide building code, The Florida Building Code, took effect on March 1, 2002. It is the result of activities of the Florida Building Code Commission, established in 1996. The new statewide code allows individual jurisdictions to amend the code to be more stringent when local conditions warrant. One of objectives of this effort was to make Florida structures more hurricane-resistant. Information on the code can be found at http://www.floridabuilding.org. On a related matter, Dade County has created a web site listing all products approved for wind-borne debris regions: http://buildingcodeoneline.com. *(from Natural Hazards Observer, May 2002)*

From the Editor

We would like to express our gratitude to all the authors of the articles included in this issue of the AAWE Newsletter. At the same time we would like to encourage all AAWE members and other readers to become contributors to future issues of this publication. Please forward your contributions and other materials suitable for publication in the Newsletter, as well as comments on the content of the current and past issues of the Newsletter, to the Editor, at bogusz@engr.colostate.edu.

Wind Engineering and Related Conferences - May 2002 Update

2002
MAY 21– 25
3rd East European Conference on Wind Engineering
Kiev, Ukraine
E-mail: vgr@ihm.kiev.ua

MAY 30-31
Hurricane Andrew 10-Year Anniversary Conference
Miami, FL, USA
Contact: R. Alvarez
E-mail: alvarez@fiu.edu
http://www.ihc.fiu.edu

JUNE 19-21
A.G. Davenport Symposium (AGD 2002)
London, Ontario, Canada
E-mail: agd-conf@blwtl.uwo.ca

AUGUST 21-23
2nd International Symposium on Advances in Wind and Structures (AWAS'02)
Taejon, Korea
E-mail: technop@chollian.net

SEPTEMBER 4-6
5th UK Conference on Wind Engineering
Nottingham, U.K.
E-mail: wes02@pfconsultants.co.uk
http://www.pfconsultants.co.uk/wes2002

2003
MAY 29-JUNE 1
ASCE/SEI Structures Congress & Exposition
Seattle, WA, USA
Contact: C. W. Roeder
E-mail: croeder@u.washington.edu
JUNE 2-5
11th International Conference on Wind Engineering,
Lubbock, TX, USA
Contact: K. Mehta
E-mail: 11icwe@wind.ttu.edu
http://www.icwe.ttu.edu

2005
Americas Conference on Wind Engineering
Baton Rouge, LA, USA
Contact: M. Levitan
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