

I/UCRC Wind Hazard and Infrastructure Performance (WHIP) Center

Center Director's Report: Feb. 1, 2020 – Jan. 31, 2021 (Year 2)

Kishor C. Mehta, Ph.D., NAE, Dist. M ASCE
P.W.Horn Professor of Civil, Environmental and Construction Engineering
Texas Tech University
Lubbock, Texas

Introduction

The WHIP Center was established on February 1, 2019. It is now in its second year. It is a collaborative Center between the two institutions, Texas Tech University and Florida International University. Florida Institute of Technology is an affiliate institute with Texas Tech.

Six companies have continued to be members of the Center during the Year 2. These members are:

- AIR-WORLDWIDE – A Verisk Business, Boston, MA
- Berkshire Hathaway – Specialty Insurance, Boston, MA
- GAF Materials, Parsippany, NJ
- Permasteelisa Group, part of Atlas Holdings since Sept. 2020, Italy
- SCOR – The Art & Science of Risk, Reinsurer, France
- StateFarm – Insurance, Bloomington, IL

A seventh member company, USAA had agreed to join the WHIP Center in February 2020, however COVID-19 generated uncertainty in the corporate structure and pulled out in early March 2020. The company has agreed to join in Year 3 of the Center.

The three academic institutions (including one affiliate) and six companies provide synergy to pursue industry selected research projects. Of the six companies, three represent insurance industry, one is risk Management Company, one is roofing material company and one is building cladding specialty company.

Florida International University has the Wall of Wind (WOW) experimental facility that can test building and components from model to full scale at wind speeds up to 150 mph. This facility is also a part of NSF funded NHERI Infrastructure nationally shared facility. Texas Tech University has conducted wind engineering experimental and analytical research on effects of wind on low buildings since 1970. The research facilities at Texas Tech include VorTECH (simulating tornado), 200-m tower for atmospheric measurement, Stick-net for spatial wind measurement in hurricane, Doppler radars, and debris impact facility. The Florida Institute of Technology has Wireless Sensor Network for field monitoring of building pressures induced by hurricane winds, Portable Lidar, and Hurricane Risk modeling system. The faculty and facilities at these three institutions compliment to pursue a variety of research in wind hazard and infrastructure performance.

The pandemic of COVID-19 closed all institutions in mid-March 2020. The experimental facilities of the universities opened on a limited basis on June 1, 2020. All projects were given extension under the 'Act of God' provisions of By-laws of WHIP for finishing the Year 1 projects and for Year 2 projects. The

extension was voted by the WHIP Leadership (IAB Chair, Center Director, and Site Directors) on June 22, 2020.

Current Status of the Center

The Center got a good start during the Year 1 with four projects. The Year 2 annual meeting that was scheduled for March 26 -27, 2020 at Texas Tech University had to be conducted remotely because of COVID-19 related travel restrictions by the companies. All the IAB members representing companies took active part in both annual and semi-annual (conducted virtually on November 5, 2020) meetings. During the Year 2 annual meeting, faculty from the three institutions presented 13 project proposals. The IAB made the decision to continue the four projects from Year 1. The IAB conveyed the message that continuing the projects through Year 2 will provide fruitful results and that with increase in membership in Year3 there will be larger pool of research funds to pursue new projects.

Updating of the WHIP Center operation includes completion of Research Road Map (posted on website), putting minutes and agendas of annual and mid-annual meetings on the website, and putting Membership Agreement (sample) and By-laws on the website. The website www.whipc.org is updated continuously to provide information about the Center to interested parties.

Annual IAB Meeting on March 26-27, 2020

This meeting was originally planned as in-person meeting at Texas Tech University. The meeting room, hotel accommodations, and other items were planned in advance. However, in early March the IAB members one by one requested to participate remotely because of restriction of travel imposed by the companies. Hence, the entire meeting was conducted remotely through Zoom platform. In addition to IAB, faculty and students, invited representatives from seven companies, two associations and two institutions were allowed to participate in this meeting to inform them about the operation of the Center.

The meeting went very smoothly in spite of being remotely conducted. IAB in its Executive Session through voting selected four projects to continue from Year 1. IAB was appreciative of the efforts by faculty of three institutions to submit and discuss thirteen proposals. IAB's decision on selection of projects was based on (1) to get tangible results from the four continuing projects, (2) larger pool of research funds with increased membership in year 3 will allow new projects to be funded.

Other items discussed at the meeting included:

- WHIP By-laws. After some discussion it was agreed to add provision for 'Act of God' delay in executing the projects. By-laws will be voted at a later date
- Develop a strategic plan to recruit additional company members in the WHIP Center
- Implement frequent zoom call one-hour meetings for the Center to improve continuous communication

Mid-Annual IAB Meeting on November 5, 2020

In this meeting, conducted remotely, participants included all IAB members, assessment evaluator, Center and Site Directors, Project PIs, Faculty and students from three institutions, and invited representatives from ten companies, two agencies, five associations, and four universities.

The proceedings at this meeting included progress reports of the four funded projects, presentations by two IAB members and a special presentation by a faculty on collection of wind data in land falling hurricanes using radars. Questions and answers on the research projects were processed through LIFE form.

In the Executive Session the IAB took an unusual action, 'IAB unanimously (voice vote) agreed that if a company joined in Year 3 and 4, the company will be able to receive research reports including IP from the previous years 1 and 2.' Following the meeting all representatives of companies, associations, and agencies who participated in the meeting were contacted to inform them of this action by IAB. It is too early to tell the impact of this action.

Zoom IAB Meeting on May 5, 2020

Items discussed at this one-hour meeting included progress report of four projects, strategic plan for recruiting new members, and finalizing Center By-laws (to be voted at the next meeting).

Zoom IAB Meeting on July 14, 2020

Items discussed at this two-hour meeting included progress report of four projects, voting of the By-laws (passed by unanimous voice vote of IAB), and mid-annual meeting date (Nov. 5 or 12 with invitations to potential companies and agencies).

Zoom IAB Meeting on September 1, 2020

Items discussed in this 90-minute meeting included progress report of four projects, and agenda for the mid-annual meeting. The agenda will include presentations by IAB members and an additional one of the recent hurricanes. It was agreed that potential company and agency representatives will be invited to the mid-annual meeting scheduled for November 5.

Zoom IAB Meeting on December 15, 2020

This meeting will be held; the report is written prior to this date.

Targeted Growth

A data-base of more than fifty company and agency contacts is developed to inform them about WHIP IAB meetings (only when IAB agrees to open meeting) and the news of the WHIP Center. Because of the pandemic and lockdown with the start of Year 2 of the Center it has not been possible to visit the potential companies and agencies on their home base. Once travel becomes safe the data-base will be used to visit the companies and agencies in-person. Contacts in-person increases the chances of convincing administration of companies to join WHIP Center; visit to USAA in San Antonio and subsequent attracting the company to join the Center is a good example.

Publicity for WHIP Center is an on-going effort. First newsletter was assembled in September 2020 and was distributed by e-mail to 170+ individuals. In addition, exhibit and presentation about WHIP Center and the on-going research projects are proposed at several venues; ASCE ETS 2021, National hurricane Conference 2021, RAA Cat Risk Management 2021, and WIND 2021. However, due to pandemic of COVID-19 it is not certain how many conferences will take place in 2021.

Faculty-Student Participation

The participation by the faculty is strong as evidenced by preparation and presentation of 13 research proposals at the Annual meeting on March 26-27, 2020. In Year 2 five faculty members and nine students are pursuing research projects. The Site Directors are working with other faculty members for ideas on potential projects.

Institutional Control

University Policy Committees are established and are operational at both institutions. Office of Research at the two institutions have managed Membership Agreements and have processed funding from NSF and the fees from the companies. MOU between the two institutions, Texas Tech University and Florida International University, has allowed transfer of research funds based on where the research project is conducted. In essence the WHIP Center is operating as a CENTER rather than center at two institutions.

Unanticipated Problems and Solutions

The Center had a slow start in Year 1 as reported in the Center Director Report of year 1. The slow start was due to change in Site Director/PI at Texas Tech University, loss of two companies and its fee revenue, delay in membership fee payment, and the loss of staff Program Coordinator in the middle of the year. These glitches were overcome with the help of IAB Chair and Site Directors.

In Year 2 COVID-19 pandemic caused disruption in the operation of the Center. The annual meeting had to be managed remotely through Zoom platform. The same was true for the mid-annual meeting. The travel restrictions prevented the Center to have social gathering between company representatives, faculty and students. One benefit of remotely conducted meetings was participation by invited guests at the meetings. These participation by the guests have provided information on the operation of the Center to companies across the country.

COVID-19 caused universities to lockdown from mid-March to June 1, 2020. 'Act of God' provision in the By-laws allowed extension of completion dates of the research projects.