September 12, 2008

David G. Mongan
President
American Society of Civil Engineers
1801 Alexander Bell Drive
Reston, VA 20191

Dear President Mongan:

Enclosed please find the report of the Task Force on Engineering Reviews, on which I was proud to serve as Chair. Over the past 10 months, in accordance with our mission, my colleagues and I conducted a thorough review of American Society of Civil Engineers policies and procedures for participating in engineering studies of national significance. ASCE has long been respected for its investigatory skill and expertise, and its work on assessments is held in high regard by those in the engineering profession. It is our hope the Task Force's work will further strengthen ASCE's process and set the standard for the industry.

After a thoughtful and exhaustive examination, we remain firm in our belief that ASCE not only plays a vital role in conducting post-disaster engineering assessments, but that the Society is the single best organization to carry out this type of work for our nation. As a private, not for profit, membership led engineering society, comprised of licensed professional engineers, researchers, students, teachers and practicing civil engineers, ASCE possesses the expertise, resources, and commitment to public service that the job requires.

In order to help the Society continue to fulfill this increasingly complex mission, we have identified four areas for improving the overall process by which future assessments are conducted: transparency; funding; communication; and potential conflicts of interest.

We feel our recommendations will help ASCE conduct future investigations in the most effective and transparent way possible, and we believe this will benefit both the Society and the nation.

I want to thank you again for the opportunity to chair this distinguished task force. Please do not hesitate to call on me if I can be of any further assistance as you review and consider our recommendations.

Sincerely,

Sherwood Boehlert, M.C. (Ret.)

REPORT
ON
ENGINEERING REVIEWS
RECOMMENDATIONS TO
THE AMERICAN SOCIETY OF CIVIL ENGINEERS

September 2008

TASK FORCE
ON
ENGINEERING REVIEWS

The Honorable Sherwood L. Boehlert
Former Chairman of the House Science Committee

Joseph Bordogna, Ph. D.
Former Deputy Director of the National Science Foundation

Jack W. Hoffbuhr, P.E., DEE
Former Executive Director of the American Water Works Association

Jack Snell, Ph. D.
Former Director of the National Institute of Standards and Technology's Building and Fire Research Laboratory

William A. Wulf, Ph. D.
Former President of the National Academy of Engineering

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Introduction

In early December, 2007, I was asked by David Mongan, President of The American Society of Civil Engineers, to assemble an independent panel of outside experts to review ASCE's participation in engineering studies of national significance.

Discussions with President Mongan led to the development of a specific charge: "Examine the policies and procedures followed by the American Society of Civil Engineers in conducting engineering studies of natural and man-made disasters. Upon completion of this examination, produce a written report providing recommendations for improving the clarity, transparency and efficiency of the policies and procedures governing future engineering studies by the American Society of Civil Engineers."

I was assured that I would have free rein in the selection of the panel. Additionally, guarantees were provided that we would have the full cooperation of the ASCE staff with access to all documents pertaining to existing policies and procedures.

With an agreed upon charge and those assurances, the challenge was accepted.

My two decades of service on the House Science Committee, the last six as Chairman, placed me in an advantageous position: I knew personally key professionals in the science/engineering community and over the years had established productive working relationships with them and their organizations. This enabled me to assemble a most distinguished panel and gave all of us access to a wide range of sources which proved most helpful in our deliberations.

Our panel engaged in a thorough examination of existing ASCE procedures and policies, conducted extensive outreach consultations with respected entities such as The National Science Foundation, The National Academy of Sciences , The National

Academy of Engineering, The National Institute of Standards and Technology and others. Our deliberations were characterized by thoughtful discussions with each of the panelists bringing a lifetime of experience to the exchanges. The synergism produced a finished product that not only met the challenge of our charge but also, we feel, paved the way for a recommended course of action to enhance what President Mongan is seeking as outlined in a May 9, 2008 letter to me: "the public's trust in and understanding of our work."

The Task Force believes ASCE remains the best option for our nation in conducting post disaster engineering assessments. However, the overall process by which future disaster engineering assessments are conducted must be improved to reflect emerging complexities in assessing disasters and evolving societal expectations. The Task Force identified four basic areas of needed reform; process transparency and efficacy, the funding of engineering reviews, communication with the public and press, and potential conflicts of interests.

Sherwood Boehlert, M.C. (Ret.)

Charge of the Task Force on Engineering Reviews

Examine the policies and procedures followed by the American Society of Civil Engineers in conducting engineering studies of natural and man-made disasters. Upon completion of this examination, produce a written report providing recommendations for improving the clarity, transparency and efficiency of the policies and procedures governing future engineering studies by the American Society of Civil Engineers.

Task Force Members

Biographical Information

SHERWOOD BOEHLERT served as a Representative from New York in the U.S. House of Representatives from 1983 to 2006. During that time he served as Chairman of the Science Committee, Chairman of the Water Resources and Environment Subcommittee, Co-Chair of the Northeast Ag Caucus and as a Member of the Transportation and Infrastructure Committee, the Intelligence Committee, the Congressional Task Force on Manufacturing, the Congressional Biomedical Research Caucus and the Congressional Fire Service Caucus.

Previously, Boehlert served as Chief of Staff to Rep. Alexander Pirnie from 1964 to 1972, and then for Pirnie's successor, Rep. Donald Mitchell, from 1973 to 1979. In 1979 he was elected Oneida County Executive; and in 1982, he was elected to the House of Representatives, succeeding Rep. Mitchell. Boehlert served in the U.S. Army from 1956 to 1958, and was a delegate to both the New York State Republican Convention and the Republican National Convention in 1980.

JOSEPH BORDOGNA, who previously served as Deputy Director of the National Science Foundation (NSF), is now the Alfred Fitler Moore Professor of Engineering at the University of Pennsylvania. Bordogna was the longest-serving deputy director in NSF's history, where he began his career in 1991 as the head of the Directorate for Engineering. He was subsequently appointed Acting Deputy Director in 1996, and was named Deputy Director by President Clinton following Senate confirmation in 1999.

Previously, Bordogna has also served as a member of the President's Management Council and has chaired interagency committees on manufacturing, environmental and automotive technologies within the President's National Science and

Technology Council. He is a fellow of the American Association for the Advancement of Science, the American Society for Engineering Education, the International Engineering Consortium and the Institute of Electrical and Electronics Engineers, where he also previously served as president.

JACK W. HOFFBUHR, who began his career with the American Water Works Association (AWWA) in 1988 as the Deputy Executive Director, has spent the past 11 year as the association's Executive Director. He is a registered professional engineer in Colorado and a board certified professional engineer (diplomat) in water/wastewater by the American Academy of Environmental Engineers.

Prior to joining AWWA, Hoffbuhr spent more than 20 years in water utilities design, construction, operation and training. After two years designing wastewater and water supply facilities in the Peruvian Andes for the U.S. Peace Corps, Hoffbuhr served in a variety of positions with the Commissioned Corps of the U.S. Public Health Service. This included designing and constructing wastewater and water supply facilities for the Hopi and Navajo Indian Reservations in Arizona, several international assignments and service with the Environmental Protection Agency.

JACK E. SNELL began his career with the National Institute of Standards and Technology (NIST) in 1971 as Chief of the Building Service Systems Section of the Building Environment Division. He then went on to serve as Assistant Chief of the Building Environment Division, Chief of the Office of Energy Conservation, Director of the Office of Energy Programs, Director of the Center for Fire Research and finally, as Deputy Director of the Building and Fire Research Laboratory, from which he retired in 2003. Prior to his work with NIST, Snell served in the U.S. Air Force, was an engineer with the Department of Aeronautical Engineering at Princeton University, an aircraft maintenance engineer with Pan American World Airways, Inc., a visiting professor at the Indian Institute of Technology in Kanpur, India, and an assistant professor and director of the transportation and urban systems laboratory at Princeton University.

Previously, Snell served as U.S. Chairman of the U.S.-Japan Panel on Fire Research and Safety; Co-Chair of the National Science and Technology Council's Subcommittee on Construction and Building; a member of the International Council for Building Research Studies and Documentation Board of Directors; an advisor to the FIATECH Board of Directors; a member of the National Fire Protection Association Board of Directors; a member of the Construction Industry Institute's Board of Advisors and Strategic Planning Committee; and a member of the Society of Fire Protection Engineers. He is the author and co-author of numerous papers, articles and reports on fire research, energy conservation and transportation systems, has been awarded Silver and Gold medals by the Department of Commerce and is a fellow of the American Society of Mechanical Engineers.

WILLIAM A. WULF, who previously served as the president of the National Academy of Engineering – an organization that operates under a congressional charter and presidential executive orders which call on it to provide advice to the government on issues of science and engineering – is now the AT&T Professor of Computer Science at the University of Virginia. Previously, he served as a professor of Computer Science at Carnegie-Mellon University, a position he left in 1981 to found Tartan Laboratories, where he served as Chairman and Chief Executive Officer until 1988.

He is a fellow of the National Academy of Engineering, the Association for Computing Machinery and IEEE, as well as a member of the American Academy of Arts and Sciences. Wulf has directed more than 25 doctoral theses and is the author or co-author of three books, two patents and more than 100 papers. He also designed Bliss, a systems-implementation language adopted by DEC, and was one of the architects of the DEC PDP-11, a highly successful minicomputer. In addition to designing and constructing the C.mmp multiprocessor and Hydra, one of the first operating systems to explore capability-based protection; he also developed PQCC, a technology for the automatic construction of optimizing compilers and designed the WM pipelined processor.

The Process for Conducting Engineering Reviews

Introduction of Issues

Is the current process for conducting engineering reviews, as presented to the Task Force by ASCE, efficient and sufficiently transparent?

Does the process for conducting engineering reviews produce assessment teams with adequate expertise and requisite independence?

Does ASCE staff serve solely a support function with respect to the work of assessment teams?

Are there adequate safeguards with respect to potential or real conflicts of interests in the selection of assessment teams?

Is the process for conducting engineering reviews presented to assessment teams, ASCE leadership, and the public clear and concise?

Analysis of Existing Process

The Task Force found ASCE's process for conducting engineering reviews to be an amalgam of policies and practices that were not fully articulated in a single document. ASCE staff explanations of the process were initially confusing. The process does not appear to have been written with adequate consideration of real or perceived conflicts of interest. The process as presented to the Task Force raises numerous questions regarding interactions between ASCE staff and the assessment teams and the overall independence of the assessment teams. The lack of formal, well articulated, procedures for conducting engineering reviews has contributed to

confusion in understanding the scope of these engineering reviews and undermined the credibility of these engineering reviews and ASCE as an organization.

Task Force Recommendations

- **ASCE should develop a Manual of Engineering Review Procedures covering each phase of this process, ensuring the completeness of the final report and that steps safeguarding against conflicts of interest are followed. This manual should be available to all ASCE members and staff as well as the public.**

- **The committee selection process must be modified to ensure that assessment teams are comprised of members with appropriate expertise. The committee selection process should follow the identification of special expertise required for a specific study. Assessment teams should be assembled from a list of those possessing needed expertise.**

- **The committee selection process must be timely and open to the public. It must have provisions for looking beyond ASCE Membership to find needed expertise. A pre-approved inventory of potential assessment team members, listed by categories (areas of expertise) would be helpful in assuring a rapid response capability.**

- **The committee selection process needs formal procedures to assess potential or perceived conflicts of interests.**

- **The assessment teams need greater independence from ASCE with respect to staff oversight and communications with the public. It must be clear that ASCE headquarters staff facilitate and support the work assessment team.**

- **Assessment team findings should not have to be presented as a consensus report. If team members have findings upon which there is not consensus, these findings should be included in the final report as additional views – not minority views.**

The Funding of Engineering Reviews

Introduction of Issues

Do the funding sources for ASCE's engineering reviews contribute to real or perceived conflicts of interests?

Does ASCE have an efficient program for funding future engineering reviews?

Should ASCE accept funding from government agencies or private entities that may be the target of engineering reviews?

Does ASCE have a funding program for engineering reviews that is transparent and accessible to its members and the public?

Analysis of Existing Funding Process

The Task Force found that past engineering reviews were funded through a myriad of funding sources, raising potential conflict of interest questions. The Task Force found that as the scope and importance of the engineering review increased the process for funding the review became more ambiguous. Existing ASCE Bylaws / Rules are focused on the funding of low cost engineering reviews, under $50,000. According to materials presented to the Task Force by ASCE, "ASCE has no specific policies governing outside funding for assessment teams." According to materials presented to the Task Force by ASCE, "ASCE Teams are typically self-funded, (and rarely exceed $50,000)" and ASCE has no specific policies governing outside funding of assessment teams. The absence of formal policies governing the funding of engineering reviews has led directly to assertions of conflict of interests.

Task Force Recommendations

- **The way in which engineering reviews are funded is a source of perceived and potentially real conflicts of interests and ASCE should take measures to address these conflicts.**

- **ASCE should self fund engineering reviews costing less than $1 M. The funding of these engineering reviews should come through a nominal increase in annual dues (perhaps between five and ten dollars) and from unrestricted voluntary gifts.**

- **All funds collected for engineering reviews should be placed in a separate account and these funds should remain dedicated solely for the purpose of conducting engineering reviews.**

- **ASCE should look to the practices of other professional organizations in developing a new funding mechanism for engineering reviews.**

- **Engineering reviews costing more than $1 M should be funded through NIST. This would entail amending the Construction Safety Team Act to authorize funding for post disaster assessment teams. These funds would not be limited to ASCE, though ASCE would be the recipient under most scenarios. Specific legislative measures would be required to ensure the timely release of funding to assessment teams and minimal oversight of these funds by NIST – potentially placing a NIST staffer on the assessment team.**

- **ASCE should develop formal procedures for the funding of engineering reviews that should be available to all ASCE members and staff as well as the public.**

The Role of Communications

Introduction of Issues

- Do current ASCE media protocols and communication efforts best serve ASCE *Members* and the public?

- Does the public (press) have a legitimate expectation of access to engineering assessment teams during the course of their investigations?

- What is the proper role for the assessment team leader, vis-à-vis the ASCE Staff, in providing the public with timely information on the work of an assessment team?

Analysis of Existing Program

The Task Force found that extremely tight controls are placed on assessment team members with regard to interaction with the press. Current, ASCE Media Protocols do not specifically address the interaction of assessment team members with the public and the press. The work of assessment teams on natural and man-made disasters are of high interest and importance to the public and the press. There is a perception by some in the public and the press that ASCE staff is

controlling and selectively releasing information on the work of assessment teams.

Task Force Recommendations

- **ASCE should develop specific media protocols for assessment teams and their interaction with the public and the press, given the high profile of natural and man-made disasters.**

- **ASCE's media protocol for assessment teams should include scheduled media availability for the assessment team leader coordinated with ASCE's Communications Director. For example, at least every seven days the Team Leader will be available for questions from the press on the progress of the assessment team's work.**

The Potential for Conflicts

Introduction of Issues

Are real or perceived conflicts of interests a threat to public confidence in the engineering reviews produced by ASCE assessment teams?

Have adequate measures been taken by ASCE to minimize real or perceived conflicts of interests?

Do assessment team members need to complete a separate conflict of interest procedure?

Analysis of Existing Programs

The Task Force found that the ultimate value of post disaster engineering reviews to society is directly linked to their credibility and credibility rests in large part on the removal of real or perceived conflicts of interests. The potential conflicts of interests in ASCE's engineering review process are not unique to ASCE and can be addressed through procedures utilized by many government agencies charged with providing unbiased assessments to the public. The Task Force believes that modifications to the funding of ASCE engineering reviews, greater transparency with regard to the selection of assessment teams and providing assessment teams with greater independence will dramatically reduce potential conflicts of interests.

Task Force Recommendations

- **ASCE should develop, with the assistance of a professional conflicts of interest lawyer, a Briefing Memo for circulation to all staff and potential assessment team members on the potential for conflicts of interests in conducting engineering reviews.**

- **ASCE staff and leadership involved in the engineering review process should receive annual briefings on the avoidance of conflicts of interests.**

- **ASCE should establish a pool of pre-approved assessment team members who possess the requisite expertise to serve on an assessment team and who have been properly vetted with regard to potential conflicts of interests. Having a pool of pre-approved assessment team members will contribute significantly to the timely deployment of assessment teams to disaster sites.**

- **Prior to work on a post disaster engineering review, assessment team members should be given a briefing on potential conflicts of interests and be required to complete a conflict of interest disclosure form.**

Conclusion

After a thoughtful and exhaustive examination of ASCE's existing engineering review program, the Task Force believes ASCE should continue to play a central role in conducting post disaster engineering reviews. As a private, not for profit, membership led engineering society, comprised of licensed professional engineers, researchers, students, teachers and practicing civil engineers, ASCE is uniquely qualified and positioned to conduct post disaster engineering reviews.

The recommendations contained in this report are responsive to the charge given the Task Force and are consistent with ASCE's goals, mission and vision. We believe these recommendations will aid ASCE in conducting studies that are authoritative, respected, and complete to the point of advancing the state of practice for its members as well as assuring the public that their best interests and safety have been well served. Further, implementation of these recommendations should help ASCE move towards its vision for engineers of the future - as leaders in the community and legitimate stewards of the nation's physical infrastructure.

Resources Acknowledged

In analyzing ASCE's current procedures for conducting post disaster engineering reviews and in formulating the recommendations contained in this Report, we drew upon our personal experiences and the input and expertise of leaders from the engineering community, from government agencies, from Congress, from national associations, from academia and from the media. Publications from the aforementioned entities also provided us with critical insights and ideas. We would like to briefly recognize these invaluable resources.

- The National Science Foundation
- The National Academy of Engineering
- The National Academy of Sciences
- The National Institute of Standards and Technology
- The Times – Picayune
- The American Society of Civil Engineers
- The American Water Works Association
- The Science Committee, U.S. House of Representatives