

**SEI of the ASCE: Technical Committee on Structural Control  
Meeting of May 7, 2000, 8:00 am – 2:00 pm, Philadelphia PA  
Minutes**

The meeting was called to order at 8:20 am by Satish Nagarajaiah, Chair. In attendance were

Satish Nagarajaiah	Rice Univ.
Shirley Dyke	Washington Univ.
Bill Spencer	Univ. of Notre Dame
Michael Symans	Washington St. Univ.
Rakesh Goel	Cal. Poly. San Luis Obispo
Erik Johnson	USC
Anil Agrawal	City College of the City Univ. of New York
Andrei Reinhorn	SUNY Buffalo
Jann N. Yang	Univ. of California, Irvine
Henri Gavin	Duke University
Panos Tsopelas	Catholic Univ. of America
David W. Dinehart	Villanova Univ.
Gokhan Pekcan	SUNY Buffalo (Guest)

1.Introductions followed. New members Erik Johnson, Anil Agrawal, Rakesh Goel, Henry Gavin, Dave Dinehart, Panos Tsopelas, Andrew Smyth, and Richard Helgeson were welcomed by the chair. Guests were invited to apply for membership to the committee.

Nagarajaiah indicated that Larry Bergman has stepped down as secretary and thanked him for the excellent service to the committee. Nagarajaiah announced that Shirley Dyke was nominated and, after due consultation with the members of the committee, appointed as the secretary.

2. The minutes of the committee meeting on April 18, 1999 held at New Orleans were approved without change.

3. Nagarajaiah indicated that several new membership applications have been received. Nagarajaiah also asked that we seek additional members from industry. He indicated that he would make an effort to get members from the industry.

4. Spencer summarized activities regarding the reviews of the structural control manuscripts submitted to the ASCE *Journal of Structural Engineering* based on the Editorial Board meeting held the previous day. He coordinates the review structural control papers. The timeframe for *Journal of Structural Engineering* manuscripts from receipt to publication is about 15 months. Reinhorn remarked that this journal has historically been more practitioner/application driven and is now more research driven. Bill responded that he takes a close look at application papers to encourage innovative application papers. He also advised the members to submit papers to the journal directly to ASCE and not to send it to associate editors, as this does not accelerate the review process any further.

5. Review of sessions at various conferences organized by the committee:

*2000 Structures Congress: (2 sessions)*

- Dyke – Modeling and Application of Semi-Active Control Systems
- Symans/Spencer – Intelligent Seismic Isolation Systems for Structural Control

*2000 Engineering Mechanics Conference: (4 sessions)*

- Gavin/Nagarajaiah – Shake Table Semi-Active Experiments
- Nagarajaiah/Gavin – Analytical Semi-Active Numerical Studies
- Johnson/Nagarajaiah – Structural Control of Flexible and Asymmetric Buildings
- Agrawal/Yang – Wind-Excited Benchmark Problem Solutions

*2000 American Control Conference: (3 sessions)*

- Dyke/Bergman – Structural Control Applications in Civil Engineering
- Dyke/Bergman – Damage Detection, Health Monitoring, and System Identification in Civil Engineering
- Wang/Spencer – Current Directions in Civil Infrastructure Predictive Control

*2001 Structures Congress: (4 sessions)*

- Hanagan – Structural Control Provides Economical Solutions
- Agarawal – Practical Development of Semi-active Damping Systems
- Tsopelas/Symans – Innovative Seismic Protection Systems for Bridges
- Tsopelas/Nagarajaiah – Seismic Isolation and Energy Dissipation Systems: Contemporary Issues, Current Design Practice, and Recent Developments

Awaiting word on approval of the proposed sessions (Since the meeting all the four sessions proposed have been approved)

*Second European Conference on Structural Control*

to be held in Paris, July 3-9, 2000. Specific sessions include:

- Yang/Agrawal - (2) sessions on the wind-excited benchmark problem solution
- Spencer - (1) session on the nonlinear benchmark building structure

Other papers relevant to committee members and activities will include:

- Dyke will present a paper on the cable-stayed benchmark bridge problem definition
- Watanabe (Nihon University, Japan) will present a paper on the base isolation benchmark problem definition

*ICOSSAR* - Spencer will check if ASCE is an organizing committee of this conference.

- Spencer and Dyke are organizing a session for this conference

6. Nagarajaiah solicited session proposals for future conferences.

*Structures Congress 2002*- Proposed sessions:

- Reinhorn - one session on practical applications or code development
- Agrawal and Johnson - two sessions on semi-active control
- Symans - one session on near-fault earthquakes

*7th US National Conference on Earthquake Engineering 2002*

- Spencer and Nagarajaiah will organize sessions

*2001 American Control Conference*

- Spencer, Dyke, and Jim Beck will organize 3 sessions: two sessions on Structural Control; and one on Structural Health Monitoring

*2001 Engineering Mechanics Conference*

- Sessions to be coordinated by Gavin
- Benchmark sessions to be organized by Spencer, Shirley, Yang and Agrawal

*2001 ICOSSAR*

- Sessions to be coordinated by Spencer

*SPIE 2001*

- Sessions to be organized by Gavin

*IMAC 2002*

- Sessions to be organized by Agrawal

*3rd World Conference on Structural Control*

- To be determined.

7. Status of the Structural Control Benchmark Problems

- Spencer briefly described the nonlinear building benchmark problem statement and indicated that further information was available on the Univ. of Notre Dame web page.
- Yang and Agrawal described the second-generation wind-excited benchmark problem and indicated that further information was available on the UCI and CUNY web page. This problem has been updated from the first generation to include more realistic wind models. The wind excitation was developed based on experimental data.

- Yang described the third generation wind-excited benchmark problem as planned. This problem will consider coupling between torsional and lateral responses. Three different geometries of the structure (L-shaped, triangular, and rectangular) were discussed and it was decided that a structure with a rectangular plan would be most representative of a typical structure of interest. Possibly the Hancock Tower in Boston would be a good choice with some modifications.
- Dyke described the benchmark cable stayed bridge problem and distributed a draft paper to committee members for review. This problem is based on the Cape Girardeau bridge in Cape Girardeau Missouri. It was suggested that we include some additional comments on the issues considered in the design of the bridge itself. It was decided to request the designer himself to contribute a few paragraphs to the paper. It was suggested that this problem would be a good topic for a session at the *7<sup>th</sup> US National Conference on Earthquake Engineering*.

The status of the next meeting of the Benchmark Structural Control Committee was discussed – which should take place in late August/early September. It was decided to have a meeting in St. Louis hosted by Shirley Dyke. This could be a joint meeting with the Benchmark Structural Health Monitoring Committee (chair: Jim Beck). Dyke will work out the logistics and contact Jim Beck.

#### 8. Status of the state of the Art Papers:

Nagarajaiah described the current status of the two state-of-the-art papers that the committee is working on. He distributed draft outlines.

Nagarajaiah and Symans are organizing a paper on semi-active structural control, and Dyke and Symans are organizing a paper on medium-scale shake tables. Suggested contributors have been listed for each section of both papers in the draft outline. For both papers the deadline for submission of sections to the organizers is Aug. 15, 2000.

#### 9. New Business

Reinhorn suggested that the committee should consider new activities aimed toward bringing structural control to civil engineering practice. Semi-active appears to be the most promising technology for implementation at this point. Several suggestions came out of this discussion:

- A demonstration project would have a great impact.
- Look at issues/difficulties in current practice and see if control may be a solution ?
- Need to attract more practitioners to structural control.
- Benchmark problems to be selected more carefully with involvement of practitioners.
- The benchmark studies are a step in the right direction for technology transfer to earthquake and wind engineering.
- Short course might be appropriate in the future. For best response, this would be based on case studies and might involve the engineers working on the designs.

- A special issue of the *Journal of Earthquake Engineering* to be published shortly will discuss case studies of structural control technology in Japan.

The meeting was adjourned at 11:50 am.

Respectfully Submitted  
Shirley Dyke  
Secretary

Attachment I:           Agenda  
Attachment II :         Current Roster  
Attachment III :        Committee Report