



## HIGHLIGHTS

### CSU professor among WTC peer reviewers on forensic engineers' 'Building Performance Study'

By Shawn Foucher

Dr. Paul Bosela's office in Fenn College of Engineering is a quiet, spacious office among many similar offices in the school's civil engineering department.

Miniature wooden bridges rest on old wooden shelves holding hundreds of sagging books and manuals advertising engineering topics that positively befuddle the average mind. Nearby a collage of desks and tables are cordoned by shelves and covered in more books, pictures, and boxes.

Against one table coated with photos of a fishing trip to Canada and student events at CSU leans a clumsy, intimidating contraption that begs to be toyed with.

But only among these pictures of CSU engineering students competing in spaghetti bridge contests and steel bridge competitions long since past can one gain a sense of the motivation behind this professor.

Recently, however, Bosela moved well beyond the challenges offered in the classroom and lent his expertise to a project that has been

making news since Sept. 11, 2001. He was among 50 professionals appointed to a peer review team that pored over a Building Performance Study (BPS) Team's findings on the structural failures caused by the WTC attack.

The report itself was conducted by the BPS team, a group of civil, structural and fire protection engineers from the Federal Emergency Management Agency (FEMA) and the Structural Engineering Institute of the American Society of Civil Engineers (SEI/ASCE), all of whom worked closely with New York City officials and a number of other agencies.

"Basically," Bosela said, "(the team) was sent in to determine what could have been done to minimize the risks and the overall impact from such an event."

A member of ASCE's Technical Council on Forensics Engineering (TCFE), Bosela served as the lead reviewer on the TCFE's eight-man review team. This group, along with nearly a dozen other groups from similar professional organizations, had to sift through and evaluate hundreds of pages of reports and statistics, structural recommendations, photographs, and engineering schematics compiled by the BPS team.

A daunting, time-consuming task by any standards, the 50 reviewers had only one month to complete their work.

"It was very detailed," Bosela said, "and because of the sensitivity issue, we couldn't discuss it with anyone until it was

published. We weren't allowed to talk about it or place it on a computer network where others could access it." In addition, the reviewers were asked to sign a consent form.

The result, no doubt, made it worth their while: After the investigation's findings were presented to the House Science Committee in early May, the committee was adamant about drafting a bill that would mollify the problems that hampered the investigation. Among these problems, for example, the BPS team found there was no federal agency in charge of building failure investigation. The House Science Committee is now working on bill H.R. 4687, or the "National Construction Safety Team Act of 2002," which will place the National Institute of Standards and Technology in charge of investigations in the future — whether the disaster be natural, accidental or intentional. All indications on the House Science Committee Web allude that the engineers' WTC investigation played a key role in driving this action by the science committee.

In regard to the study itself however, Bosela said that it was an exhaustive, in-depth look into the causes of the two towers' collapsing.

"The bottom line," Bosela said, referring to the study's summary, "is that the buildings were designed to code and there were no deficiencies with the buildings. (The towers) were designed well — even though the initial impact of the aircraft took out columns and significant structural members, they were both able to survive the impact.

"But the impact also caused large sections to lose a lot of the fire-proofing material that was sprayed on during construction," Bosela added. "Buildings are very compartmentalized — it wasn't the jet fuel that was burning for hours when this happened — that was consumed minutes after the explosion. The fires that were consuming the building contents were fueled by the building's material in areas where the fire-proofing was knocked off, or torn off."

Many of the BPS team



Photos by Shawn Foucher

Civil engineering professor Dr. Paul Bosela was among approximately 50 professionals on a peer review team that pored over the Building Performance Study (BPS) Team's findings on structural failure following the World Trade Center attacks.

members specialized in forensics engineering, a field that Bosela has had extensive experience in — both professionally and academically.

"We tend to think of (forensics engineering) in legal terms," Bosela said, "but it really has more to do with looking at the performance of structures — that is, investigating structural failures, fire-proofing ... running the whole gamut from buildings that collapse to regular maintenance."

"So, there are a lot of things that are going to be learned from this incident," Bosela said. "such as issues with egress, or ways to let people get out of the building."

"In the World Trade Center towers, the interior core of the elevators were destroyed by the initial impact — and there were no outer cores. In the future of high-rise buildings, there are likely to be requirements in which the elevators will be separated and (placed) at the four

corners of the building, rather than at the central core."

"While they're also looking at building egress," he said, "they're looking at fire-proofing applications and an organizational system where, if there is an emergency, they'll be able to respond quicker — not just to terrorist attacks, but other disasters as well."

"Then again," Bosela continued, "the problem with engineering design is you can't design for everything that could possibly happen. If we did, nobody could afford to build anything. We make things earthquake-proof, but we don't want to build bunkers or something nobody would want to live in."

While getting students to understand this shouldn't prove too difficult, Bosela does plan to use the material for future classes. However, he cautions that he doesn't anticipate seeing a "structural failures" course at CSU any time soon.

"I'm not trying to

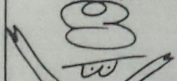
graduate people to investigate structural failures," Bosela said. "It can be taught, but if someone has actually worked in civil engineering or structural design, they can become qualified to investigate failures."

"I don't want to give the impression that, because you've taken a class, you're qualified to investigate a failure," Bosela said. "But we do try to include enough in courses so students understand the rights and responsibilities inherent in structural design."

While he had a number of personal and professional connections to the incidents, Bosela said that he knew the review process was going to be a time-consuming task. Yet, he adds, "I'm proud that I had the opportunity to contribute to (the peer review)."

In the meantime, he'll be leafing through his copy of the World Trade Center report, sent compliments of ASCE.

Dull Dorm Room?



Posters are the answer... come see

Frannie The Framer  
across from CSU  
1938 Euclid Ave.  
216-621-4175

Looking For New Faces!



MANAGEMENT  
Tomorrow's models today

Finally A Cleveland Agency with An L.A. Style!

Earnings start at \$60 an hour.

Experience preferred, but not required.

CALL: (216) 524-5501

