

## A NATION CHALLENGED: THE TOWERS; Experts Urging Broader Inquiry In Towers' Fall

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Saying that the current investigation into how and why the twin towers fell on Sept. 11 is inadequate, some of the nation's leading structural engineers and fire-safety experts are calling for a new, independent and better-financed inquiry that could produce the kinds of conclusions vital for skyscrapers and future buildings nationwide.

Senator Charles E. Schumer and Senator Hillary Rodham Clinton, both of New York, have joined the call for a wider look into the collapses. In an interview on Friday, Mr. Schumer said he supported a new investigation "not so much to find blame" for the collapse of the buildings under extraordinary circumstances, "but rather so that we can prepare better for the future."

"It could affect building practices," he said. "It could affect evacuation practices. We live in a new world and everything has to be recalibrated."

Experts critical of the current effort, including some of those people who are actually conducting it, cite the lack of meaningful financial support and poor coordination with the agencies cleaning up the disaster site. They point out that the current team of 20 or so investigators has no subpoena power and little staff support and has even been unable to obtain basic information like detailed blueprints of the buildings that collapsed.

While agreeing that any building hit by a jetliner would suffer potentially devastating damage, experts want to examine whether the twin towers may have had hidden vulnerabilities that contributed to their collapse.

The lightweight steel trusses that supported the tower's individual floors, the connections between the trusses and the buildings' vertical structural columns, as well as possible flaws in the fireproofing have been drawing scrutiny from fire safety consultants and engineers in recent weeks.

"Two buildings came down," said Joseph F. Russo, director of the Center for Fire Safety Engineering at Polytechnic University in Brooklyn, referring to the twin towers. "That suggests some degree of predictability."

"And if it was predictable," Mr. Russo said, "was it preventable?"

Family members of some victims have added their voices to the calls for a wider investigation.

The exact scope of an expanded inquiry has not been defined. But the central desire is to learn any lessons that might be hidden in the rubble and to pinpoint the exact sequence and cause of the collapse, regardless of whether it was inevitable from the moment the planes struck, members of the investigative team and others said.

In calling for a new investigation, some structural engineers have said that one serious mistake has already been made in the chaotic aftermath of the collapses: the decision to rapidly recycle the steel columns, beams and trusses that held up the buildings. That may have cost investigators some of their most direct physical evidence with which to try to piece together an answer.

Officials in the mayor's office declined to reply to written and oral requests for comment over a three-day period about who decided to recycle the steel and the concern that the decision might be handicapping the investigation.

"The city considered it reasonable to have recovered structural steel recycled," said Matthew G. Monahan, a spokesman for the city's Department of Design and Construction, which is in charge of debris removal at the site.

"Hindsight is always 20-20, but this was a calamity like no other," said Mr. Monahan, who was designated by the mayor's office to respond to questions about the investigation. "And I'm not trying to backpedal from the decision."

Interviews with a handful of members of the team, which includes some of the nation's most respected engineers, also uncovered complaints that they had at various times been shackled with bureaucratic restrictions that prevented them from interviewing witnesses, examining the disaster site and requesting crucial information like recorded distress calls to the police and fire departments.

The investigation, organized immediately after Sept. 11 by the American Society of Civil Engineers, the field's leading professional organization, has been financed and administered by the Federal Emergency Management Agency. A mismatch between the federal agency and senior engineers accustomed to bypassing protocol in favor of quick answers has been identified as a clear point of friction.

"This is almost the dream team of engineers in the country working on this, and our hands are tied," said one team member who asked not to be identified. Members have been threatened with dismissal for speaking to the press.

"FEMA is controlling everything," the team member said. "It sounds funny, but just give us the money and let us do it, and get the politics out of it."

A spokesman for FEMA, John Czwartacki, said the agency's primary mission was to help victims, emergency workers and to speed the city's recovery, and added, "We are not an investigative agency."

But given the assignment to examine the structural failures at the World Trade Center, the agency has so far spent roughly \$100,000 and Mr. Czwartacki said that more financing could be expected after the group produced what he called an "interim document" in the spring.

"I've heard the calls for the N.T.S.B.-style investigation," Mr. Czwartacki said, referring to appeals by engineers and some families of trade center victim for an exhaustive examination like those done by the National Transportation Safety Board when a plane crashes. "I don't think this study will do it for them."

Mr. Czwartacki added that it was premature to comment on whether team members were receiving necessary information because the study has not been completed. Regardless of what any investigation might find, it is unclear how many civilian lives would have been saved if the buildings had not collapsed, because so many died on the burning upper floors.

Despite the universe of unknowns, the calls for more extensive investigations of various kinds are coming from engineers, fire experts and professional organizations in New York and across the nation.

"What some of us are calling for is a probe or reassessment," said Loring A. Wyllie Jr., a member of the National Academy of Engineering and chairman emeritus and senior principal at Degenkolb Engineers in San Francisco. Mr. Wyllie, who has investigated many building collapses after earthquakes, said the work would involve "a critique of our building practices" in search of greater safety after Sept. 11.

He added that intensive studies of building failures in disasters like the Northridge earthquake near Los Angeles in 1994 had led to important structural advances.

Calling an intensive new investigation "absolutely necessary," Mr. Russo, of Polytechnic University in Brooklyn, said the expense could be justified by the payoff of better safety in high-rises of the future. Other experts take a still wider view, favoring a study that would look at the implications of the collapses -- a nearby, 47-story building, 7 World Trade Center, also fell on Sept. 11 after burning for most of the day -- for fire codes, building standards and engineering practices across the board.

National organizations charged with addressing building and fire safety issues have sent letters urging the federal government to invest as much as \$15 million a year to study the vulnerability of buildings to terrorist attacks and possible changes to fire and safety standards.

"There is an urgent and critical need to determine the lessons to be learned from these events," reads a letter from the American Society of Civil Engineers, dated Nov. 15.

In other disasters, FEMA, the Army Corps of Engineers and other federal agencies have played a more central role in making decisions about cleanup and investigations. But from the start, they found that New York had a degree of engineering and construction expertise unlike any they had encountered.

"They wanted to do a lot of things on their own," said Charles Hess, who is in charge of civil emergency management for the Army Corps. "Which they're very capable of doing."

But during a recovery effort that received worldwide praise, the city made one decision that has been endlessly second-guessed. To deal with nearly 300,000 tons of crumpled steel, the city quickly decided to ship it to scrap recyclers.

Dr. Frederick W. Mowrer, an associate professor in the fire protection engineering department at the University of Maryland, said he believed the decision could ultimately compromise any investigation of the collapses. "I find the speed with which potentially important evidence has been removed and recycled to be appalling," Dr. Mowrer said.

But Mr. Monahan, the City Department of Design and Construction spokesman, pointed out that members of the investigation team were eventually allowed to visit the site and inspect steel at the scrapyards and continue doing so.

Some experts have suggested that the only way to definitively determine the sequence and cause of the collapse is to recover large amounts of steel from the areas near where the planes struck, and possibly reassemble sections of the towers.

Others say such a reconstruction of an entire section might be impractical, but also expressed discomfort with the impediments they said they have faced in their investigation.

For example, three months after the disaster, Ronald Hamburger, an expert in structural analysis at A.B.S. Consulting in Oakland, Calif., and a director of the National Council of Structural Engineers Associations, said he had not even been given access to basic blueprints describing where the steel and other structural elements had been when the World Trade Center was whole.

"I'd like to be able to have a set of the drawings for all of the affected buildings," Mr. Hamburger said. "I don't have that."

Photo: Twisted beams from the World Trade Center rest in a heap at ground zero. Calls for a broader investigation into the towers' collapse have grown. (Librado Romero/The New York Times)(pg. B6)