



Stevens Institute of Technology: On the Front Lines

Per *Aspera ad Astra* (through adversity to the stars) is the motto of the Stevens family—and what motto is more fitting to the high-minded work of that good family of Stevens alumni who were there for others in need during the trying moments and days following the horrific morning of Sept. 11, 2001.

In the following pages of this special edition of *The Stevens Indicator*, you will find stories of heroism, of dedicated service to others, of men and women meeting personal challenges—of Stevens Institute of Technology alumni, faculty, staff and students who faced adversity and rose, star-like, to the occasion.

Alumni like Troy Roberts '84, a New York City firefighter who put in countless hours digging at Ground Zero, with the burning desire to rescue friends and fellow public safety workers from the rubble.

Corporate leaders like Larry Babbio '66, who stood his ground on important issues in directing the response of Verizon workers as they

repaired and kept vital communications channels open to protect industry and the government.

Students like those at Stevens fraternities who rallied to support recovery and philanthropic efforts to aid the victims of Sept. 11. And from the campus, faculty like Ed Friedman, Hon. M.Eng. '83, who raised multi-cultural awareness by sharing his understanding of the Middle East.

Family and friends like alumna Dening Wu, M.S. '97, who made a great sacrifice in losing a loved one, but yet established a Stevens scholarship fund, keeping hopes high for the future.

And last but not least, Stevens faculty and researchers whose good work serves on the leading edge of global efforts to fight terrorism.

As Stevens' first president, Henry Morton, wrote in his poem on the Stevens family motto:

*Nor need we travel far to other climes,
Or instance heroes of the classic times,
To find examples fitted to inspire
Loving respect and emulous desire.*

STANDING TALL—Symbol of engineering ingenuity, strength and perseverance, the Verizon building rises above the ashes of Ground Zero in lower Manhattan, New York. Verizon professionals, including Larry Babbio '66, played a crucial role in getting the city back on its feet again amid the death and destruction of Sept. 11, 2001.

PHOTO: VERIZON



Alumni to the Rescue

Stevens alumni active in recovery efforts

The moment terrorists in a hijacked commercial airliner slammed into the North Tower of the World Trade Center on the morning of Sept. 11, 2001, Stevens Institute of Technology alumni sprang into action to help in rescue and recovery efforts. Their heroic work continues today.

A variety of Stevens alumni—from a senior official in a public safety agency and a corporate president to a hobbyist with knowledge vital to emergency work—have contributed their know-how and passionate dedication to rescue and recovery operations at Ground Zero in Manhattan, in Pennsylvania and at the Pentagon, ranging from police work and fire-fighting, to maintaining communications systems, to cleaning up the disaster sites while ensuring the safety of emergency crews.

Call to action

It was a call from a close friend and colleague that began a day that will be forever fixed in memory for **Michael A. Scott '70, M.S. '74**, assistant public safety director for the Port Authority Police.

The colleague, Ezra Aviles, phoned an alert into Scott's office at Police Headquarters at the Holland Tunnel in Jersey City, N.J., telling him that an American Airlines plane had just hit the North Tower above the 61st floor, where Aviles' office was located.

"There was no sense of panic or alarm in his voice—but I was deeply concerned that a commercial aircraft was involved," Scott said. It was clear what to do.

"I immediately relayed the information I had just received to the chief of headquarters,





Memorials like this one at the Pennsylvania crash site sprung up in Manhattan and Washington, D.C.—the outpouring of grief and prayers of many thousands around the world. Communications services provided by Stevens alumni at the Pennsylvania site facilitated emergency efforts there, too.

whose office is next to mine, and the required emergency notifications commenced,” said Scott.

Minutes later, reports were getting worse.

“Ezra called back a few minutes later to advise me that debris was raining down from the floors above outside his window and he was leaving his office and would contact me from the ground and come to my office to assist with this emergency,” Scott said.

Meanwhile, Port Authority Police staff gathered outside Scott’s office at headquarters, including his boss, Superintendent of Police and Public Safety Director Fred V. Morrone, and formulated plans to respond to the disaster scene.

Scott remained at headquarters to handle communications with Port Authority senior staff and other inquiries that might occur during the emergency. Other police officials headed to the scene.

“We were not yet aware of this being anything more than an aircraft accident,” Scott recalled.

Aviles called Scott for a third and final time from a stairwell in the North Tower to report that people were being evacuated but the stairwells were filling with smoke and movement downward was slow going.

“He again exuded a calm and orderly operation was taking place,” Scott said.

“As I recall, some time later, my boss called to advise me of his situation, but after he began to say a few words, the cell phone he was using went silent and I never heard from him again,” he said.

Director Fred V. Morrone, of Lakewood, N.J., was missing in action at Ground Zero. So, too, was Port Authority policy manager Ezra Aviles.

On the front lines

In came reinforcement. New York City Firefighter **Troy A. Roberts ’84**, of Ladder 31 in the Bronx, N.Y., was among a multitude of public safety workers who responded to the scene of the collapsed Twin Towers. The city sounded a general alarm for all firefighters to report for duty.

“We commandeered a city bus to transport firefighters down to the World Trade Center,” said Roberts. His ladder company stood standby in the South Bronx, while Roberts and crew members stopped at their division headquarters, where firefighters were mobilizing, and packed up their personal gear. “Nobody was really sure what to expect at the time.”

At about 11:15 a.m., they arrived in the vicinity of the World Trade Center, at a staging area for crews at Chambers and West streets, where they got equipment ready and prepared to mount firefighting and rescue efforts. Both towers had already collapsed, and it looked like a “volcano had gone off because gray dust was covering everything,” Roberts said.

Late that afternoon, 7 World Trade Center collapsed with a rumble, Roberts recalled, and within 15 minutes his crew of firefighters was sent into action.

Then they saw it—The Pile—for the first time.

“It was about four or five stories tall,” Roberts said, recalling the big hill of debris that was the collapsed World Trade Center towers. “What we found was debris piled all the way across the street. We looked ... It was, I’d say, surreal, because there are 30-ton fire trucks mangled, burning, twisted, lying in the street. You know, steel. ... You looked at it like, ‘What can we even do here? What are we *really* going to be able to do here?’”

“By that hour, there had been a limited amount of equipment that started coming in,” he said. “And we just kind of ... everybody jumped in the pile, and they were searching whatever they could search, moving whatever they could move.”

Firefighters were primarily working with hand tools. Their normal complement of specialized tools, including power tools like the Jaws of Life, were generally not available. Much equipment was buried under the rubble with firefighters who died in the initial response. “At the time it was a lot of shovels,” Roberts said. “It was, do as much as you could with the little we had.”

“Normally, a collapse would require a lot of specialized tools,” he said. “We are prepared to have one building collapse, but not have this total destruction of a 16-acre site.”

Also lacking were self-contained breathing apparatus (SCBA), what firefighters call “Scott packs.” Roberts

recalled: "So we were operating in this environment with, at the time, your basic hardware store dust mask. There were a few days before we got proper respiratory protection in the form of respirators, and we never ever really had breathing equipment, like SCBA."

So their first day at Ground Zero was digging in the pile, making do with what they had. "The first day was rather chaotic. There was a limited command capability," Roberts said. Many fire officials had died in the collapse.

"For the most part people operated on their own, in an organized manner. ... You saw the lines of people; everybody would jump on a line and get a bucket of debris going, passing debris, passing whatever you could, out to the back."

Besides the bucket brigades there was the heat of the fires in the pile. "There was a lot of active fire on the rubble pile. Lots of smoke, and in the ensuing days, lots of heat. You'd walk over it and feel this big rush of heat coming up after you," Roberts said.

Also burning was their strong desire to rescue victims, but with that came a lot of frustration. "There were only five successful rescues during the whole operation," Roberts said in January 2002. "We found five survivors. The frustrating part was we knew we had people under there, but there was just no way to get to them."

The disaster had wiped out most of the regular water supply and firefighters had to use fire boats for their water supply. "It was a lot of hose stretching. Everything became so much more labor intensive than it would normally have been," Roberts said.

They worked well into the night on Sept. 11. "We took a bus back at about 3 in the morning," Roberts recalled. "We basically went home and got a two-hour nap and turned around and went right back to the scene."

The morning after

Roberts knew in his mind the size of the Trade Center towers, and that they had completely collapsed, but it took until the following day, when they were putting out fires inside a building next to the site, 90 West St., for him to realize the true enormity of the destruction.

"We got a good look over the site. It was just ... it's beyond comprehension," he said.

Many times during the first couple of days, there were scares that further collapses were imminent. A long, steady blast of a horn was the signal for evacuation. "The problem was once you got committed onto that pile deep," said Roberts, "you weren't going off anywhere. If something further had collapsed, you were stuck. ... You really couldn't scramble off it."

Roberts spent his second day at Ground Zero putting out fires burning unchecked on several floors of 90 West St., again, without the protection of a respirator. "It was, as they call it, iron man firefighting—because there was just no equipment."

Several days in, fire officials established a rotation schedule and the first of the Trade Center task forces, which Roberts volunteered for. "So I was assigned full-time to the World Trade Center. I basically was at the World Trade Center full time, with the exception of one 24-hour period, for the next 3½ weeks or so."

But whether they were assigned to work at the site or not, the commitment and dedication of firefighters drove them to put in many long days. They had lost a lot of colleagues and friends. Roberts himself lost 21 guys from the department football team, and knew many others.

"Any given day you were down there, you spent time in the pile. Everybody wanted to be on the pile. They wanted to make as much effort as possible," Roberts said.

"But a lot of work was done voluntarily. Most guys, when you had to work the firehouse, you worked the firehouse; when you weren't working the firehouse, you went to the pile. This was before they established formal crews to go down to the site, and even then, even when I got in the task force, plenty of guys just showed up to work every day, besides those assigned."

It was a tough schedule the first month at Ground Zero. Hours were long. The work was hard physically. Recovery work was at times gruesome, and, again, fraught with a sense of futility because victims were few and far between in the early stages of the work, Roberts said.

And he returned for a second tour of duty in November and early December 2001, pulling 12-hour shifts every other day. Firefighters' main role during that period was body recovery, in coordination with contractors using heavy construction equipment.

"We would watch the equipment moving debris. They would move it, pile it—move it around. And we would search it for any evidence of victims, civilians, firefighters, police officers. And when they would stop digging, we might do some hand-digging. Or definitely when we saw evidence of a body, then we went into hand-digging mode, pretty much with small hand tools, like a garden kind of rake."

But despite the hard work, the support was encouraging, Robert said. Volunteers active at the site included emergency services, volunteer firefighters, iron workers, and support staff such as those with water and food. "It really was a tremendous effort," Roberts said. And mutual aid from other fire departments was part of that effort.

Got you covered

Covering the backs of firefighters at Ground Zero were firefighters from around the region who offered mutual aid for firehouses throughout the immediate area that had sent their rigs and crews to the site.

Stanley C. Rogacki '78 was one of them. Stan, who comes from a family of Stevens graduates, served standby with North Caldwell, N.J., Engine 5 at Staten Island's Engine Co. No. 160/Rescue Co. No. 5 near the Verrazano Narrows Bridge, as New York City firefighters battled fires at the Trade Center site.

His crew of volunteer firefighters helped cover the lower eastern end of Staten Island, N.Y., with fire units from the Essex County Task Force—working 30-hour shifts. Many lives were lost from Rescue 5, and the mood there was very somber, Rogacki recalled when he returned from one shift.

"Rescue 5 has 11 missing men," he wrote in an e-mail Sept. 14 to alumnus **Jim Weatherall '78**. "We were told that these 11 men have 40 children between them. ... We visitors gave the FDNY men their space, and filled in where we could. The lack of real information about their colleagues, lots of confusion and ever-changing conditions, sights, smells and sounds put a serious damper on their mindset.

"The donations of flowers, cards and food by the local residents were unbelievable, and at times emotionally overwhelming. Residents pulled up and unloaded trunk loads of items. People stopped in front of the building to call out words of encouragement, condolences and thanks. Many clergy and family members visited the station to give or seek comfort. I was amazed how open the building was to those 'walk-ins.' The firehouses in New York City seem to be very neighborhood-oriented."

"This location was also used as a staging area for incoming and outgoing personnel to the World Trade Center site. We witnessed and experienced the conversations, feelings and the emotions of those in the trenches. Although our engine company was not close to Ground Zero, we were exposed to the event enough to realize that we probably did the most good where we were assigned. We did, however, come away with the utmost of respect for those who were at the scene."

Of the five heavy-rescue vehicles in New York City, Rescue 5 was able to limp back to its firehouse in Staten Island, Rogacki reported.

"When we first saw it, it looked like a bomb had gone off next to it," he said. Most of the window glass was blown out, including the windshield.

"The sides looked like they had been hit with multiple



shotgun blasts. Doors were blown off." Rescue Co. No. 5's vehicle managed to make it back from Ground Zero to the firehouse on Staten Island, where alumnus Stanley Rogacki and other volunteer firefighters helped to repair it and put it back in service by the next morning.

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Rogacki and crew helped strip the vehicle, removing debris, and clean the rescue equipment, he said. "Spare windshield glass, gaskets, hydraulic hoses, lights and other components appeared throughout the day and night for us to install. By 8 a.m. this morning, Rescue 5 was placed back into service, making it the only road-worthy FDNY rescue vehicle in the city. The boost to morale was significant. The men of Rescue 5 were very grateful to have their rig back."

Good Samaritans

Thousands of panicked people in downtown Manhattan needed help when the chaos broke out on Sept. 11, and **Arthur E. Imperatore, Sr., Hon. D.Eng. '88**, chairman emeritus of NY Waterway, and his son, Arthur, Jr., company president, were there to stretch out a hand across troubled waters.

A New York Harbor ferry and excursion fleet, NY Waterway came to the aid of dust-covered office workers, terrorized and stranded at water's edge next to the Trade Centers, some jumping into the river at Battery Park, others waving their arms in the air and crying for help.

The ferrymen, motoring at times through thick smoke, carried the shaken and wounded to the safety of the opposite shore in Jersey City, N.J., where emergency services workers and volunteers were waiting with food, blankets and fresh water.

NY Waterway's two dozen vessels evacuated an estimated 200,000 people from lower Manhattan on that tragic day.

The Imperatores shared their stories when they visited Stevens in October 2001 to give the keynote address at a conference on the revitalization of urban shorelines, as their company has played an important part in economic

revival of the New York port area. At the Stevens Board of Trustees meeting that month, Stevens presented the Imperatores with a citation recognizing the key role their company played in public safety efforts on Sept. 11.

Open channels

While the channels of the Hudson River were clogging up with vessels on Sept. 11, other alumni were keeping channels of communication open.

Lawrence T. Babbio, Jr., '66, vice chairman and president of Verizon Communications' Telecom Group, was faced with the challenge of repairing some 300,000 customer lines and almost 4.5 million data circuits in lower Manhattan that were damaged in the terrorist attacks. Verizon was also involved in providing vital services at the Pentagon and at the Pennsylvania crash site following Sept. 11.

The first major challenge was getting the New York Stock Exchange back up and running, Babbio said in an interview on the Stevens' campus. And the logistical difficulties of this were no small matter.

"The issue is the Stock Exchange is not just the Exchange. You not only have to have the Stock Exchange on the line, you have to have every trading partner on the line," said Babbio. "All the major brokerage firms in the area had to be satisfied."

And there was a lot of last-minute planning and then scrambling to get all the necessary lines of communication reestablished and the Exchange back in business the Monday following the attacks.

"You didn't know from companies like Merrill Lynch, Salomon Brothers, all the big brokerage houses, where their people were going to be for at least two or three days," Babbio said. "It took them, in some cases, until Friday or Saturday before they would say, 'OK, I'm now set up in a temporary office someplace else. Get the lines over there.'"

In addition, the Securities Industry Automation Corporation—which runs the computer systems and communications networks that power the New York Stock Exchange and the American Stock Exchange—also had to be back online. When the financial markets close each day, SIAC's computers keep going, processing nearly all of the equities and fixed-income securities traded in the United States each day and disseminating U.S. market data worldwide.

Verizon had to send workers in full protective gear up to the 23rd floor of its building next to the Trade Center at 140 West St. (the former New York Telephone building), which was severely damaged, to carry down the con-



Photo: Verizon

Pulling wiring and cabling up the outside of the Verizon building at 140 West St., next to Ground Zero, workers help get lower Manhattan's phone and data communications networks back up to enable the Stock Exchange to reopen.

control equipment for SIAC and move it to a safe, new location, Babbio said.

It came down to the wire opening the Stock Exchange the following Monday, but Verizon pulled through. "There was a lot of last-minute stuff. As a matter of fact, with this quoting system, with the SIAC, it came on line at 5:30 in the morning on Monday," Babbio said.

Pulling was the optimal word at times—pulling wire, that is. Verizon had to install hundreds of new phone lines in the first few days after the attacks, running lots of cables out of windows, along sidewalks and in trenches dug in the street, to bypass the damaged areas of the Trade Center neighborhood and reestablish circuits—covering the area in datacom boxes and cabling.

Some good old engineering moxie came into play, too, when there was no easy way of getting an entire reel of cable up the building, because the power was out and ele-



Photo: U.S. Army

The hijacked airliner that slammed into the Pentagon caused major damage to the building and killed nearly 200 people. Here, recovery efforts were under way by a variety of agencies; Verizon, for example, helped protect a data switch to maintain Defense Department communications.

vators weren't running, Babbio recalled.

"All of our cables today come in fairly heavy sheaths. And we pulled them up the outside of the building. So we put them on the street, had five strong people on the rope up at the top of the building, and just kept pulling and pulling. So we just literally, by hand, brute force ... we kept going, one cable after the other, and we stopped when the window sills broke," Babbio recalled. "We said, 'Okay, move to another window.'"

Babbio had to bear down and insist that New York City officials allow Verizon to keep its generators running in 140 West St., in order to ensure that surviving phone lines were kept open in lower Manhattan, after fire officials ordered the generators shut down as a safety precaution. (The West Street building was a main telecommunications hub, handling some 20 percent of the data traffic of the Stock Exchange.)

Over at the Pentagon in Arlington, Va., Department of Defense communications and operations were in jeopardy because Verizon switching equipment vital to those operations was being threatened by encroaching fires caused by the crash of the hijacked jetliner there.

The fire, and water from the firefighting efforts, were directly over the network operations center at the Pentagon and Verizon's "5E" switch. Fire marshals asked Verizon workmen to leave, but they stood their guard to cover the equipment and protect it from the fire and water.

"We never abandoned that part of the building," Babbio said, "because if we had let that switch go down, then Department of Defense is out of service and that really does have repercussions. So our people really stayed with this one for a very long time."

Making temporary patches to Verizon's wireless network was a challenge, too, particularly because of the increased demand for wireless services in the wake of the attacks, Babbio said. While the company increased capacity to its wireless networks by 50 percent in the weeks following Sept. 11, Verizon also gave out some 5,000 free cellular phones to New York's rescue workers and businesses, which increased wireless call traffic. And Verizon pay phones in Manhattan were made available for free immediately after the attacks.

Verizon set up a wireless system antenna on the Stevens campus, at the top of Castle Point next to the Howe Center, because, with the loss of the giant antennas that were on the Trade Center towers, cellular phone service was shot in the New York City area. Other antennas were set up in lower Manhattan and at Liberty State Park, N.J., and in Washington and the Pittsburgh area. These patches to the wireless network helped such emergency services agencies as the Port Authority Police communicate with crews and officials.

One of the beneficiaries was **Nina Rogacki '84, M.S. '87**, who works for the Port Authority of New York and New Jersey as a manager supporting information technology and telecommunications for the Port Authority Police. Working from the Emergency Operations Center at Port Authority Police Headquarters in Jersey City, N.J., Rogacki helped coordinate the technical expertise and resources needed to keep channels of communication open for the Port Authority.

"We were prepared with live computers, radio and communications equipment, satellite TV, and satellite

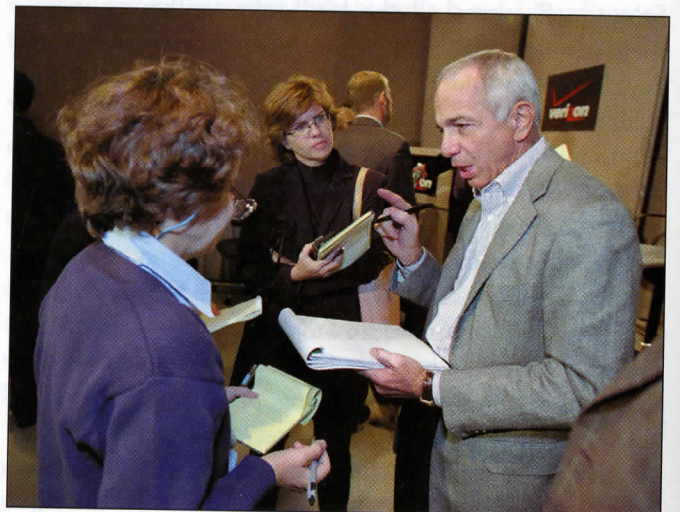


Photo: Verizon

Larry Babbio '66 speaks with the media in the aftermath of the attacks on the World Trade Center. Verizon, whose building is right at Ground Zero, served a vital role in getting telecommunications back up and running after the attacks.

phones, office equipment and supplies, awaiting the arrival of representatives from various Port Authority departments, local and state agencies," she said. "This location also became the new headquarters for the higher level Port Authority executive staff since their offices in Tower One were destroyed."

Rogacki recalled, "On 9/11, we never had much time to ask 'Why?' We moved right into: 'Now that this has happened, what can we do?' Since the Port Authority provides access to New York through the river crossings and operates the airports, we were an integral part of locking down the city."

Over the next few months she worked many long days providing technical and project management expertise in support of Trade Center recovery efforts, with limited resources and staff. Port Authority Police lost 37 people in the attacks.

"There was so much to do, and four months later, I am still sorting out the details and the invoices," Rogacki said in January 2002.

While Verizon did its best to bolster the cellular phone system, the destruction of the Trade Center and the massive radio and TV antennas mounted on them had crippled area communications, making it tough for rescue workers and officials to get cellular phone signals, so others with know-how pitched in as well.

Across town in Jersey City, **Richard N. Krajewski '77** and fellow members of the Jersey City Amateur Radio Club (now called the Cirri Memorial Radio Club, after Port Authority Police Lt. Robert Cirri, a member who was killed in the attacks) rallied together on Sept. 11 to assist the relief efforts by reestablishing communications between Jersey City and New York City on the morning of the attacks.

"I was called to help the local Red Cross here in Hudson County establish emergency communications," Krajewski said. "The Red Cross' antennas had been on top of the World Trade Center; moreover, the phone system was no longer functioning.

"We were able to gather a number of amateur radio operators, and together we built an emergency radio station and established communications with other relief agencies." Set up by 11 a.m. on Sept. 11, they took shifts on the air, helping to direct the influx of food, medical supplies, rescue equipment and emergency workers to the



Photo: Verizon

Telecommunications workers from Verizon repair wiring damaged in the basement of their building in lower Manhattan after girders and debris from the collapsing World Trade Center struck the building. They reestablished thousands of data circuit and phone lines in the hours and days following the attacks.

proper relief areas by communicating with Ground Zero.

Ham radio operators can play a valuable role in emergencies, Krajewski said, and he hopes to raise the interest of Stevens' students and local high-schoolers in amateur radio to integrate other ham radio setups into the area's emergency communications network for future emergencies. In fact, the Cirri Memorial Radio Club has been asked to help create an emergency communications plan for Liberty State Park, Jersey City, and it welcomes the participation of the Stevens community in that effort, he said.

"The reputation of Stevens will be enhanced as the skills of the Stevens community, so hard won at school and at work, are put to use in what could be life or death situations," Krajewski said.

Indeed, some students at Stevens are already radio-savvy and played their own part in emergency efforts of Sept. 11. Even closer to the danger zone than Krajewski was Phi Sigma Kappa brother **Jim Behnke '02** (son of **Eugene Behnke '72**), who, with support from his Stevens fraternity brothers, helped in setting up and operating ham radio stations in New York to keep communications open for emergency workers.

Behnke, along with Stevens freshman Ian Denholm and former Stevens student Monica Yazno, helped prepare the communications center for the Red Cross in Brooklyn by running phone lines throughout the Red Cross chapter building there on Sept. 13. The three also worked as radio operators in the Red Cross shelters set up for displaced

New York City residents on Sept. 15 and 16.

"Jim spent many long days and nights near the site, risking his own life to help others," said fellow brother **Ken Adam '02**.

Communications support efforts did not go unnoticed. Telecommunications workers at Verizon who were involved in the repair operations in New York received a pat on the back in January 2002 when the honor of their presence was requested at the New York Stock Exchange, to ring the closing bell along with Babbio, in recognition of the hard work they did in bringing the nerve center of world commerce back to life again.

"It took thousands of our people, working around the clock, using all the intellectual capital that they ever accumulated and all the years' experience that they had working together—in a fashion that is totally unbelievable—to bring off what I consider is probably the telecommunications miracle in the last century," Babbio said.

At Ground Zero

Before the dust had fully settled, construction engineer **Thomas J. O'Connor '80, M.Eng. '82**, a veteran of the 1993 terrorist bombing of the World Trade Center, was called to the scene to help in the rescue and recovery operations. The Port Authority's engineer of construction at Kennedy Airport, O'Connor played a significant role in construction work that supported the recovery operations. "I was the lead in charge of recovery construction during the day," he explained.

The job essentially involved removing debris so that recovery teams could come in and search for survivors and victims, O'Connor said. New York Fire Department spotters stood watch during the work, and each time they spotted something out of the ordinary, O'Connor's crew would be asked to stop and let the recovery teams check it out. The debris was later transported by vessel to the Fresh Kills landfill in Staten Island for further inspection.

Logistics and dust suppression were two challenging aspects of the project, O'Connor said. Officials had to arrange to bring heavy construction equipment into the disaster area. And all the concrete in the Trade Center had turned to dust, so preventing that dust from getting further airborne during recovery work was a major job, he said. They had to cut up debris inside of trucks and use hoses to wet down materials before moving them.

His crack crew of construction engineers knew their stuff, O'Connor said, because half of them had dealt with the aftermath of the 1993 bombing at the Trade Center—which left a crater in the underground parking garage. But many others who also survived the 1993 attack didn't

make it, he said.

O'Connor might have been among them that fateful morning of Sept. 11 had it not been that his children needed him, so he canceled attending a meeting on the 72nd floor of the North Tower to stay at home, and witnessed the attack from afar. His wife, however, was not so remote, having experienced the destruction from a couple of blocks away at the World Financial Center, and straggling back, covered in "gray," to their Long Island home in a car whose windows were blown out in the attacks. Seventy guys, many firefighters, from their local church were lost in the attacks.

O'Connor's work on the "big dig," as he called it, continued through the fall of 2001, up to 18 hours per day, seven days a week. It was only after many weeks and months, in early January 2002, that the New York City Department of Design and Construction, which had called in the Port Authority, hired an outside contractor to take charge of Ground Zero, and he was reassigned.

But O'Connor expected to be back at the site in the spring of 2002 for the construction project to rebuild the PATH train station that existed under the World Trade Center concourse.

Also on the engineering front in Ground Zero recovery operations are Stevens graduates **Edward A. Segali, III, '90** and **Sam Ezeldin, M.Eng. '93**, of Tully Construction Co., Inc., Flushing, N.Y.

Tully is one of four firms hired as construction managers for the clean-up and recovery work at the World Trade Center site. Each is in charge of a quadrant of the site. Its responsibility is the South East Quadrant, which consists of the South Tower (Tower Two), the demolition of Buildings 4 and 5, and all areas east of the South Tower.

Working with the lead agencies, including the New York City Department of Design and Construction, the Port Authority and city firefighters, Tully crews have helped excavate the site to locate the remains of victims.

"Words just can't describe the emotion of all the crews down there—especially when a body is recovered; everyone stops working and salutes the victim's body wrapped with a flag," said Ezeldin, director of Engineering Services for Tully Environmental, Inc.

Tully has been removing over 300 loads of debris per 24-hour period. Two of the firm's main concerns during the job have been the extent of the removal operation and the safety of its workers.

"Seven days a week, 24 hours a day for months is a major undertaking for any company," said Segali, "and Tully produced equally day or night, weekday or weekend."

The four Tully brothers, the vice presidents and the safety officer, along with many project managers/engineers and project superintendents, were assigned full time to tackling the project, putting in many long, exhausting days and nights.

Ed Segali, general superintendent of Tully's Environmental Division, had been supervising a construction project at Fresh Kills landfill in Staten Island when the attacks occurred on Sept. 11, and since all the debris from Ground Zero was being sent to that landfill, he was appointed to coordinate the delivery of the material with the FBI and the New York City Department of Sanitation.

Sam Ezeldin is providing engineering support for environmental monitoring activities during the removal of construction debris and is acting as a liaison with other regulatory agencies involved at the site such as the U.S. Environmental Protection Agency and the New York state Department of Environmental Conservation.

Ezeldin was also involved in volunteer efforts, during the early stages of the disaster. The day after Sept. 11, he gathered more than 60 volunteer engineers from the American Society of Civil Engineers and went down to the Jacob K. Javits Convention Center on Manhattan's West Side waterfront, the central staging area for volunteers.

"Don't ever believe it when they tell you: 'If you fell down in New York City, nobody will even look at you.' People were in the streets, crying, singing and hugging each other. Kids, 6 and 7 years old, were offering cookies and cheesecake to the volunteers standing on one long line surrounding the full block of the Javits Center, refusing to go anywhere but south to the so-called Ground Zero," he recalled.

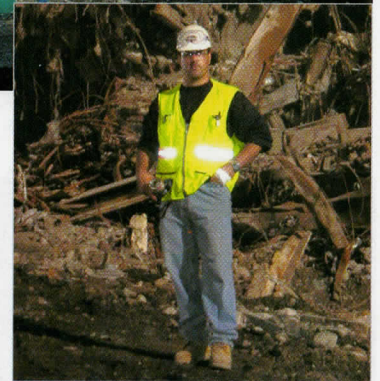
"Around 8 p.m. that day, we were dispatched to the disaster site to help. It doesn't matter if you are an engineer, a lawyer or a doctor ... we are all moved human beings who are here to help. For 12 straight hours, we rolled up our sleeves and carried small buckets of debris in a harmonic, yet silent, symphony surrounded with the blended smell of death, smoke and burned rubble."

Also helping out on the volunteer front were Stevens



Above Photo: David Vaccari

Stevens graduates Sam Ezeldin, above, and Ed Segali, right, have been involved in the clean-up and recovery operations at the World Trade Center site. Segali is supervising the delivery of debris to the landfill on Staten Island, N.Y., and Ezeldin has been providing engineering support for environmental monitoring activities at the site.



students involved in campus Greek life. Chi Phi brothers volunteered at one of the supply depots in Jersey City, carrying donated goods to boats at the Hudson River waterfront that ferried the supplies across the river to Ground Zero where they were needed. Other fraternities headed to Ground Zero and the Javits Center to volunteer; Theta Xi fraternity pitched in on the bucket brigades at Ground Zero and tried to spend as many days and nights as they could at the Javits Center helping families in their efforts to find loved ones who were missing.

And two children of Mary Gaspar, associate director of the Executive Master of Technology Management program at Stevens and mother of alumnae **Mary C. Gaspar Hillenbrand '92, M.S. '94**, and **Marguerite F. Gaspar McIntyre, M.S. '93**, also pitched in. Siblings George and Teresa Gaspar kept open their downtown Manhattan restaurant, Stack and Stack, on Cliff Street not far from the Trade Center site, as a haven for police, firefighters and rescue workers needing food and a place to sit and rest.

It was the solidarity and cooperation of people looking beyond superficial differences to the human suffering of those in need—like Sam Ezeldin, an American citizen and Muslim born and raised in Egypt—that was the diamond in the rough of Sept. 11 and rescue and recovery operations.

Unity in adversity

The terrorist attacks were an enormous blow, the most devastating event he has had to endure, said the Port Authority's Michael Scott, who faced the 1993 bombing of the Trade Center. Many friends were lost. The nation lost the Trade Center, a force for economic growth in the region and a symbol for America.

Scott, a Stevens Alumni Association trustee who served as SAA president in 1986-87, has worked for the Port Authority since his first summer job as an engineering intern there in 1969 when the Trade Centers were being built, and has seen his share of difficult emergencies.

But the tragedy opened the nation's eyes to the good work of others, Scott said. "I have gained an even greater respect for the work performed by our Port Authority staff in the almost instant rescue efforts that were initiated and succeeded in saving so many lives and continue even today in recovering our fallen heroes at the site of 'Ground

Zero,'" he said in December 2001.

"Our work hours at the Port Authority are much longer these days than ever before," he said, "but our collective energies are strengthened each day, by the prayers and good wishes expressed by those who have been in contact with the many Stevens alumni who work for this agency."

Firefighter Troy Roberts concurred: "We all suffered a really terrible loss with this thing, and most people lost many friends, not just single friends, but it was heartening to see the way people pulled together and have continued to show support since those days.

"There were so many people who helped in so many ways, large and small. And it still goes on. At the site you're amazed, you see all the volunteer workers still working there.

"It's a shame it took this kind of event to bring everyone together—but they really did."



Photo: Michael Rieger/FEMA

Workers at Ground Zero use heavy machinery to remove one of the steel beams from the section dubbed "God's House" in reference to the many crosses inside.