Deconstructing the cost of construction

The real story behind the cost of public works projects in NY
Needed Improvements

Many factors affect the cost of building public works projects. Some of the biggest impediments involve a breakdown in agency processes that creates a confrontational, litigious environment that drives up costs and impacts project delivery.

For example:

- **30%** of contract value exceeded by change orders
- **4** years to close out a project and receive final payment
- **800** contract drawings supplemented by 1,600 revised drawings
- **110** days to approve a payment for processing
- **540** days to process a change order
- **38** pre-bid addenda on 1 project
- **140%** increase in fill material disposal costs due to regulatory changes
- **$1.2M** held for 4 years pending agency final audit. Foregone interest: $137K, Audit findings: $50K
- **6%** average MWBE response rate in 3 years of project solicitations

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These are examples of process failures that drive up construction costs, and not an average for all public procurements.
Dear Colleagues and Friends,

Although the press and public policy pundits have opined extensively on the duration and cost of construction in New York, the written and spoken words fail to convey the real issues. “Construction” is but one part of a long process that takes a project from concept to final public use, but bears all of the burden for cost and schedule decisions that are made long before a contractor ever sets foot on the job.

The fact is, construction contract costs for labor, equipment, and materials account for far less of the overall project cost than one might think, with over 40% of project costs being absorbed by non-construction items including land acquisition, design, environmental reviews, and owner overhead.

Material costs are also determined largely by choices made by the project scoping process, even when projects are delivered using design-build. Architectural features, like cylindrical buildings, customized façade cladding, and unique lighting, along with sophisticated, customized, software-based building management systems, may enhance project aesthetics, but nonetheless add costs that show up both in construction bids and subsequent maintenance.

Elements that address community concerns, such as vibration and noise mitigation and restrictions on debris removal, provide benefits but add cost and time. Site conditions, confined work staging areas, and limitations on a contractor’s ability to store materials on site impact productivity but are then ignored when pundits simply compare the total cost of one project to another and announce that New York’s are higher.

Large public projects begin with budgets and schedules that are crafted from historical data and assumptions, but with limited information about how the project will actually be constructed, the overall market conditions during the procurement cycle, or any of the issues the project will confront. As more information becomes available, it becomes incumbent to publicly update the budget and schedule.

In a process where public support is critical, minimizing cost becomes paramount, even when the project that is originally budgeted and the project that will actually be built ultimately bear little resemblance to each other. The failure to adjust budgets and schedules as requirements change during a project’s development lead to the inevitable charges of “cost overruns” and “schedule delays.”

Managing controllable costs is what contractors do on projects every day. But many costs are outside a contractor’s realm, and if we are serious about reducing project costs, then we need to work collaboratively to better control project scopes, implement robust constructability reviews and value engineering, improve the payment and change order processes, minimize disputes, stabilize sources of project funding, reduce mandates, and streamline procedures and regulations.

The GCA’s 2018 annual report, “Deconstructing the Cost of Construction,” explores all of these issues and offers solutions that will enable the public agencies, the design and construction professionals, and the public to advance the next generation of projects that will secure the region’s future for generations to come.

Sincerely,

Denise M. Richardson
Executive Director

Joseph Malandro
President
Why Does It Cost More To Build A Project in New York?

Much has been written recently about the relatively high cost of “construction” in New York. Yet only a portion of a project’s total cost is attributable to physical “construction.” There are many other factors that combine to make projects more expensive here than elsewhere around the world.
We touch briefly here on each of the other factors that affects the cost of building a project in New York. We hope this will begin a positive discussion about how to improve the way that future projects are planned and built.

- **Scaffold Law**
  Despite the fact that Workers Compensation duplicates the effort, since 1885 every New York construction contractor is burdened by the Scaffold Law's 100% liability standard for work-related falls, no matter who has been at fault, unnecessarily adding 10% to the cost of every construction project.

- **Major Scope Changes**
  Changing project scope after construction contracts have been awarded is a major cause of project cost overruns and schedule delays. Agencies must ensure the buy-in of all stakeholders prior to soliciting construction bids through better pre-bid reviews and formal scope sign-offs to prevent later changes, even though this may lengthen the pre-bid project review process.

- **Unworkable Designs**
  Contractors frequently face designs that contain conflicts or are simply unworkable once put into practice. Before construction bids are solicited, designs must go through an independent constructability review. For design-build projects, the owner's scope must be clear and comprehensive and not subject to changes by other parties.

- **Change Orders**
  Change orders after construction has begun or been completed are too frequent. Input during the design phase from all interested parties, especially maintenance and operations staff, will help minimize later changes and keep projects on time and within budget.

- **Procurement**
  Public procurements have become increasingly onerous, confrontational, and expensive single-point-of-contact nightmares. Whether procuring copy paper or a multi-billion dollar tunnel, collaboration to improve delivery is too often not part of the process. Before soliciting bids for projects, agencies should engage the industry to solicit ideas to tailor project requirements with the goal of reducing cost and time.

- **Legislative/Regulatory Requirements**
  In the name of transparency, agencies must respond to multiple levels of oversight and reporting, taxing the resources of the project management staff. Unnecessary layers of approvals and oversight add hundreds of millions of dollars in cost, as contractors end up financing the project while they wait for payments for work that in many cases was performed months before.

- **Subcontracting Requirements**
  While no one would argue their broader societal benefits, a host of subcontracting goals add millions in administrative, reporting, project management, and compliance costs that roll up into overall project costs.

- **Insufficient/Unpredictable Funding**
  Waiting two, three, or more years to secure federal, state, and local funding for either individual projects or multi-year capital programs adds not only inflationary costs, but actual costs, as planners, designers, and staff are kept on hold awaiting finality.

- **Project Leadership Instability**
  Leadership instability in major capital agencies creates uncertainty as managers change during the project's lifecycle. With nearly half of New York's public agencies engineering personnel eligible to retire in the next five to ten years, leadership continuity will be a critical issue as agencies seek to deliver multi-year capital programs.

- **Real Estate Costs**
  There is no doubt that real estate in New York is expensive. But the limitations on how public entities must either purchase or dispose of real estate puts them at a great disadvantage and drives up the cost of a project.

- **Density/Politics**
  New York's physical environment dictates project construction and sequencing decisions. Working in and around busy rights of way, staging work during off-hours, and limiting community impacts all require extra time, planning, staffing – and cost.

- **Multi-Agency Coordination**
  Multiple agencies issuing permits, controlling site access, and performing proprietary work add cost and time that, while unseen by the public, are nonetheless very real.
Project Delivery Improvements – What’s Needed

The region’s ability to sustain and accommodate future growth depends on a robust transportation and infrastructure network. With uncertain federal funding and limitations on borrowing capacity and what taxpayers can bear in new fees, it is imperative that public owners, legislative leaders, and the design and construction industries collaborate to deliver projects more cost effectively.

For public owners, this begins with fair contract terms; appropriate risk allocation; comprehensive documents with adequate time for the industry to bid; and efficient procurement, payment, change order, and dispute resolution procedures.

A clear and unchanging scope of work, developed with the end users, and with regular communication with the public, is essential. Allowing time to adequately design the project, including thorough pre-bid constructability review, is also critical for managing and controlling costs.

For design professionals, this entails designing to budget, accounting for differences in material costs, and taking into account the cost impact of custom-designed or hard-to-get items versus commercially available systems. Designs must meet the owner’s maintenance needs, avoiding unique items that are hard to maintain and difficult to replace. During construction, expediting reviews and clarifications is critical to keeping the job on schedule.

For elected officials, streamlining outdated laws, regulations, and requirements that add layers of oversight, duplicative reports, and procedures will significantly reduce costs.

For contractors, costs are controlled with a skilled, productive, and safety-focused workforce; use of corporate purchasing power to obtain favorable prices for goods and materials; attention to the schedule; and managing tasks to maximize the productivity and efficiency of the workforce. Selection of quality subcontractors is critical, as their ability to manage and execute their work independently contributes to successful projects. Contrary to popular perception, the best project for a contractor is one with few change orders, signifying a thoroughly scoped, well-designed project supported by owner engagement.

Accomplishing successful project delivery is a Herculean task. As a leader in infrastructure construction’s best practices, the GCA implements constructive changes in labor force work rules to improve construction efficiency. From making recommendations on the best ways to deliver critical projects, to commenting on legislation and regulations, to exploring transportation funding solutions, to suggesting changes to improve the MWBE program, the GCA also provides insight on current issues facing the industry through a series of reports shown below.

FOR THE RECORD/ON THE RECORD – The GCA published a series of reports throughout the year that identified public policy issues and recommended ways to make improvements. The reports also educated the public about issues that drive up the cost of construction in New York.
What the GCA is Doing to Get There

Centered at the nexus of federal, state, municipal, and industry policies, the GCA remains active on the multitude of policy issues that affect what our members build, how they build it, and how these projects are funded and managed.

Federal

• Advocating for FAST Act, FAA, and WRDA appropriations and reauthorization
• Making the case for Gateway and Second Avenue Subway Phase 2
• With industry partners ARTBA and APTA, advocating for the Capital Investment Grant Program funding and Highway Trust Fund and Mass Transit Account solvency
• Recommending changes to streamline federal rules and regulations
• Addressing multi-employer pension plan solvency

State

• Ongoing partnering with public agencies and authorities on capital program delivery issues
• Supporting legislation that promotes fair contract provisions, such as damages for delay and fair contract notice provisions
• Giving the industry a voice on regulatory and legislative changes
• Fostering legislative initiatives that streamline contract and procurement practices
• Promoting reforms to the MWBE directory and MWBE certification to make the program work better for MWBEs seeking to obtain work

City

• Providing expert input on the Crane Advisory Task Force and new safety and training requirements
• Advocating for the reform of burdensome and costly rules and regulations
• Engaging with City agencies on task forces, regulations, and new requirements
• Promoting opportunities for women and minorities in the construction trades through workforce development programs including NEW, Construction Skills, and Helmets to Hardhats
• Recommending improvements to the MWBE program
The Scaffold Law

New York’s Labor Law §240 (“the Scaffold Law”) dates back to 1885. Its original purpose was to ensure that contractors provided proper protection to their workers to prevent injuries due to falls from heights. The law predates Workers Compensation, OSHA, and other statutes that are designed to address workplace safety and provide compensation to injured workers. Over the past 20 years the New York Court of Appeals dramatically expanded the coverage of the Scaffold Law to include any injury that is gravity-related and upheld record high verdicts.

Scaffold Law claims have also expanded to encompass any entity working on a job site, as an injured worker collecting Workers Compensation is prohibited from suing their direct employer for additional damages. This has caused insurance costs in New York to skyrocket as insurers have left the market due to the unpredictability of jury verdicts and claim settlements. The remaining insurance companies have increased the minimum level of insurance required. This has created a hardship for many small and mid-sized construction companies, adversely impacting their ability to bid and take on more work. The result has been substantially higher owner-controlled insurance program (OCIP) premiums for public owners, and higher insurance costs for contractors reflected in higher bids.

The Scaffold Law adds

10%

to the cost of a construction project.
New York's robust Workers Compensation program insures that workers injured on the job receive replacement wages up to $904 per week tax-free and coverage for all healthcare costs. Worker safety is important, but the Scaffold Law doesn't protect workers, it harms the public when funds are taken away from building schools and rehabilitating train stations to pay for ever higher insurance costs.

“Our general liability insurance costs have increased over 155% over the past 6 years.”
- KND Electric, a certified WBE

MTA’s OCIP costs for East Side Access Project increased 61.8% from 2014-2018

Estimated to add between $180M-$300M in additional insurance costs to Amtrak’s Gateway Project

General liability insurance costs for construction are higher in New York than in any other state.

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Insurance costs are 75% higher in New York than in Connecticut for the same contractor doing the same type of work with the same workforce.
Protecting worker safety is the number one priority for GCA members, but it’s never taken for granted.

To keep an industry-wide safety culture in the forefront, the GCA actively engages in a host of activities each year.

The GCA’s Safety Week program selects a specific theme for a series of seminars, tool box talks, and specialized training. Ongoing robust training programs offering certification and accreditation enhance the skills of the members’ safety departments. General and task-specific training for project managers and other field personnel ensure best practices on all job sites. At all times, sensible safety laws and regulations that protect the workforce, embrace new technology, and foster a management-labor partnership are at the top of the GCA’s advocacy priorities.

With 24 new safety-related laws passed last year, and ever-changing regulatory requirements, the GCA provides expert guidance to inform the legislative and regulatory process, advocating on behalf of our members and their workforce, and keeping them current on new requirements and changes. The GCA also offers ongoing training classes to help members stay on top of new requirements and obtain the latest certifications needed to get the job done in one of the most complex markets in the U.S.

The bottom line is that GCA members want all their workers to return home safely each night. The GCA helps them make that happen.

We Build New York – Safely!

Safety Week provides an opportunity for the industry to stand down and reinforce safe work practices. 2018 focused on fall protection – one of the most critical issues facing GCA members and their employees. This year’s message reminded workers of their ABCs: Anchor point, Body harness, Connector – the key elements in the proper use of fall protection harnesses.
2018 Projects

The GCA’s 300 members are keeping New York going 24/7 by helping to build, rebuild, and renovate its most critical infrastructure. Here are but a few of the projects that allow us to lay claim to our century-old motto, “We Build New York.”

**A New Goethals Bridge**
Quietly and without fanfare, a joint venture of Kiewit-Massman-Weeks completed the new Goethals Bridge using the public-private partnership procurement model for the Port Authority. Replacing the original bridge that was built in 1928, the new bridge features three 12-foot-wide lanes in each direction, outer and inner shoulders, and a 10-foot-wide sidewalk/bikeway along the New Jersey-bound side of the bridge.

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**Connecting the Third Water Tunnel to NYC’s Water Distribution System**
Before the third water tunnel can be fully activated in Manhattan, it must be connected to the City’s water distribution system. This involves installing new trunk and distribution water mains, valves, regulators, and chambers to connect to the third water tunnel shafts – an especially complicated task in the dense, highly congested Times Square area. With no room to spare underground, the experienced Judlau/Waterworks engineering team had to redesign the utilities’ layouts to accommodate the new piping system.
2018 Projects

Redevelopment of LaGuardia Airport
The new central terminal building at LaGuardia Airport will bring much needed improvements to an airport that serves close to 30 million passengers a year. By reconfiguring the roadways and moving the terminal 400 feet, the LaGuardia Gateway Partners team, led by the construction team of Skanska/Walsh, are able to provide for more taxiway area – a critical need for improved on time flight performance. In addition to the terminal, the project includes 8 miles of roads and 19 bridges, and a 370-foot long pedestrian bridge that crosses airplane taxi lanes.

New Water and Sewer Mains in the Bronx
Tully Construction is installing new water and sewer mains in the Bronx as part of the City’s effort to improve Pugsley Creek. The project, which includes 9,020 feet of water mains, 4,365 feet of sewers, 26 new fire hydrants, 306 trees, 20,000 square feet of sidewalk, and 29,000 square yards of pavement, will reduce combined sewer overflows into Pugsley Creek. Complex dewatering of the area was required to allow excavation to a depth of 40 feet through soil and rock. With work taking place adjacent to residential buildings, skilled engineering management and experienced workers ensured that the buildings were properly supported and the work done safely.
Reconstruction of Cortlandt Street Station
The Cortlandt Street Station was irreparably damaged on 9/11. Before the station could be reconstructed, much of the new infrastructure at the World Trade Center had to first be rebuilt, requiring complex coordination among multiple city and state agencies and authorities, and private developers. The station construction, completed in September by Judlau Contracting, marked the final renewal and rebirth of the infrastructure destroyed in lower Manhattan.

Rehabilitation of 9 Stations on the IND Line in Brooklyn
Kiska Construction rehabilitated nine stations along the F Line in Brooklyn. The project included new stairs, lighting, artwork, walls, and floors, along with structural repairs. Renewing a station while it is kept open is particularly challenging, especially on the elevated lines. Contractors must be efficient in managing limited spaces for work and material storage.
2018 Projects

JFK Airport Runway Rehabilitation
Grace Industries rehabilitated taxiways Q and QG, as well as the restricted vehicle service road at JFK Airport. In order to meet a very aggressive construction schedule, the project required complicated sequencing and coordination. The solution was to do it in multiple short duration stages using multiple shifts working round the clock.

SouthWest Brooklyn Marine Transfer Station
Marine Construction is an essential part of building New York’s infrastructure. To support the City’s revitalized waste transfer station along the Brooklyn waterfront, J.T. Cleary installed new bulkheads, fendering, and timberwork. As part of the industry’s commitment to recycling, all dredged material was dewatered and processed for beneficial reuse.

Pier 55
GCA members build the infrastructure that supports New York’s ever-changing skyline. Nowhere is that more apparent than on the West Side of Manhattan where Weeks Marine is installing 480 piles and constructing the pier to support a planned new park at Pier 55.
Gerritsen Beach Inlet Bridge
Constructing a new bridge carrying the Belt Parkway and demolishing the old structure involved complicated site logistics and work in environmentally sensitive areas. To address environmental concerns, CCA Civil proposed a mechanically stabilized earth system that required no intrusive digging, avoiding conflict with previously unknown active drainage structures and preventing potential damage from vibrations.

East Side Access
Bringing the Long Island Rail Road into Grand Central Terminal
Constructing East Side Access requires complicated coordination of systems and finishes contracts. The project is particularly challenging as all materials and equipment must be transported in from Queens to reach their final destinations below Grand Central. While the East Side Access project provides a litany of lessons on project delivery, once completed it will provide significant economic benefits to the region.

C.A.C. Cares
Michael Capasso, president of C.A.C. Industries, established C.A.C. Cares to give back to the communities in which they build public works projects and where their employees live. This year’s charitable projects included constructing a new playground system for a nursery school in the Bronx, donating computers to a school in Far Rockaway, working with pre-K students in Brooklyn on a community garden, and handing out kid-size hardhats and safety vests to neighborhood children in Brooklyn to encourage the next generation of contractors and engineers.
Making the DBE and MWBE Programs Work Better

In the highly specialized field of heavy civil construction – building New York’s roads, bridges, transit, water and sewer systems – the GCA’s forums help connect disadvantaged, minority, women, and service disabled veteran-owned businesses, with the leading prime contractors in the industry.

At this year’s 10th annual networking event, federal, state and city certified minority and women owned businesses, and state certified service disabled veteran owned businesses (SDVOB), met the estimators, outreach officers, and compliance personnel at some of the biggest contractors in the region, providing opportunities for collaboration and connections.

GCA members on hand were seeking DBE, MWBE and SDVOB participation for more than $2 billion worth of subcontracting opportunities on projects ranging from design and construction work with the LIRR Third Track team, work on the region’s most significant bridges, including the Manhattan, Madison Avenue, Broadway, and Kosciuszko Bridges, and opportunities on the redevelopment of the region’s airports, including LaGuardia and Newark, as well as work on other heavy civil projects in the region.

Opening remarks were provided by Greg Bishop, Commissioner of the New York City Department of Small Business Services, followed by a panel discussion titled “Ask the Primes,” with Dennis Capolino, Vice President, Halmar International; Cesar Pereira, General Counsel, Judlau/OHL; Joe Belgrave, Lead Estimator, Skanska USA Civil Northeast; and Naomi Glean, M/W/D/ LBE Officer, WDF, Inc.

The conversation provided insight on working with prime contractors, understanding how primes evaluate subcontractor bids, learning the type of information primes look for in evaluating bids, and gaining insight on how to get noticed by prime contractors.

Panelists also offered a broad range of practical advice:

- Correct information in the government directories of certified businesses is critical. It is the foundation upon which prime contractors solicit business opportunities. Make sure the contact information is accurate, the business description is detailed, and the industry codes accurately reflect the work performed.

- Submit clear and concise bids that include a detailed description of the scope of work. Price alone with no additional information sends the message to estimators that a company does not understand the scope of work or have the ability to perform the work.

- Follow up with the prime contractor. Communication with the prime will help to identify weaknesses or missing elements in the bid and help the firm be successful in the future.

- Ask questions. Request meetings. If at first the prime does not respond, follow up more than once.

- Don’t take on a bigger job than the company can handle – this is one of the fastest pathways to failure.
Improving the accuracy of the DMWBE directories is more than an administrative function. The directories are the foundation upon which prime contractors search for firms to perform specific areas of work and upon which public owners should determine capacity. For DMWBEs seeking opportunities, an accurate directory listing will ensure timely notification about bidding opportunities.

It would seem that the public sector’s administration of their DMWBE directories would be a top priority. The reality is quite different. The GCA’s recommendations, if adopted, will help improve opportunities for DMWBEs.

### NYS Directory

<table>
<thead>
<tr>
<th>10,064</th>
<th>Firms listed</th>
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</thead>
<tbody>
<tr>
<td>14%</td>
<td>are dual certified (both Minority and Woman Owned)</td>
</tr>
<tr>
<td>8,722</td>
<td>unique businesses</td>
</tr>
<tr>
<td>2,180</td>
<td>firms statewide (25%) are categorized as construction companies</td>
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</table>

### NYC Directory

<table>
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<tr>
<th>5,591</th>
<th>Firms listed*</th>
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<tbody>
<tr>
<td>1,236</td>
<td>firms (25% of the firms in the directory) are certified in building or heavy civil construction services NIGP Codes</td>
</tr>
<tr>
<td>1,414</td>
<td>firms have no NIGP codes and therefore do not receive information about business opportunities</td>
</tr>
</tbody>
</table>

### Recommendations:

- **Fix the List** – The directory is the primary way to match DMWBEs with business opportunities and to find out what work a firm performs. It must be accurate.

- **Set Contract-Specific Goals** – DMWBEs/SDVOB goals must be set for each contract based on the actual capability and availability of certified firms to do the work or supply materials, not a blanket goal.

- **Establish Goals Based on the Actual Work in the Contract that can be Subcontracted** – Items such as utilities, rent, personnel, insurance, and other overhead costs, as well as specialty or sole-source work must be excluded from project goals, just as they are for agency goals.

- **Clarify a Firm's Certification** – An MWBE can be certified by the state as a supplier and a broker. Specificity is needed in the directory to indicate what products the firm supplies and when it is a broker, especially when suppliers can be affiliated with multiple manufacturers.

- **Create a State-Funded Insurance Program** – DMWBEs report difficulty getting liability insurance due to the Scaffold Law. With insurance in excess of 10% of the project cost, it is a major barrier to a firm’s ability to grow. The State should establish an insurance program to help DMWBEs.

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*Results of a 2017 GCA survey of certified MWBEs in Long Island, New York City and Westchester/Hudson Valley.

*Due to the difficulty of obtaining a download of the complete NYC directory, the data is current as of December 2017.
Preparing Future Industry Leaders

The construction industry is on the cusp of a generational transition. The changes are apparent in a professional workforce that is increasingly diverse. The percentage of junior female engineers has increased to 40% of the workforce, and efforts are underway to mentor, grow, and retain that workforce. Similarly, the number of minority engineers has been increasing every year, with 38% of junior engineers who identify as a minority. These workers are the future of the heavy construction industry.

$532,000
in scholarships

37
universities

55%
of scholarships awarded to minorities and/or women

Serving on the boards of both Helmets to Hardhats and Non-Traditional Employment for Women, the GCA is making sure that these programs stay current in the skills needed by employers. In the GCA's heavy construction trades, the workforce is now majority-minority, with early recruits now advancing into the supervisory ranks. With over 65% of union apprentices coming from minority groups, the unionized construction industry continues to lead the way in providing opportunities for solid middle-class jobs for a highly diverse workforce.

From top, summer interns at Posillico Civil; GCA sponsored Summer Engineering Awareness Program at Manhattan College; summer interns at Railroad Construction; GCA Members lead tours for Moles Student Day; summer interns at Skanska Koch.
Who is the GCA?

Female Employees

- 6% 20+ years in the industry
- 40% Less than 5 years in the industry

Minority Employees

- 12% 20+ years in the industry
- 38% Less than 5 years in the industry

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In Memoriam

**Theodore Civetta** (“Ted”), president of John Civetta & Sons, was president of the GCA in 1984 and 1985. Following his 1951 graduation from Manhattan College, Ted served in the Army, returning to the family business in 1956. For over 50 years, Ted was involved in the foundation projects that shaped the New York skyline. Ted remained active in the construction industry throughout his life.

**Michael McHugh** (“Mike”), former executive vice president of Moretrench American Corp., was known for his active mentoring of engineering students through his work with the Moles and the American Society for Civil Engineers, as well as the GCA. Mike’s tireless dedication helped the GCA members mobilize our response to 9/11 and Superstorm Sandy, as well as countless other emergencies throughout the region. Mike was a 1980 graduate of Manhattan College.