



STRUCTURETONE Organization *Insights*

Ajax | Govan Brown | LF Driscoll | Pavarini Construction | Pavarini McGovern



The **BOOTS** **ON THE** **GROUND** Issue

What's Inside:

6 Built-In Functionality
Hudson, NH Fire Station

14 Paving the Way
An epic concrete pour at a major airport

16 Building Together
Q&A with Linda Foggie of Wells Fargo

30 Historic Transformation
Twenty St. James's Street

IN THIS ISSUE >>



- 3 Executive Message**
We are builders
- 4 New York City Rising**
Building ground-up towers in NYC
- 6 Built-In Functionality**
Hudson, NH Fire Station
- 8 Upward Bound**
Avolon's Dublin HQ
- 11 Pioneering Infection Control**
Prefabricated infection control panels
- 12 The Importance of Commissioning**
More than simply quality assurance
- 14 Paving the Way**
New airport facilities for a global distribution company
- 16 Building Together**
Q&A with Linda Foggie of Wells Fargo
- 18 Challenge Accepted**
BCG Philadelphia
- 20 Resurrected**
Residence Inn by Marriott Stamford Downtown
- 24 Tilt-Up Construction**
Why, where, how
- 26 Behind the Curtain**
Building Villanova's Performing Arts Center
- 28 It's All About the Plan**
Capital One Toronto
- 30 Historic Transformation**
Twenty St. James's Street



A Message from
Jim and Bob

SPECIAL FEATURES

- 10 Safety 360°**
Taking construction safety to the next level
- 22 Giving Back**
Make-A-Wish's Real Estate Council



The vision of our clients and our design partners constantly inspires us. Every time we see employees first walk into their beautiful new workplace, or patients visit their state-of-the-art treatment center or even passers-by admiring a new addition to the skyline, we're incredibly proud of the role we played in that impressive outcome.

While the beauty of these buildings and spaces is impressive, we never forget what it takes to make that vision come to life...to start with a space—or bare ground—that ultimately bears little resemblance to the extraordinary structure that takes its place. We are builders, and it's our job to help our clients and partners successfully achieve the end result they envision, finding innovative solutions to construction challenges along the way.

We also want to take this opportunity to welcome a new addition to our team: Ajax Building Corporation. Based in the Southeastern US, the firm works on a diverse mix of ground-up and interior/renovation construction projects across sectors such as K-12 and higher education, city, county and state government, healthcare and historic restorations. We will be sharing more about Ajax in our next issue, but in the meantime, please visit their website to learn more about what they bring to the Structure Tone family of companies.

This issue of *STO Insights* celebrates that process—the “boots on the ground” problem-solving and experience that our team brings to each and every project. From determining which crane is the best for a project's circumstances (page 5), to modernizing a centuries-old building without sacrificing its charm (page 30), to announcing the culture-based safety initiative we've rolled out companywide (page 10), this issue highlights the expertise and teamwork required of the work we do for and with our clients.

James K. Donaghy
Executive Chairman

Robert Mullen
CEO

©Copyright Structure Tone, LLC, 2019
Structure Tone Organization Insights is a publication of the Structure Tone corporate marketing department | 330 W. 34th Street, New York, NY
 Editor, Alison Smith | Art Director, Sarah Lembo | Contributing Writer, Breanna Ahern | Senior Proofreader, Kari Mullen | Proofreader, Robert Holloway | Special thanks to the STO marketing department
 The Structure Tone organization refers to a group of separate legal entities including Structure Tone, LLC, Structure Tone Southwest, LLC, Structure Tone International Limited (UK), Structure Tone Limited (Dublin), Pavarini Construction Co., LLC, Pavarini McGovern, LLC, L.F. Driscoll Company, LLC, Govan Brown and Ajax Building Corporation, as well as their subsidiaries, joint ventures, divisions or affiliates. Each member company is an independent legal entity operating and providing services solely under its own name.
 Locations: Atlanta, Augusta, Austin, Boston, Calgary, Dallas, Dublin, Edmonton, Gainesville, Hartford, Houston, Jacksonville, London, New York, Orlando, Ottawa, Philadelphia, San Antonio, Sarasota, Stamford, Tallahassee, Tampa, Toronto, Vancouver, Winnipeg, Woodbridge

Photo above: Michael Verrelli/
courtesy of Structure Tone

Photo above:
John Beer/Building Images Photography



FIND OUT MORE IN OUR *STO INSIGHTS* APP!
 On the app, you'll find digital content that supplements the stories in the magazine. Download the app to your mobile device and hover your device over the pages marked with the app icon. The digital content should appear!



NEW YORK CITY RISING

New York City has always been known for its soaring skyscrapers. In fact, New York was home to the world's tallest building for an accumulated 86 years before cities in Asia started breaking height records in the late 1990s.



200 Amsterdam Avenue, NYC

But even today, New York continues to push the limits of tall construction, and Pavarini McGovern is right on the front lines. The firm is building several of the city's newest towers, including residential towers at 100 Vandam and 200 Amsterdam and the new Pendry Hotel in Hudson Yards.

Building these kinds of structures in a city as active and dense as New York brings a number of expected challenges, from site constraints to infrastructure coordination. But each project (and owner) is different, meaning the project team cannot use a "one size fits all" approach.

While those elements are similar, the specifics of each project's site and circumstances pose very different challenges for the construction teams. 200 Amsterdam, for instance, is in the middle of a residential neighborhood on the Upper West Side. That means construction noise and working with the community are key focus areas for the project team. To build the tower, however, PMG and its team have had to excavate through roughly 50ft of solid bedrock—which, not surprisingly, can get loud. The team has installed sound-absorbing blankets along the perimeter site fence, as well as wrapped those blankets around the hoe rams and chipping hammers to help reduce the noise of rock chipping and drilling.

"We took a very proactive approach with the community," says DePaul. "We have an email community outreach program that we use to constantly share the schedule and events and update neighbors on what's happening with construction sequencing."

For the Pendry Hotel, noise is not the issue. The acres of development within the Manhattan West and adjacent Hudson Yards sites include multiple construction projects all happening simultaneously. And therein lies the challenge. Brookfield is developing the Pendry, whose full-city-block-sized site includes two high-rise office towers, a

high-rise residential tower and the hotel. Needless to say, competition for work areas can get complicated.

"We're in constant communication with the other construction management firms on a daily basis," DePaul says. "We all meet weekly to go through site logistics, tower crane locations and swing operations, safety and other site issues, and to coordinate scopes like overtime and weekend work. We have around 30 team members from all of our firms at these meetings, making sure everyone's project schedule stays on track."

At 100 Vandam, neighborhood noise and site limitations also apply, but the most pressing challenge comes with the building itself. The project is preserving the building's original six-story façade, building an entirely new core to support the new stories above. Bracing towers on capped concrete piles keep the exterior walls in place, tying into the building via a steel truss system at the window openings. "The system is designed to avoid impacts to the façade itself and the ongoing work within the walls," says Sade Obayemi, project executive for Pavarini McGovern. "We've also used vibration monitors and other tools to keep a vigilant eye on the façade to make sure there was no impact to the façade as construction continued."

PREPARATION IS KEY

So how does a construction team prepare for the routine and unique challenges that these incredibly complex projects bring? Preparation, says DePaul.

First, he says, the team does a great deal of research when they have even the earliest interest in a project. "We do detailed studies into the site and its logistical constraints and difficulties, plus any challenges we foresee with utility connections or MTA limitations," he says. "We also work hard to fully understand what the client's most important needs might be. All of that helps us shape how we will tailor our approach for that project."

Another key factor, he says, is staffing. "We hand-select the right PMG team members for the job. We match their experience and expertise to the specific complexities of the project at hand."

All that upfront work has helped Pavarini McGovern become one of the city's leading companies when it comes to building the towers that define the Manhattan skyline. And, says DePaul, the challenges that come with that are well worth the reward.

"I am most proud of our team when we are awarded one of these amazing projects. It's a true reflection of all the hard work and dedication that PMG puts in, and the trust the client has in us to do the job." ◀



Rendering, right: Courtesy of SJP Properties

Above ▲
200 Amsterdam will rise 55 stories on Manhattan's Upper West Side

To Crane or Not to Crane?

When it comes to building multistory towers, that is the question. For Pavarini McGovern, whose work is primarily core & shell construction in dense Manhattan, hoisting options are among the first examined as they plan their project approach.

So, what sort of thought goes into deciding if a crane is the way to go? And which crane to use? Turns out, a lot. Here, Ed Lydon, Pavarini McGovern's general superintendent (and logistical mastermind) shares five primary factors when considering hoisting options.



Building Height.

Typically, once a new building exceeds 30 floors, a tower crane becomes the only option. For 200 Amsterdam, PMG selected the FAVCO 440—a "workhorse" due to its speed and capacity.



Logistics.

In densely packed cities like New York, space on the ground is at a premium. For the Pendry Hotel, the restricted laydown area, heavy traffic and nearby entrance to the Lincoln Tunnel ruled out using a mobile crawler crane. Despite the building's modest height, PMG optimized precious logistics space by choosing a tower crane to erect the structure.



Budget and Schedule.

While tower cranes are fast and efficient, they are also expensive and can add millions to a construction budget. In some cases, owners and developers may be willing to relax the schedule to save on costs. For those projects, a combination of crawler cranes and "set back" spider cranes can achieve the same high-quality result with a later completion date.



Safety.

During crane selection, PMG is very focused on safety—of both the public and construction personnel. Safety considerations include the age and condition of the equipment, past performance, weather implications, proximity to public utilities, transit lines and tunnels and the quality and safety record of the operator and erector. At its own expense, PMG hires a third-party crane inspection engineer to ensure the safety of all crane equipment before it is allowed on any project site.



Owner Priorities.

When there are many good options, the final decision can come down to the client. Does the owner appreciate the speed and efficiency of diesel crane construction? Or the quieter and cleaner electric crane? Are they looking to save money by using a street crane, understanding it may mean relaxing the schedule to accommodate delays? It's important to have an open dialogue with clients early on so they understand the options and the construction team understands their priorities.

Project Details

200 Amsterdam

Height: 55 stories
Client: SJP Properties
Architect: Elkus Manfredi/CetraRuddy

100 Vandam

Height: 25 stories
Client: Jeff Greene
Architect: COOKFOX Architects

Pendry Hotel

Height: 20 stories
Client: Brookfield
Architect: Skidmore, Owings & Merrill

Type: Hotel

DIFFERENT PROJECT, DIFFERENT CHALLENGES

All three of these towers are concrete and curtainwall structures reaching to heights of 20 (the Pendry), 25 (100 Vandam) and 55 stories (200 Amsterdam), respectively. They are also all located in Manhattan—so space to do anything on site is limited.

"There is zero room for logistics or lay-down areas," says Marc DePaul, vice president of operations at Pavarini McGovern. "It's a major challenge to try to fit a tower crane and exterior hoist on a 75-foot-wide property frontage while still leaving room for materials, equipment and laydown."

BUILT-IN FUNCTIONALITY: Hudson, NH Fire Station

In Boston, Structure Tone is primarily known for its unparalleled expertise in commercial interior construction, from small upgrades to high-end renovations. But when the team expanded their services into New Hampshire in 2016, they knew it could open doors into new and different types of work, including public facilities and out-of-the-ground construction.



Above ▲
The fire station is the first new building the town has built in nearly 30 years

One of their first opportunities arose when the town of Hudson, New Hampshire needed a new fire station. The 7,800sf, brand new, design/build facility would help fill a gap in one end of town and would serve as a model station for future renovations.

"These kinds of projects are part of why we expanded into New Hampshire," says Thomas Roy, Structure Tone account executive. "We have a team with decades of experience in new construction, and we knew this Hudson project was a great chance to show what we could do."

ALL SYSTEMS GO

While the facility's features are typical for a fire station, they aren't typical of an average building—new construction or not. Common building elements like the foundation and the MEP systems are specifically designed for the needs of fire station equipment and processes. Structure Tone worked together with the architects from Harriman to fit those features into an attractive, functional town facility.

The concrete slab, for instance, is heavily reinforced to support the weight of four fire trucks and their water tanks. The HVAC system comprises a special ventilation system that allows the firefighters to run their daily tests and checks without opening the

Below ▼
The apparatus bay includes a number of special features



All images these pages: Blind Dog Photo

Next page
Table of Contents

Project Details

Size:
7,800sf

Client:
Town of Hudson, NH

Architect:
Harriman

Structural Engineer:
Harriman

Civil/Site Engineer:
Keach-Nordstrom Associates

Services:
Construction Management

Sector:
Government

Completion:
July 2018

garage bays—a feature the crews particularly appreciate during the brutal New Hampshire winters.

"This vent system has a hose and collar that hooks directly onto a truck's exhaust pipe," says Tony Page, Structure Tone superintendent. "Air pressure holds the collar onto the pipe but if the truck gets a call, an exhaust pressure sensor releases the pressure on the collar and it pops right off as the truck pulls away."

The mechanical system has some similarly unique features. Most heavy trucks use a compressed air brake system in which the truck must idle before moving to let the pressure build up behind the brakes. Fire trucks, however, must be on the move as soon as they are called to an emergency. To keep them ready to roll at all times, the station's mechanical room hosts a large commercial air compressor with hoses that plug into each of the trucks. This system pre-pressurizes the air brakes so that when the fire house gets a call, the crew can simply pop off the hoses and go.

CLIENT FIRST

While those extra elements added some construction challenges for the team, the biggest hurdle, says Page, was the weather.

"We worked really hard with our subs to keep everything on track to avoid the cold of mid-winter," he says. "But we did work through cold and snow, putting things on hold for only two days when the weather just simply prohibited doing anything."

The new James A. Taylor Memorial Station was officially opened last July, and hundreds of townspeople came out to celebrate the opening and honor the fallen firefighter for which it was named. Since then, the Structure Tone team has continued to keep in touch with the fire department to ensure the station was just as they envisioned.

"The firefighters basically live there several days a week, so we asked them to keep track of what they think needs tweaking and we address it," says Page. "We did things the STO Way—whatever it takes to make the client happy, that's what we do." ◀

Back to Cover
Previous page

A floating staircase links the floors together



UPWARD BOUND: Avolon's Dublin HQ

While tourism, tech and pharmaceuticals are well-known drivers of the Irish economy, Ireland has steadily become a world leader in perhaps a less familiar sector: aircraft leasing. In fact, it's estimated that an Irish-leased aircraft takes off from a global runway every two seconds.

One of the firms leading that growth is Avolon. As their business has grown, Avolon's existing office space could no longer keep up, not only in physical capacity but also in matching the level of innovation and sophistication such a successful firm cultivates.

Structure Tone had helped the company fit-out its former space, so when the decision was made to make a move, Avolon again called on the Structure Tone Dublin team. The new, six-storey headquarters in a newly built commercial building features a central staircase that leads visitors from level 2 up through levels of offices and meeting spaces, culminating in two floors of executive suites, a café and a striking, double-height auditorium in the sky.

THE AUDITORIUM

Building the auditorium, says project director John Atkinson, was by far the most complicated part of the project. "To create the semicircle of a two-storey auditorium, we had to remove large parts of the existing slab and four reinforced structural concrete columns," he says. "When you're moving such key elements of a structure, what do you put in their place?"

That was the question facing the project team, who ultimately worked together to reinforce the structure, cut through the slab and continue building the auditorium in the following sequence:

1. Bolt and adhere steel spanner plates under levels 4 and 5 and on top of the level 5 slab to support structural openings for the stairs and compensate for the removed structures.
2. Begin cutting out the openings for the stairs, working from level 5 downwards.
3. Construct a platform over the opening to support back propping for the auditorium opening.
4. Install Macalloy beams and tension rods to the underside of the roof slab to replace the large portions of existing slab and four reinforced concrete columns that were to be removed to form the auditorium slab opening.
5. Hydraulically tension the Macalloy beams and tension rods.
6. Remove the two reinforced concrete columns at level 6 using a Brokk concrete breaker. The level of the underside of the roof slab was continually

monitored during demolition to check potential deflections. At the same time, a crash deck was installed to the underside of the level 6 slab.

7. Remove the level 6 slab by saw cutting and concrete breaking followed by two further columns on level 5.
8. Install a tiered steel frame within the opening for the auditorium to provide structural support for the perimeter of the new opening and a backbone for the tiered seating in the auditorium.
9. Form a concrete beam to the perimeter of the auditorium opening after further breaking back the edge concrete and tying into the existing reinforcement steel.
10. Begin installing the prefabricated stair sections on level 2, working up to level 5.

"The auditorium is a statement piece for the whole project," says Structure Tone project manager Tom O'Brien. "It was quite a complex system to build, but adding such a large, open space to the top of the building rather than the bottom is part of what makes this workplace so incredible."



The auditorium was a complex structural challenge

THE STAIRCASE

These supports, extended through each floor, also accommodated the "floating" staircase that unites the first four floors and carries through the auditorium's notion of looking skyward. Not only does the staircase float through each floor to create a visual connection among levels, but at level 2, a section of slab was replaced with a large pane of structural glass. This glass floor essentially allows visitors at the building's ground-floor reception desk to look upward through the Avolon space.

Installing the stairs also involved some construction ingenuity. To build the multistorey staircase within the limitations of the prepared openings, the stairs arrived in prefabricated subassemblies, which were spliced together on site. The team then completed the striking aesthetic of the stairs with the designed finishes, including glass balustrades, stone treads atop the concrete base and steel stringers clad in stressed rivetted steel pressings and soffits, which were plastered and painted.

"The design is very artistic and creates a dynamic feature for the space, all the way through to level 5," says Atkinson. "The complexity of the shape and the design led to some challenges with the finer finish details, but the client and design team were flexible and innovative in assisting this process."

Photo above: © Donald Murphy Photography

Project Details

- Size:** 80,000sf
- Client:** Avolon
- Architect:** MOLA
- Structural Engineer:** Bakkala Consulting Engineers
- A/V Consultant/Contractor:** Image Supply Systems
- Services Consultant:** Axis Engineering
- Client Cost Control Manager:** Scollard Doyle
- Fire Consultant:** Jeremy Gardner Associates
- Completion:** July 2018

THE TECHNOLOGY

Finally, an added challenge for the construction team was integrating the extremely sophisticated A/V features and components of the auditorium.

"The brief called for an auditorium space to be controlled through a simple interface with an audio system that was made especially for audience participation," says Brendan Nourse, sales director at Image Supply Systems, the A/V contractor for the project. "All A/V was integrated with the furniture to fit aesthetically within the space, with wire-



Above ▲ The office puts a premium on collaborative spaces

less microphones for presenters and push-to-talk button microphones at each seat."

The auditorium also features a 4.3m by 2.7m (14ft by 9ft) LED video wall to be used for all-staff or other large events and a sophisticated video conference system.

With the space complete, Atkinson says the initial reactions of Avolon employees certainly made the tough challenges of the job worth it.

"We're seeing people walking around the space with smiles on their faces, blown away with how it turned out," he says. "That's what gives us the most joy." ◀



Back to Cover



Previous page



Next page



Table of Contents



SAFETY 360°: Taking Construction Safety to the Next Level

By Keith Haselman, senior vice president, corporate safety

In the construction industry, there's a lot of talk about safety. Everyone agrees that safety comes first. But does it always? How often in our industry does safety take a backseat when a project team is stressed, hyper-focused on schedule, budget or other significant issues on the job?

To make sure that vigilant attention to safety always remains top of mind, we are kicking off a heightened, even more proactive approach to safety than ever before. Aiming to foster a 360-degree view of safety—physically and philosophically—"Safety 360°" is a behavior-based approach, with new-and-improved training, engagement and recognition to ensure the Structure Tone organization is at the leading edge of construction safety.

LAYING THE GROUNDWORK

LF Driscoll first developed and launched this initiative in 2016, envisioning a culture where safety is a passion rather than a requirement. While most construction management firms focus on standards and policies, Safety 360° targets behavior and, in fact, our company's culture. This behavior-based approach is designed to inspire our staff and the workforce to become safety champions through a few key focus areas:

- 1. Training.** In conjunction with mandatory, procedural training, Safety 360° promotes "safety coaching," which leverages the psychology behind creating a strong and enduring safety culture. Safety coaching motivates and empowers the workforce to take an active role in keeping every jobsite as safe as possible. It will dramatically reduce accidents, near misses and unsafe acts while making our workplaces the preferred places to work.
- 2. Awareness.** Safety 360° encourages every employee to be actively engaged in their environment by consistently taking inventory of what's happening above, below and next to them. All employees are encouraged to look out for their coworkers and speak up about potential issues, making everyone on a project site as invested in safety as our dedicated safety staff. With Safety 360°, everyone is empowered.
- 3. Positive reinforcement.** Safety 360° uses a recognition program to inspire project teams and employees at all levels to achieve the highest level of safety. Soliciting feedback, engaging the workforce, respecting opinions and coaching constructively are the core values of our behavioral approach to developing and sustaining a strong safety culture.

LASTING IMPACT

By launching Safety 360° organization-wide, Structure Tone is committed to creating a durable, positive safety culture throughout the organization. Our vision of the program will help reduce accidents, incidents, injuries, premiums and claims while improving overall project performance. The ultimate goal is, of course, to save lives and livelihoods. We believe the Structure Tone Safety 360° initiative will further strengthen our safety culture and make a true difference to our staff, to the workforce and to our clients—everybody, everywhere, every day. ◀



Pioneering Infection Control: Prefabricated Infection Control Panels

Containing dirt, dust and bacteria on any interior jobsite is crucial, but when working in an occupied healthcare facility, the stakes are even higher. After years of juggling the tight schedules and stringent protocols of active healthcare facilities, the Structure Tone organization's healthcare experts set out to find a more efficient way to handle infection control requirements.



Above ▲

Typical ICRA barriers involve construction studs and walls, which can add time to the project schedule

In the world of healthcare, service is around-the-clock, and the facilities need to keep up. For most healthcare organizations, shutting down an entire hospital wing to accommodate construction is simply not an option. So, when a large healthcare network in NYC approached Structure Tone to convert their patient rooms into more intimate treatment suites—as quickly as possible and without interfering with services—the team knew it was time to explore some new infection control options.

Given the time and disruption of building, taping, spackling and painting typical sheetrock partitions, the conventional approach to installing critical barriers was out of the question. "We knew we had to look elsewhere for ideas," says Joseph Chin, Structure Tone/LF Driscoll Healthcare senior vice president. "We did some research and found a vendor that provided a prefabricated panel system that could be assembled in just three hours and didn't require all the steps involved with standard partitions."

Even better, the prefabricated panels could be removed and reassembled at the next location just as quickly—and then reused on subsequent projects. "There is virtually no waste generated from using this kind of system," says Chin. "That's a big difference from conventional sheetrock, which has to be demolished and carted away as waste."

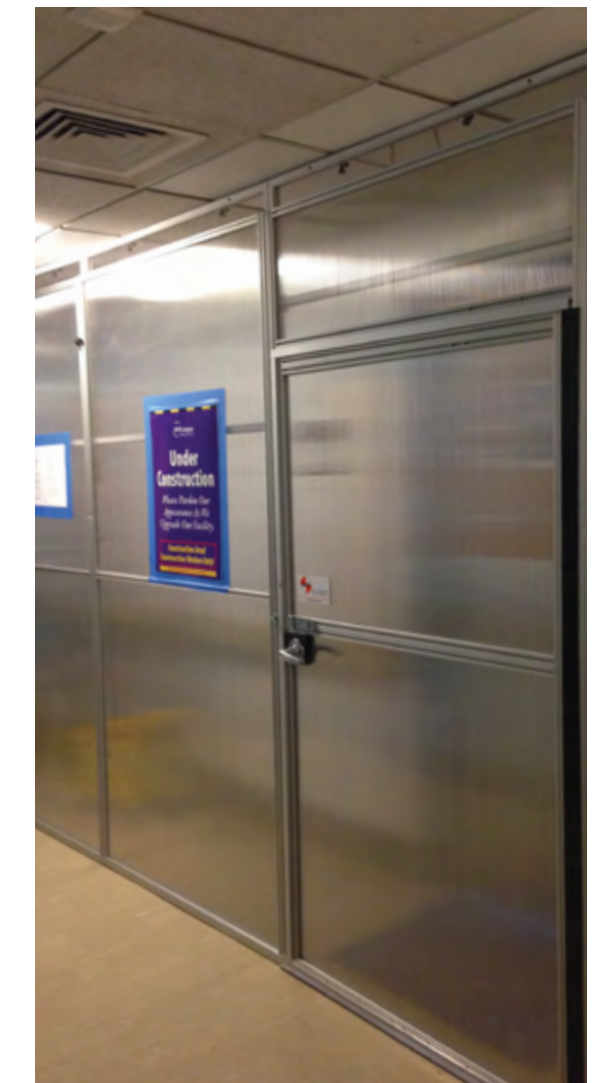
Though the innovative new system does come with a steeper upfront cost, says Chin, it's well worth the investment.

"With the labor savings, ability to reuse the materials and minimal waste byproducts, at the end of the day, this is a more cost-effective product and application."

The hospital and Structure Tone were so happy with the prefabricated solution, they shared the product and its specifications with other health-

care systems facing similar set-up and scheduling issues. More suppliers have since launched prefab systems as well, providing even more options and flexibility. As a result, several healthcare organizations have adopted the prefabricated panel system as the new standard for infection control in occupied healthcare facilities.

"We're thrilled that this idea was useful from the construction perspective," says Chin. "But most importantly, we're glad the system ultimately benefits the healthcare facilities and their patients." ◀



Above ▲

Prefabricated panels take only a few hours to install, produce virtually no waste and can be reused



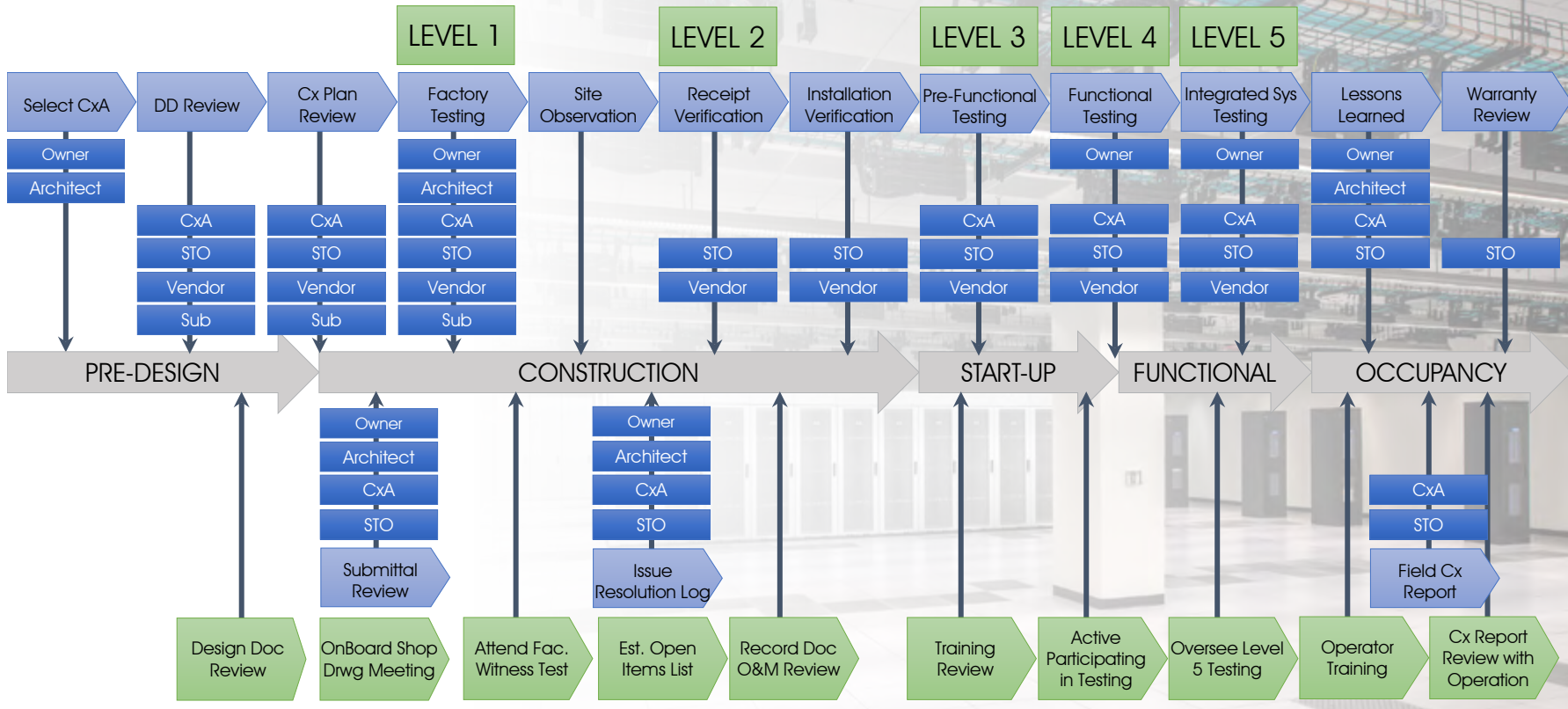
The Importance of Commissioning

By Ed Zemaitis, Mission Critical account executive

In the world of design and construction, “commissioning” can be a bit nebulous. Some people confuse it with quality assurance or control—and it is partly that. But commissioning is also validating the design to ensure what was built was installed correctly and operates properly. It’s also not the same for every situation. For instance, commissioning the systems of a building built to achieve LEED certification differs drastically from commissioning employed for a high-level data center. But in every case, it’s an important element of the design.



PROJECT DELIVERABLES



Above ▲
A full commissioning process begins at the earliest stages and includes all project key stakeholders

WHAT EXACTLY IS IT THEN?

In a nut shell, commissioning is a process to verify that the design and function of a facility meets the owner’s expectations and requirements. Commissioning is an absolute requirement in many sectors. In healthcare, the commissioning process ensures that critical systems like air quality, life safety generators or medical equipment function as designed. In pharmaceutical or manufacturing facilities, commissioning could target the MEP and air handling systems of a laboratory or the entire processing line of a factory.

In the mission critical sector, commissioning is essential. It spans the entire timeline of construction, from kick-off through to turn over. At Structure Tone, our process for commissioning a data center typically includes these steps:

- Level 1. Factory witness testing** to ensure the equipment ordered for the project meets all the proper specifications.
- Level 2. On-site verification** of equipment when it’s delivered to make sure there is no damage.
- Level 3. Quality control/vendor start-up** to not only ensure the systems were built and installed well, but that they function properly when up and running.
- Level 4. Component testing** of each component of every installed system to ensure they meet the design criteria established by the design team.
- Level 5. “Integrated system testing,”** or IST, which involves essentially “pulling the plug” on electrical service to test the system and its components’ response to failure.

In other words, rather than test a component or system at the end of a project, we test them all at each stage and, ultimately, take that testing a step further by forcing failure and assessing the effects so we can adjust the systems to be even stronger.

IT TAKES A VILLAGE

Given the comprehensive nature of this approach, it takes more than the contractor or the engineer alone to conduct proper commissioning. The entire project team plays a role:

- ◆ **Commissioning agent** – If a client is serious about commissioning, they may want to hire a commissioning agent. This expert writes the step-by-step plan for testing and validation of all the building systems and conducts the tests when the time comes.

Photos right page: Kevin Bowers

- ◆ **Electrical engineer** – The engineer has, of course, designed a system for the building that should include overcurrent protection, safety protections, etc. Some owners allow the engineer to handle the commissioning of their own systems, but it’s generally advised to get the unbiased input of a third-party specialist.
- ◆ **Mechanical engineer** – Similar to the electrical engineer, the mechanical engineer defines the sequence of operations of the system, the controls and other factors. Their input is critical to how the commissioning process moves forward, particularly if a problem arises.
- ◆ **Owner** – The owner has a role, too. They are the ultimate end users, so if any issue does arise during the commissioning process, owners may need to step in and make decisions on how the team should move forward.
- ◆ **Construction manager** – In an ideal world, the CM is involved in the commissioning process right from the start and functions, essentially, as the quarterback. The CM is intimately familiar with the design, responsible for the subcontractors and facilitating progress every step of the way. And if the commissioning process uncovers an issue—the CM is there to resolve it.

In a mission critical facility, that kind of comprehensive involvement—and rigorous testing—is necessary. Failure is necessary. Because when a data center goes live, the owner and their clients must be 100% certain they can rely on the facility to protect their data no matter the circumstances. Commissioning provides that confidence, for the project team, the owner and the many users who trust in that security.

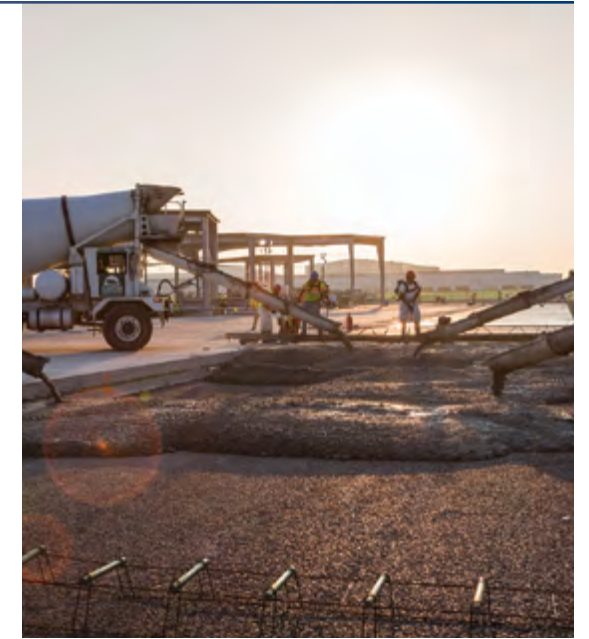
Based in Chicago, Ed Zemaitis is a Mission Critical account executive across the Structure Tone organization. ◀

Below ▼
Commissioning helps ensure critical building systems perform as expected



PAVING THE WAY

Newark Liberty International Airport is in the midst of a major endeavor. Terminal One, the new terminal under development is, in fact, the largest design-build effort in New Jersey's history, according to the Port Authority. The scale of the project has meant relocating some airport facilities to make room—including a major shipping and delivery company's New York/New Jersey distribution hub.



Above ▲ A fleet of 40 concrete trucks was hired to help meet the pour schedule

Above ▲ Given the hot summer days, pours were limited to early mornings

On its new 18-acre site on the airport campus, the company's Newark distribution gateway will ultimately house a new 48,000sf distribution building, including loading docks, sorting and distribution facilities, office space and the associated MEP and security systems to support them. The rest of the site is dedicated to parking, fueling, transporting and otherwise accommodating the company's air fleet that serves the Newark airport—which can't take days off without jeopardizing delivery commitments.

Time was of the essence, which is why the company called on Structure Tone to help.

"We had built some complex projects for them before, and they knew this project would be another challenge," says Jorge Gaspar, Structure Tone account executive. "The Port Authority review process alone typically requires a great deal of time that this project just didn't have."

SUNDAY, SUNDAY, SUNDAY

The team had to start by focusing on the aircraft facilities. To accommodate their load and schedule, the airfield needed to add 23,000yd³ of 18in-thick concrete—and fast. After the proper underground work was completed (more on that below), Structure Tone turned its attention to coordinating the epic pour.

The team hired a fleet of 40 concrete trucks aiming to pour 200yd³ an hour every Sunday morning for six weeks, with some Saturday pours. Although 500 to 700yd³ of concrete were being poured on weekdays, Sunday was designated pour day for several reasons. "Sunday meant less traffic around the airport and no other customers that the concrete plant had to service," Gaspar says. "We paid a premium for that service, but the entire plant and fleet were dedicated just to this project, so we could get aggressive and place a high volume on these pour days."

Crews arrived at 3:30am and typically poured for five or so hours, culminating in roughly 1,200yd³ a day and avoiding the limitations of the afternoon heat. Crews could then spend the rest of the time leveling, sealing and cutting the new slabs.

"The process itself isn't unique but the scale is just so large," says Gaspar. "It's very different from the kind of concrete pour we typically experience on building projects."

Project Numbers

- 50,000yd³ of historic fill removed
- 23,000yd³ of concrete poured in total
- 1,000yd³ of concrete poured a day
- 18in thickness of concrete
- 2in thickness of aggregate

CHALLENGE ACCEPTED

Managing such a monumental effort was just one of the project's complexities, however. Before the team could even begin pouring concrete, they first had to work through a number of other challenges.

Soil. Newark Airport was built on a marsh, meaning the fill is a bit undefined and unstable. So, anything built on airport land must be built on piles. The Structure Tone team managed the safe removal of over 50,000yd³ of historic fill with unknown contents to make sure the new facilities could be built on a solid foundation.

Underground infrastructure. Airports require specialized drainage systems for stormwater collection and detention systems, as well as the glycol used to clean and deice planes. With a history of varied facilities and uses, the airport grounds had a significant network of existing underground systems, much of which are no longer in use. As the project team began planning the new infrastructure, they discovered undocumented but active utilities that are critical to airport operations, requiring quick work to redesign or relocate what they could. With

no time to fully remove all the old piping systems, the team instead designed the new system around them so the project could continue on course.

Security. Understandably, any work at an airport requires intense security measures. To meet those requirements, the team installed temporary barriers made of 1,400ft of jersey barriers with chain link fencing and barbed wire at the top. The barriers had to be approved by the Port Authority and the TSA, and all construction crew members and project team employees had to be escorted by security to the fenced-in area.

Approvals. With so many agencies and regulations involved with airports, pursuing and obtaining approvals was a constant challenge. Construction was more or less halted for nearly eight months while the client, architect and project team worked through the review and approval process with the various agencies.

Given those delays, the Structure Tone team worked with the client to expedite certain elements of the project so they could resume some operations as soon as possible. "We reconfigured the schedule so we'd have things ready enough to service planes and unload trucks while the full building was still under construction," says Gaspar. "We also fit-out some existing Port Authority buildings for the client to use as temporary office space."

When it's fully complete and operational, trucks will be able to unload at the building, where automated equipment will sort packages into containers for the appropriate aircraft. Administrative staff will also have over 15,500sf of office space.

"Maintaining this tight schedule and abiding by the processes and security required by a major airport have made this project complex," says Gaspar. "But our team embraced the challenge and certainly impressed Port Authority regulatory authorities. It's been exciting to work with the client to get them up and running and watch their modern, new facility come to life." ◀

HOVER OVER THIS PAGE WITH THE **STO Insights** APP FOR MORE!

All photos these pages © John Baez/Building Images Photography



BUILDING TOGETHER:

Q&A with Linda Foggie of Wells Fargo

A seasoned architect, mentor and design and construction lead, Linda Foggie, is the vice president of project management for Wells Fargo's Northeast markets. Structure Tone is working with Foggie and her team to build Wells Fargo's 500,000sf New York headquarters at 30 Hudson Yards. The bank will occupy nine floors of the building, two of which will be state-of-the-art trading floors. Here, Foggie shares her experience working on what she calls a "once-in-a-lifetime" project.

Q: What has it been like working in the middle of such a hub of construction activity?

Working in Hudson Yards does not come without its challenges. There are a lot of factors to think about when building a new building out of the ground anywhere in Manhattan, but the truly challenging aspect of this project is working around the activities of the other towers and tenants. With several construction companies and contractors onsite at once, the jobsite gets extremely congested. For instance, things like getting manpower up to our floors hasn't been easy, especially at the very beginning of the project. When you start a brand new building, the elevators don't work right away, which is why there are the hoist cars on the side of the building. But when there are three companies building out their space and a thousand laborers that need to get up the building between 6:00 and 7:00am, sometimes you can lose time just trying to get your manpower moved up and down the building.

Q: How do you manage all the moving parts?

I'm really fortunate to be working with an esteemed team of professionals. Having talented and knowledgeable people around you really goes a long way in managing such a complex job. Understanding who your folks are, what their expertise is and finding ways to let them unleash their strength is really the key to managing across multiple disciplines.

Q: How does working on this project compare to others you've managed?

While I've worked on some really fascinating projects in my career, there's nothing that compares to this project. We're building a skyscraper out of the ground in the middle of Manhattan. Besides the complexities of working on our fit-out at the same time as the core-and-shell of the building is being built, this project holds such

importance for the city and all the talented team members who get to help build it. This project is so unique, I may even dare to call it a once-in-a-lifetime opportunity.

Q: What is the status of the project right now?

Design was fully completed and construction documents were issued in early 2018. At this point, we're well into construction both on the trading floors and the office floors. Studs are in, drywall is going up and painting will begin soon. Our project should wrap up in the middle of April.

Q: What are you most excited about for the new office?

I'm really excited about the amazing views. From the southwest corner of the building, you can see clear across to the Statue of Liberty and Jersey City. It will be an amazing backdrop to do our work every day. I'm also excited for the new ways of working that we're creating. We're implementing the 120-degree desk, a new type of workstation that will help the space feel brighter, more open and encourage collaboration. We've also incorporated spaces for people that might need to do focus work. We really tried to design the space around the types of activities people might naturally engage in across the course of their day.

Q: What do you like most about your job?

Every single day when I come to work, there's a new challenge to be solved. No two days are ever alike, and that thrills me. It's very exciting! What I love about my particular position is having the opportunity to help others learn, grow and gain new experiences. I enjoy when someone leaves my team with more knowledge and abilities than they had when they joined it.

Q: What has your experience with Structure Tone been like?

My experience with Structure Tone on this project has been wonderful. They're a very talented and organized team, but what I enjoy most about working together is—like me—they allow the individuals to work in their strength zones. The team members do what they love and they're really good at it. It's been a really rock-solid team from the start.



Above ▲
Linda Foggie
vice president of project management
for Wells Fargo's Northeast markets



All photos these pages: ©John Bae/Building Images Photography



Challenge Accepted: BCG Philadelphia

What do you do when you're tasked with renovating 52,000sf of high-end office space—while employees continue working in it? Communicate. A lot.

Project Details

Size:
56,000sf

Client:
Boston Consulting Group

Architect:
Aref & Associates

Engineer:
Bala Consulting Engineers

Owner's Rep:
Gardiner & Theobald, Inc

Services:
Construction Management

Completion:
September 2018

So says Vincent Sarnatora, Structure Tone project manager who led the recent expansion of Boston Consulting Group's Philadelphia offices from one floor to two. The project involved completely renovating the 40th floor of the existing building, re-configuring and updating the 41st and cutting in a grand floating staircase to link the two.

"The staircase was the most challenging phase," Sarnatora says. "We were in constant communication with the client and met on a weekly, sometimes daily, basis to make sure we were meeting their employees' needs."

To help mitigate the noise and the dust, the team built four-layer-thick, temporary sheetrock barricades around the work area and did their best to leave the staircase work to off hours, like early mornings and weekends.

COMMUNICATION AND COORDINATION

Aside from trying to keep the impact to a minimum, the project team was managing a few construction challenges with the staircase as well. The design of the staircase was complex, with a variety of materials and finishes. Once again, communication was the name of the game.

"For the staircase, we had to make sure everything coordinated together, from the glass railings, to the stone treads, to the wood cladding," says Sarnatora. "We met with the architect constantly."

The columns supporting the open area around the staircase also took some construction ingenuity. The columns are wrapped from top to bottom in an elegant stone shipped in from Italy, which required a fairly long lead time. Sarnatora and his team shifted the schedule to keep things moving while they awaited the stone, in some cases finishing certain elements and then covering them with protection as construction continued.

The designers also wanted each column to use the fewest number of stone panels as possible—which meant each panel was extremely large and heavy.

"We had very little space to install the stone between the staircase and the columns themselves," says Sarnatora. "We built scaffolding over the staircase just to be able to lift and place them."

TECH SAVVY

As a global company, BCG is incredibly advanced when it comes to using technology to communicate. The firm's offices are highly "connected," from internal networks to sophisticated video conferencing systems to communicate with their clients and each other. The Philadelphia office was no

different, including screens throughout the space and complex A/V systems in every meeting area, including the central amenity space.

Even the living wall adorning the amenity area was controlled through a central computer system, meaning the various irrigation, lighting and plumbing systems associated with that feature had to be closely coordinated and connected to the overall office A/V system.

"Coordinating and roughing in the locations of so many different technology elements was tricky," Sarnatora says. "But the A/V contractor was excellent and made it easy for us."

After 30 weeks of construction, BCG held an official ribbon-cutting celebration in September 2018, showing off the completely refurbished lobby, meeting areas, amenity space and, of course, feature staircase, complete with a Zen garden at the bottom. The Structure Tone project team was invited to the event and were able to witness the pride and excitement of the staff first-hand.

"This was a challenging project, for sure," says Sarnatora. "But to see our client hosting a grand opening and celebrating their beautiful new space made it all the more rewarding." ◀

Aref & Associates, Design Firm; Paul Bleiberg, Photographer



Back to Cover



Previous page



Next page



Table of Contents



Project Details

Size:
135,000sf

Client:
UC Funds

Architect:
Jonathan Nehmer & Associates

Engineer:
Stantec

Owner's Rep:
Urigo Hotels & Resorts

Services:
Construction Management

Sector:
Hospitality

Completion:
November 2018

RESURRECTED: Residence Inn by Marriott Stamford Downtown

Located in the heart of downtown Stamford, Connecticut, the Residence Inn by Marriott was expected to give the downtown an extra boost as a hub for visitors. But when the original developer went bankrupt and work abruptly stopped, the site remained dormant for three years.

It was then that new owners revived the project and hired Pavarini North East to lead construction. "Our job was to develop a construction strategy to bring this high-profile structure back to life," says Pavarini North East regional vice president, Michael Melanophy. "With the logistics of working next to the Palace Theatre and in such a prominent part of the city along Atlantic Street, we were proud and excited to be involved."

UNANSWERED QUESTIONS

The three-year pause in the project, however, had left a few unanswered questions for the team. It was unclear which elements of the design had or had not yet been implemented, meaning the team had to work very closely with the original partners to essentially conduct a full forensic review.

"We had an intense review phase to establish a baseline," says Pavarini estimating manager Tom Patterson. "We brought the original MEP subcontractor back on board, which helped verify which systems had or hadn't been put in place, and partnered with the design team to evaluate the work that needed to be done to move forward."

Once construction began again, the plan was to continue building around what was already there rather than demo and start over. The team was vigilant about constantly surveying the existing conditions to plan around any surprises they might find along the way.

"We expedited buyouts where we could and tried to be proactive in identifying issues from the beginning rather than having to work around unexpected challenges," says Michael Krantz, Pavarini core and shell superintendent.



Above ▲
The Residence Inn is the first extended-stay hotel in Stamford

The project's design also incorporated prefabricated bathroom pods—which had been ordered during original construction and were sitting on the site, waiting for the project to come back to life. With those nearly complete bathroom units ready to go across all 156 rooms, the team was able to efficiently build in the bathrooms and related systems, saving time on the schedule.

RELATIONSHIP FACTOR

Another factor that influenced the project's success was the involvement of the new owners. For example, the Pavarini team got their input right away on the furniture, fixtures and equipment (FF&E) to make sure that aspect of the work came together smoothly.

"We tried to get a jump on those deliveries and how the existing field conditions might affect them," says Eileen McCarthy, Pavarini interior room manager. "That really made a difference to ensuring the FF&E program was delivered seamlessly."

The owner's direct, hands-on involvement from the beginning was, in fact, essential to pulling the pieces of the puzzle together.

"If they hadn't been so involved, this job would not be done yet," says Stephen Salvatore, project manager for Pavarini. "This project really taught me how important the relationship is between us and the owner. It's the most important factor in solving problems."

Now open, the 156-room Residence Inn by Marriott is Stamford's first extended-stay hotel. The new, high-end facility features suite-style rooms with full kitchenettes and amenities like a fitness center, business center and meeting spaces. And the guests now staying there see no signs of the half-built structure that once stood in its place.

"For a project that was once idle, it's exciting to see it up and running," says Salvatore. "Now a guest can check in and simply enjoy their nice place to stay, and the community has another jewel in the heart of downtown. That's the outcome we strive for." ▲



Above ▲
The high-end hotel is located in the heart of downtown

All photos these pages: ©John Beer/Building Images Photography

GIVING BACK: Make-A-Wish's Real Estate Council



The team helped give Romeo a space of his own to hang out

From meeting A-list celebrities to driving on a real NASCAR racetrack, Make-A-Wish has proven they can make even the most fantastic wishes come true for children with life-threatening illnesses. But without guidance from construction experts in the area, simple construction requests were a major struggle for the Make-A-Wish Metro New York chapter.



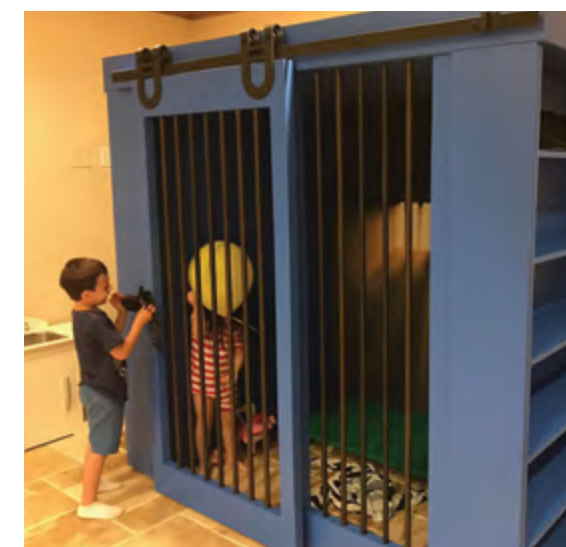
Above ▲
From Left: Evan Meyers-Kamco, Brian Donaghy (Make-A-Wish Real Estate Council Member), Dan Finnegan-Structure Tone (MAW Real Estate Council Member), Perry Fine-Ronen Fund, Chris Mee-Gibson Dunn (MAW Real Estate Council Member), Marc Freud-Troutbrook Company (MAW Real Estate Council Member)

Between filing a building permit, understanding an architect's drawings and coordinating subcontractors, the construction process is complicated, especially when it's unfamiliar territory. The Metro New York Make-A-Wish team said it was often easier for them to send a child to China than to renovate a bedroom! Luckily, Structure Tone recognized Make-A-Wish's need as an opportunity to bring the AEC community together for a worthy cause.

Knowing Make-A-Wish needed help in Structure Tone's area of expertise inspired Dan Finnegan and colleagues Brett Phillips and Brian Donaghy to organize the Make-A-Wish Real Estate Council, a group of diverse industry partners committed to granting construction-related wishes in the New York area. "We're all involved in lots of charities, but it's not often we get to help by doing what we do every day," says Finnegan. "We knew we could make a real difference here."

In the last three years, the Real Estate Council has added seven new members and collectively granted a dozen wishes. As the only construction firm in the group, Structure Tone has been involved with eight of them, the most recent being a full kitchen renovation for a family that loves cooking together but couldn't afford to finish their home remodel.

Since it began, the council's role within Make-A-Wish has transitioned from granting the wishes Make-A-Wish sends their way to helping the NYC chapter expand their reach throughout the city. At one of their quarterly meetings, Make-A-Wish explained the main reason it takes months to grant a child's wish is there aren't enough volunteers to handle the volume of wishes they re-



Above ▲
Sebastian loves to pretend he's a police officer in his new "police station"

ceive, especially in outer boroughs like the Bronx and Brooklyn. "We would get a wish request and then find out that the child made this request last year," says Finnegan.

To help fill this gap in volunteers, Structure Tone hosted a wish volunteer training session in its New

York office. Trainees from across the AEC industry were taught how to meet with wish families, record the necessary information and act as wish facilitators. Finnegan, who became a wish volunteer himself, said the training was so successful that Structure Tone is already planning the next one. To continue to leverage that growing interest, the Real Estate Council also hosts an annual holiday fundraising event that has grown exponentially each year. Last November, the event raised over \$170,000 for Make-A-Wish Metro New York.

Whether it's transforming a basement into a movie theater, hosting training sessions or raising funds, the Real Estate Council plays a crucial role in giving sick children a bit of joy.

"For a sick child, it's the simplest pleasures that take their minds away from their illness," says Finnegan. "It's a really humbling experience to be part of." ◀



Above ▲
Ben enjoys the outdoors from his custom-built swing



Back to Cover



Previous page



Next page



Table of Contents



TILT-UP CONSTRUCTION: Why, Where, How

The construction industry has been evolving faster than ever since the advent of mobile technologies, 3D modeling and other developments. And while these innovations are certainly helping construction firms build smarter and faster, in some instances, a tried-and-true solution is still the best approach.

In many parts of the country, that proven approach for new buildings is tilt-up construction. Going back to the “barn raisings” of rural America, tilt-up is essentially just what it sounds like: the walls of a structure are built on the ground and then raised (or tilted) up into place. Today, the lifting is done by cranes with a sophisticated system of footings, forms, braces and other elements to efficiently and safely put the walls in place.

HOW DOES IT WORK?

While the tilt-up technique has been honed over the years, the core of the effort remains the same through these general phases:

1. Planning. Before any construction begins, the project team works through the best layout and approach for the tilt-up process. While

the team can (and often does) use 3D tools for this planning, one of the most effective methods is to use what’s called the “paper doll” technique. In this approach to planning, the team prints the digital drawings of the building footprint and site to scale along with the elevations of the wall panels themselves. Then they manually cut out the wall panels like paper dolls and place them around the site, discussing which approaches make the most sense within the site’s circumstances, schedule and other factors.

“I’ve done this using 3D tools, but when we have our initial meetings with the owner and the full team, we stick with the paper dolls,” says Structure Tone Southwest (STSW) senior project manager Blake Evans. “It’s easier for everyone to understand what they are looking at and manipulate the model themselves.”

2. Prep work. Before any panels are formed, the support infrastructure must be put into place. During the design and planning phases, the team identifies where the panels will be formed and laid, which includes locating the positions of all the associated footings and supports.

Once those locations have been determined, the team installs the “deadmen,” or the concrete blocks in the ground that brace off the bottom edge of each panel as it’s erected. The temporary steel braces that support each panel throughout construction are also put into

Photo top left: Pixellhawk/SLC

their positions. As needed, piers or caissons are installed underground during these early phases to further support the panels.

3. Panel formation. Tilt-up panels are typically constructed of concrete and rebar and formed horizontally, on the ground. “Depending on the design, the team will put down the exterior base and any reveal, inset brick or design features first, then install the rebar and pour the concrete to form the walls around them.”

4. Lift off! Once the panels are set, a crane will lift each into place and connect its supports, according to the progression identified in the planning stages. As each panel is erected, the crew hooks a steel brace into the panel and into the deadman. The panel is then welded at the bottom and left in place while construction continues.

“Once those braces are up and the panel is in place, how long the braces remain depends on the job and the engineer’s design,” says Evans. “On many jobs, it’s typically after the slab has been poured for a few floors.”

WHY USE TILT-UP?

Tilt-up is a great fit for particular types of projects and site conditions but not others, which is why you don’t see the technique used in all parts of the country. A number of factors affect its usefulness:

- ◆ **Site constraints and topography.** In greenfield development or more suburban or rural areas, the abundant space available gives the construction team plenty of room to form and lay out the panels. But for the tight sites of more urban areas, tilt-up would be tricky to negotiate. The topography also plays a role. “If it’s hilly, this won’t really work,” says Mike Toole, STSW senior superintendent. “Areas like Texas have flatter geography and steadier temperatures so it’s almost the standard approach here.”
- ◆ **Climate.** Colder climates need more insulation in the walls, meaning it takes longer to form each layer of the wall panels. Again, in warmer climates like Texas, the walls can be formed and erected in just a matter of days.
- ◆ **Building size and design.** Limited height and simple designs are best for this approach, says Evans. “The size of a building plays a lot

into it,” he says. “If the building is two to five stories with pretty straight planes, tilt-up is a great approach.”

BREAKING RECORDS

The STSW team regularly leads tilt-up projects and is, in fact, currently working on one of the largest in the world. According to the Tilt-Up Concrete Association, the new commercial office building at 3201 Olympus Boulevard near Dallas features the tallest panels in Texas tilt-up history and the fourth tallest in the world. The panels for the 250,000sf, 5-story building have been erected, and the team is now progressing with the steel, pouring the floors and installing the MEP infrastructure.

“Twenty years ago you didn’t use tilt-up for a building taller than three stories,” says Evans. “But now with more innovative engineering, the technique has been honed to take buildings to new heights, quite literally.” ◀



Back to Cover



Previous page



Next page



Table of Contents

BEHIND THE CURTAIN: Building Villanova's Performing Arts Center

Villanova University is in the midst of a major capital campaign that will, as the university puts it, "ignite change" on campus. A central focus of the campaign is to redevelop the southern area of campus along Lancaster Avenue. The former surface parking lot will eventually boast student housing, retail, dining and a Performing Arts Center (PAC)—the crown jewel of the development. The PAC will include two theaters, classrooms, a dance studio and costume and scenery shops.



HOVER OVER THIS PAGE WITH THE **STO INSIGHTS** APP FOR MORE!



Above ▲

Villanova's Performing Arts Center will offer two theaters, a dance studio, classrooms and other support spaces

But while every construction project has special features and challenges, building a theater comes with some unique circumstances.

"There are so many different engineering processes, and nothing is the same in one area as another," says Jack Garrett, LF Driscoll senior superintendent. "It's not necessarily harder to build than other types of buildings, but it's definitely different."

UNOBSTRUCTED VIEWS

Perhaps the most obvious difference is the shape of a theater. The Performing Arts Center's main theater is "proscenium-style"—the traditional arrangement of a stage separated from the audience by a picture-frame-like opening. Building the other side of the proscenium (aka the "house") involves a sequence of thin, cantilevered sections across several stories and layers of seating. It's not your typical four-walled box.

Building this type of space, says Garrett, is further complicated by the relationship of each component to the next. "The biggest challenge in building theaters is that construction phases can very seldom happen simultaneously," he says. "Because one step relies so heavily on another, we have to follow a very tight, linear plan rather than work on several components at once."

Part of that plan involves building the complex infrastructure to support an unobscured view for



Above ▲

The project's topping out ceremony was held last October

the audience. Rather than rely on columns, the structural load is transferred to a large steel beam. And "large" is an understatement. Coming in at 68ft in length and 12 tons in weight, the massive girders, the first of which was placed in the proscenium theater last summer, required LF Driscoll to carefully plan everything from the beam's transportation to lifting it into place.

"Because it's such a large load, we had to work through several state and local authorities to even get the beam to the site," Garrett says. "Once here, it was too big to lay down within the project site. So we had to work with the university to shut down a lane of traffic so we could place it there."

Communicating those logistics on the day of the beam placement meant having nearly all hands on deck:

- ◆ **Construction site manager:** This person announces to the entire site that the lift is beginning so people steer clear of the area.
- ◆ **Crane operator:** The crane lifts the girder from the ground to its place in the structure.
- ◆ **Steel erector foreman and ground crew:** The foreman oversees the operations, while two crew members rig it for lifting off the trailer to the ground. Two more re-rig it for lifting from the ground to the building.

- ◆ **Steel erector's raising gang:** A crew member works from a boom lift on each side of the beam location to help guide it as it's lowered into place.

"Once the beam is in place, the crew can begin welding, bolting and all the remaining steps," says Garrett.

SIGHTS AND SOUNDS

With the girder in place, the next steps of construction could continue, which have also required some special considerations. For example, the center will have its own scene shop, a two-story space with a loading dock, crane and special equipment for creating the impressive scenery used for productions. Once the scenery is built, it must get from the shop to the stage, meaning the building's corridors and passageways need to be tall and wide enough to accommodate them.

Sound and lighting are other major factors for the building. The theaters and other performance spaces are designed for specific acoustic controls, including sound-proof windows, sound-absorbing floors and wall panels, risers and other features. And while building construction continues, the team has had to be very cognizant of maintaining the space and access for lighting and A/V systems when the time to install them comes.

"The building is full of electrical and A/V wiring, so we are always thinking about where that wiring will go," Garrett says. "In very technical areas, we're installing large conduit so the wire can be pulled through later as needed."

All photos these pages: Michael Verzele, Courtesy Structure Tone

"THE GOOD STUFF"

The university and the project team celebrated the Performing Arts Center's topping out last October and are now working on precast installation, roofing and preliminary interior work such as installing staircases, block walls and overhead rough-in of the MEP services. Despite some of the challenges so far in building such a unique facility, Garrett says the "real" work is only just beginning.

"Next comes all the details of truly making this into a performance center," he says. "That is when things can get more complex, but it's also the most rewarding. There is a lot of energy on campus about this building. That's the good stuff." ◀



Above ▲

Each beam weighs 12 tons and is 68 feet in length

Project Details

- Size:** 84,000sf
- Client:** Villanova University
- Architect:** Voith & Mactavish Architects/
Robert A.M. Stern Architects
- MEP Engineer:** Bala Engineering
- Structural Engineer:** O'Donnell & Naccarato
- Civil Engineer:** Nave Newell, Inc.
- Lighting Consultants:** O'Donohoe & Rose Lighting
- Acoustic & A/V Consultants:** Marshall/KMK Acoustics
- Services:** Construction Management
- Sector:** Education
- Completion:** Early 2020



Back to Cover



Previous page



Next page



Table of Contents



Phasing move-in for each floor was one of the biggest project challenges

IT'S ALL ABOUT THE PLAN: Capital One Toronto

For some projects, the challenges that pop up in the field can be the biggest hurdles. For others, the real problem-solving comes before construction begins.

When Capital One wanted to consolidate its Toronto offices under one roof, the biggest challenge was time. They had just under a year to get through the design and construction of 120,000sf over 5 storeys AND move their staff from the old space to the new.

"It was a very tight timeframe," says Hany Younan, project manager for Govan Brown, who Capital One hired to lead construction. "They also had a fairly firm budget, so those two factors really drove the project."

FROM THE START...

To meet that challenge, the Govan Brown team focused on the elements of the project they could control—and how to make those as efficient as possible. To start, the team got involved early with the design team to work through five months of preconstruction, during which they fine-tuned

the budget and value-engineered some of the higher-end features.

One of the easier decisions came with the furniture. Because the new offices were designed to maintain the aesthetic of their existing offices, Capital One agreed that they could reuse much of their furniture in the new space—which would be a big time and money-saver.

"That became more of a phasing challenge," Younan says. "Capital One had to purchase one floor's worth of new furniture so staff could move into that new floor while we moved their former furniture into the next phase. Govan Brown helped the client come up with a phasing plan that would best accommodate the move with the least interruption to Capital One's internal operations."

...TO THE FINISH

Phasing was, in fact, the operative word for the

entire project. First, each floor's technology infrastructure had to be ready well ahead of move-in. That meant not only building out the MDF and IDF rooms and installing all the racks, UPS equipment, security panels, etc., but also having them properly commissioned. Capital One hired a third-party commissioning agent to handle the commissioning, and Govan Brown developed a schedule and list of tasks to help keep the entire team on track.

"Commissioning like this is very detailed and can often take weeks," says Younan. "We developed the schedule task by task to make sure everything was documented and ready for testing. What they predicted would take two weeks was done in three days."



Above ▲
The new offices consolidate Capital One's Toronto-area employees into one five-storey hub



Above ▲
Furniture from the former office is mixed in with custom-made pieces, like these collaboration booths

Project Details

Size:
120,000sf

Client:
Capital One

Architect:
IBI Group

Engineer:
The HIDI Group

Owner's Rep:
JLL

Services:
Preconstruction, Construction Management

Sector:
Commercial

Completion:
June 2018

Phasing the move itself was also a major focus for the team. The new space occupies the 16th through 20th floors of 161 Bay Street, an active office tower in the heart of downtown. The first move-in was targeted for the end of May. Since construction did not begin in earnest until mid-December of 2017, the team had a tight window for phasing the turnover of each subsequent floor, leaving just two weeks between each phase. But with a carefully prepared plan, the team made it work.

"We had to make a few tweaks to the schedule as things moved along, but from day one of construction we didn't really need to adjust the schedule too much," says Younan. "All that preparation really paid off."

In fact, the new space is targeting LEED Silver, and the team's early organization made closing out that process much easier than usual too. "We came up with a plan where we provided all the waste bins to track materials," Younan says. "Crews could just drop everything in the bins and our vendor would sort it off site." With that plan in place, Govan Brown avoided the usual need to chase down each subcontractor to find out what they tracked—and then sort through the various ways each sub tracks that information. "In the end it only took two months after the job was finished to fully close it out," says Younan.

From the preconstruction right through to close-out, Younan says preparation, teamwork and having the proper resources to manage each task made all the difference—and a beautiful end result. ◀



HISTORIC TRANSFORMATION: Twenty St. James's Street

London's St. James's Street has long been a desirable address, home to aristocrats, dignitaries and cultural institutions for centuries. With its rich history, however, the street's buildings don't quite have the same repositioning opportunities as those in other areas of Central London. Historic conservation codes restrict building heights, materials and other features to keep new construction in line with the neighbourhood's special character.

The historic façade now houses high-end, modern work spaces



Above ▲

The new reception features a striking, 54-foot-long art installation

But over the last two years, investment trust WELPUT and its advisors, Grafton Advisors, have transformed Twenty St. James's Street, preserving its history while updating its features and functionality as a 54,925sf modern-day commercial office building.

This refurbishment entailed more than a few simple upgrades, however. The space needed a major reconstruction to meet the needs and expectations of today's workforce. Together with the design team from Orms, Structure Tone addressed several structural and construction challenges to make the repositioning a success.

CHALLENGE #1: RELOCATING THE BUILDING CORES

The segmented building needed to be more open to provide the flexibility and natural light tenants look for. That meant the two central building cores had to go.

"They wanted to offer more modern, open-plan offices with excellent natural light," says Kevin Crane, Structure Tone project executive. "By reducing the two staircase cores to one and moving it to the rear of the building, the floorplates have become much more agile and flexible."

Not surprisingly, removing the structural cores of a building takes a good deal of planning and careful execution. To tackle the complex effort, the team divided the areas into quadrants, constructing new supports and then removing each 6m² section one at a time. Once the new supports were in place and the former staircases removed, the team began building up a new structural core, including the new core staircase and elevator bay, and then tying in the floor beams and other elements of each level.

All photos these pages: ©Richard Lantry Photography

CHALLENGE #2: GOING UNDERGROUND

Part of the repositioning effort also involved making useable space out of the basement level, which now features double-height, open-plan office space, bicycle storage and shower facilities. The basement, however, extends a bit beyond the building's aboveground footprint, meaning the adjacent street and sidewalk was disrupted throughout much of the basement phase.

In addition to the communication, coordination and permitting required of that kind of work, the building is home to a venerated cigar shop that has served the likes of Sir Winston Churchill, Oscar Wilde and the Queen Mother. Protecting the shop and its business was critical.

"Throughout the basement work, we supported the ground floor of the shop to ensure it was unaffected," says Crane. "They were able to continue with business as usual."

CHALLENGE #3: RESTORING AN HISTORIC FAÇADE

While the exterior of the building was to remain in line with its original character, the team was asked to make some updates. During the 1980s, the ground floor was lowered, allowing the introduction of a first floor. As a result of these works, the original anodized aluminum frames of the ground-floor windows were modified.

As part of the refurbishment, the Structure Tone team restored the rounded arches, individually surveying each of the existing five arches to create templates for the reconstruction. Sections of curtainwall were then shaped to each Portland-stone arch.

Project Details

Size:
54,925sf

Client:
WELPUT/Grafton Advisors

Architect:
Orms Designers & Architects

MEP Engineer:
Watkins Payne

Structural Engineer:
Heyne Tillett Steel

Quantity Surveyor:
MPG Shreeves

Owners Rep:
City South Projects

Services:
Construction management

Completion:
June 2018

CHALLENGE #4: INSTALLING UNIQUE ARTWORK

The recreated, double-height windows allow passers-by a glance into the striking new reception area, which includes incredible, custom artwork. The focal point is a 54-foot-long brass installation that spans nearly the entire length of the reception area.

"We had to come up with a way to install it since it's such a unique piece," Crane says. "We divided it into several sections, trying out a few methods on the first section. We settled on hanging it and carefully continued adding each section in that same manner. It worked out quite well."

Since completion, the refurbished building has been attracting a number of potential tenants and has signaled a promising new future for St. James's commercial buildings. At the building's topping out event, Councillor Steve Summers, the Lord Mayor of Westminster, noted that the area continues to prove an attractive business destination and that repositioning efforts like this project can, in fact, be carried out successfully.

"It's important that we continue to cater to demand from domestic and international businesses," Summers said. "And modern, prime projects, such as Twenty St. James's Street, send a very clear message that London is open for business." ◀



Hudson Commons, 441 Ninth Avenue, New York, NY Photo by Karen Fuchs, courtesy of Cove Property Group



Back to
Cover

Visit Us: [structuretone.com](https://www.structuretone.com)
Follow Us:     



Table of
Contents