



# CHIEF ENGINEER

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REALTOR BUILDING

It's a real estate reality: to get to the glitz, you must first tend to the nitty-gritty.

That sequence is playing out at 430 N. Michigan Avenue, where the National Association of Realtors (NAR) is making major changes to the 56-year-old building that has been their headquarters since 1978. The transformation to this Magnificent Mile edifice includes the addition of a glass-enclosed office and conference center atop the 12-story, 265,000-square-foot building.

The vertical expansion, a project with great complexity, draws inspiration from the nearby Apple Store. The bright, bold move figures to attract more attention to what has long been a largely unassuming structure in the Windy City's hottest spot. At the same time, the \$45 million project ensures a vibrant space that NAR can call home for the next generation.

Before soaring to those heights, however, the building owner is digging deep with an overhaul of the mechanical, electrical, plumbing, and temperature controls infrastructure.

"Most of the building infrastructure is original from 1962," notes Renata Stec, Senior Vice President and General Manager of GNP Realty Partners, the building manager. "We are in the same boat as many other landlords. However, our challenge is even tougher given that we have a 100-percent occupied building. The reality is that over 50 percent of commercial buildings in this area were built before 1980. It's not sexy, but these mechanical systems, among other items, need to be updated."

#### Rolling Up their Sleeves

"We knew we wanted a premier, modern, efficient mechanical system befitting the A-plus location of the building," said John Gagliardo, president of ONE Development, a new development arm of GNP Realty Partners, NAR's development partner in the project. "We reviewed design companies and chose Grumman/Butkus Associates (G/BA) because of their experience, background with efficiency and detail-oriented approach. Putting together the right team of experts is vital to the success of a project. You may pay more upfront but you get a great return on investment because of mistakes you avoid and the quality of the finished product."

When mechanical equipment gets old or breaks down, the easy choice is simply replacing it with the latest model on the market, said G/BA Vice President John Tsingas.

"This is why it is the most common approach," Tsingas added. "It is difficult to step back and look at the building as a whole. It takes time to understand current and future tenants' needs, think about the benefits offered by new equipment, and recognize the challenges to installing it. But this is G/BA's approach and why we were selected for this project."

Timing is an essential element — the sooner, the better, when it comes to enlisting experts, according to Gagliardo.

"We involved a building controls expert, Milton Woo from



## Moving on: COSMETIC AND INFRASTRUCTURE CHANGES AT THE REALTOR BUILDING



Interactive Building Solutions, very early in the design process," Gagliardo said. "He offered budget estimates and suggestions on a variety of controls options. Others might not meet the controls contractor until a construction kick-off meeting. By then, it's too late to take full advantage of their knowledge and experience."

Likewise, having building ownership play an active role in the planning process, from the get-go, is crucial, said Tsingas.

"John Gagliardo attended all our meetings and took the time to hear about and really understand the issues and options under discussion," continued Tsingas. "He also was able to make decisions on behalf of the owners. Having a single, well-informed decision-maker on a project is an invaluable asset."

In addition, Joe Tracy, vice president of operations and chief engineer at GNP Realty Partners, was instrumental in the development process, Tsingas noted. "His detailed knowledge

of the equipment and operations of the building informed every discussion we made. He also helped us avoid countless issues by alerting us to the building's idiosyncrasies."

#### The Plan

After months of brainstorming and evaluating options, the decision was made to replace the majority of the mechanical systems. That overhaul encompassed the boilers, chillers, cooling towers, Makeup Air Units (MAU), chilled water pumps, condenser water pumps, hot water pumps, Building Automation System (BAS), and the Air Handling Unit (AHU) serving the building's induction units.

"We will have a building shell from the 1960s," said Joe Tracy, "with an infrastructure from 2020."

It was a complicated construction process, requiring tremendously detailed and careful planning, said Andrew Milleville, Senior Project Engineer for G/BA.

The first phase: installation of the BAS communication trunk from the basement to the top floor and the addition of a Tridium graphical front end.

"As new equipment is installed in subsequent steps, it is also added to the BAS," said IBS Sales Engineer Joe Crosetto. "The monitoring and troubleshooting tools of the BAS are immediately available for the new equipment, which is very helpful for the operations of a fully occupied building."

#### Long-Term Benefits

Undertaking such a massive project, and steering clear of the temptation to simply go ahead with basic replacements, offers a prime opportunity to make systemic shifts that spur long-term benefits.

For 430 N. Michigan, one such example was moving to an "open" BAS.

"We had bad experiences in the past with proprietary building controls that required us to get parts and service from a single vendor," Gagliardo explained. "Our new system uses an open network protocol, BACnet, that allows us to install devices from any vendor and the Tridium front end can be serviced by any qualified technician."

The system includes many more sensors and meters than a typical system, another G/BA recommendation bolstered by enormous long-term benefits.

"The sensors themselves are actually very inexpensive and it is relatively easy to install them during construction," Crosetto elaborated. "They allow you to see what is actually going on in the building on a much more granular level, which helps troubleshoot problems. They also allow for more elaborate sequences of operation that can increase tenant comfort and energy efficiency."

Another significant upgrade: right-sizing the boiler, whose high-efficiency performance will provide significant energy savings, said G/BA's Milleville.



*Pictured left to right Joe Tracy, Vice President of Operations and Chief Engineer, GNP Realty Partners, Renata E. Stec – Senior Vice President and General Manager, GNP Realty Partners, and John R. Gagliardo, President, One Development*



## FOR ANYONE EMBARKING ON A SIMILARLY INTRICATE AND AMBITIOUS PROJECT, TSINGAS RECOMMENDS HIRING A MECHANICAL ENGINEER TO EVALUATE YOUR BUILDING INFRASTRUCTURE



*Building Chief Engineer Joe Tracy and IBS Sales Engineer Joe Crosetto evaluate the existing mechanical equipment*

“The existing boilers were actually oversized for the building, even considering the top floor addition,” Milleville said. “Originally the building had an absorption chiller. But since that was replaced, the boiler capacity exceeds the needs of the building.”

The work also presented the opportunity to design the mechanical system in such a way that it qualifies for several ComEd incentives, said Milleville. Those incentives relate to demand control ventilation, VSDs on pumps, chiller sequencing, supply air temperature reset, supply air static pressure reset, and morning warm-up cycle, among others.

The boiler stack and chiller are other issues that G/BA is helping navigate.

The new boiler stack needs to be built above the existing building, before the top floor addition takes shape around it. And the chiller, located in an isolated subbasement corner, posed another challenge.

“We relied on the help of Edwards Engineering to figure a way to remove a slab from the parking garage and get the old chillers and boilers out and the new chillers and boilers in,” said G/BA Engineer Mike Murphy. “We also had to make provisions for a temporary AHU in the alley to accommodate the building during the AHU replacement.”

Once the major mechanical infrastructure is installed, the floor-by-floor work will begin on the first floor and move up, said Tracy. Upgrades on the tenant floors will add VAV boxes with reheat to convert the AHUs to VAV.

“On the 11th and 12th floors, we will replace the pneumatic VAVs with new boxes with digital controls,” he added. “The air handling units on the 11th and 12th floors will also be



*The new boiler stack has to be built before the top floor addition could be shaped around it.*



*Before the building's new chiller can be installed, the old boilers and chillers have to be moved out from the building's subbasement.*

replaced. Everything will be tied in with the new Building Automation System.”

### Keys to Success

Replacing every system imaginable and putting an addition on top, amid a fully occupied building, is a massive undertaking that requires great engineering and organizational skill. Now, blend that top-notch expertise with genuine, relentless care — that is what helps put Gagliardo at ease.

“I sleep better at night knowing that Mike and Andrew from G/BA are tossing and turning in their sleep worrying about the details of my project.”

“The devil is in the details,” said G/BA’s Tsinga. “It takes a great deal of time and effort to explore, think about and work through all the details of a mechanical upgrade during the planning phase. We are all busy and it is very easy to make assumptions and hope for the best. But it doesn’t work out well for anyone when major issues are discovered during construction. Taking the time upfront is the only way to avoid this.”

### Advice for Others

For anyone embarking on a similarly intricate and ambitious project, Tsingas recommends hiring a mechanical engineer to evaluate your building infrastructure and generate an Infrastructure Report Card. The approximately \$10,000 investment is “well worth it,” said Tsingas.

“It will allow you to consider and plan equipment upgrades rather than making costly, rash decisions when equipment fails,” he concluded.

Gagliardo echoed that perspective: “If you have the luxury of time, do a great amount of due diligence. In some events, you don’t have that luxury. But when you do, hire a great team and involve as many experts as early in the process as possible. From experience, I can tell you that the result is going to be a really good one.”

