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The Generator Is the Machine of the Moment

By JULIE SATOW



Evan Sung for The New York Times
HIGH AND DRY At 116 John Street, the backup generator is on the roof. Many buildings are considering moving mechanical systems out of basements to reduce the risk of flood damage.

IN the days that followed [Hurricane Sandy](#), the developer of the luxury condominium 150 Charles Street hunkered down with his team of architects and engineers to rethink the building's design.

Just steps from the Hudson River, the construction site was partially flooded. "Their mandate was to figure out how the building would have stayed open in a storm like this," said Steven Witkoff, the developer. "They came back with a list of five things, and we implemented every single one."



Benjamin Norman for The New York Times
Superior Ink, 400 West 12th Street, is moving its mechanical systems above ground, and mulling the purchase of a generator.

The efforts delayed the project by some six weeks and added as much as \$3 million to its cost.

It was one of a number of projects that convened their engineers and construction teams to reconsider their plans after the rising waters rushed over the city's embankments and into the basements of countless residential buildings across Lower Manhattan.

Now, more than two months after the storm caused millions of dollars in damage, novel and costly waterproofing techniques are being employed, including the addition of backup generators and floodgates, and the relocation of mechanical equipment. The owners of buildings that predate the flooding are also looking at these measures, although retroactive installation is so complex and costly that some may decide not to do anything.



Hayes Davidson

At the building planned for 150 Charles Street (rendering shown), the storm influenced additions like generators, floodgates and submarine-style basement doors.

“If you are in the flood zone and you are marketing a new high-end property, it will need to stand up to the test of another superstorm,” said Stephen G. Kliegerman, the executive director of development marketing for Halstead Property. “I think buyers would happily pay to be relatively reassured they wouldn’t be terribly inconvenienced in case of a natural disaster.”

At 150 Charles Street, Mr. Witkoff plans to forestall a blackout by installing two [natural-gas](#)-powered generators on the roof to run the fire-alarm system, the emergency egress lighting, the elevators, and electrical and mechanical support equipment. Each apartment will be equipped with at least one electrical outlet connected to the generators. The developer is also ordering five-foot-tall floodgates that can be assembled and installed to encircle the building in a matter of hours. The gates, which fit together like toy Lincoln Logs, are to be stored in the basement.



Evan Sung for The New York Times

116 John Street's generator and boiler are up high, but its basement electrical switchgear was damaged by the hurricane. The landlord isn't sure moving it is worth the expense.

Finally, Mr. Witkoff is using poured concrete instead of cinder block for the basement walls. And each basement mechanical room will be sealed with watertight submarine-style doors.

“This is the new normal,” said Adam Gordon, the president of Adam Gordon Holdings, which is building a condominium at 560 West 24th Street in Chelsea. “With two hurricanes in two years, this is the new base level for the way people should think about building in New York.”

Mr. Gordon’s Chelsea project will have a waterproof “concrete superstructure” from the basement to the second floor that has 13-foot floodgates; waterproofed rooms with submarine-style doors to protect mechanical and electrical systems; and a generator and a pumping system run on natural gas.

The floodgates are expected to cost Mr. Gordon roughly \$100,000 — “not an insignificant cost, but not breathtaking.” He is still pricing the other waterproofing measures. The building, eight units averaging 3,300 square feet each with a ground-floor art gallery, is to be completed in spring 2014.

The developer Time Equities is rethinking the plans for its approximately 62-story condominium at 50 West Street. It is considering replacing a hotel with multilevel retail and, to make the building flood-resistant, moving the mechanical room onto the second or third floor. The developer is also looking at raising the sill height on the ground floor and using floodgates at the entrances.

After the storm, Time Equities hired the Albanese Organization, which built the Visionaire, the Verdesian and the Solaire in Battery Park City, to be its development manager.

“The Albanese Organization are the exact people to handle the project,” said Robert Singer, the director of development and acquisitions for Time Equities, “because Battery Park City was the only place that had electricity during the storm, while the rest of Lower Manhattan went dark.”

As for timing, “50 West Street is looking to expedite its design,” said Jack C. Becker, the executive vice president for design and construction of the Albanese Organization, “and we are hoping that by late spring or early summer to at least get the foundation started.”

Mr. Becker is looking at similar strategies for 111 Washington Street, a 50-story rental project on which Albanese is also advising. There, the electrical system is being moved to a higher floor from the basement, at an estimated cost of \$850,000, Mr. Becker said.

Relocating basement mechanical systems means eliminating space on upper floors that could have been used for apartments or building amenities, said George Poniros, the assistant director of construction at Pink Stone Capital Group, the developer of 111 Washington. “It does cut into some of our sellable space,” he said, “but when people go to rent in our building they will know that we have taken these extra precautions, and it will give us an edge.”

Pre-existing buildings in the flood zone are also weighing their options. At Superior Ink, the condominium and town-house development in the West Village, the storm flooded the lobby and basement, and some mechanical systems were damaged by saltwater erosion. The residents, forced out of their apartments for more than 40 days, paid an assessment totaling \$1 million in December so renovations could start immediately, without any wait for insurance proceeds.

The building is moving its electrical and mechanical systems to the second floor, to share space with the garage, and is considering installing a generator.

Superior Ink is rebuilding amenities in their below-ground sites, including the gym, the playroom, the residents’ lounge and the bike room. “It is almost a lucky accident since it provides us a rare opportunity to do over the common spaces the way the residents want them,” said Melanie Lazenby, an executive vice president of Douglas Elliman and a resident. Ms. Lazenby, who stayed with her mother on the Upper East Side for 42 days after the storm, said the lobby was already 70 percent rebuilt.

As for that \$1 million assessment, “they anticipate we will be given the money back once the insurance money comes in,” Ms. Lazenby said.

Many affected buildings whose residents did not pay a special assessment are still waiting for their insurance proceeds. The development [88 Greenwich](#), across from Battery Park City, incurred basement flooding. The water dislodged an oil tank, which hit a ceiling beam and cracked open, necessitating a major cleanup.

“The building is now open again,” said Dan Wurtzel, the president of Cooper Square Realty, the condominium’s manager, “but the only thing currently on their radar is getting through the insurance process. It is going to take several months for this to be completed, and only then will they begin to confront the next question, which is what can they do to prevent this from recurring.”

Some pre-existing buildings are not taking any action at all. At 116 John Street, a 419-unit rental, the boiler and generator were fortunately already on the roof. But not so the electrical switchgear that controlled many other systems; it was damaged by floodwater.

“Our switchgear is in the basement and I don’t know how one can move that elsewhere,” said Nathan Berman, the principal of [Metro Loft Management](#), the building landlord. “It is a matter of economics — I’m not sure too many developers would want to compromise lucrative space elsewhere in the building for a storm that was hopefully just a 25- or 50-year event.”

Some management companies that oversee buildings in the flood zone are thinking along the same lines.

“While buying a generator itself may not be that expensive,” Mr. Wurtzel said, “it is everything else — like connecting it to the various building systems that you want to run in case of a power failure, then securing a fuel supply by either running a natural-gas line or using diesel fuel — that can be costly and logistically complicated.

“I don’t want to say you are throwing your money away,” he continued, “but if your electrical mains that feed the building are in the basement, they are going to be damaged anyway, so it just may not be worth it.”

Paul Gottsegen, the Halstead Management Company’s president and management director, is advising buildings to “instead of retrofitting their mechanical areas, to concentrate more on preparedness.” The company’s emergency task force has come up with recommendations on when to evacuate buildings and other best practices.

The issue of where to put building systems remains a thorny one for many new buildings. The building code does not count basement space used for mechanical equipment in the square footage permitted by zoning. But if the mechanical room is on an upper floor, it is included in the square footage and thus impinges on sellable space, like apartments and amenities. And while in some cases the equipment can be moved to the roof, many buildings are subject to height restrictions.

“Builders want to be more resilient, but don’t want to be penalized by giving up space,” said Russell Unger, the executive director of the Urban Green Council. He is a member of a [task force](#) set up by the City Council and the mayor’s office to study ways to help buildings better prepare for extreme weather. Its findings will be published this summer.

“If you are in a flood zone, you cannot have your mechanicals in the basement,” said Donald A. Capoccia, the managing principal of the developer BFC Partners. “There are no two ways about it. The building codes have to change to reflect this new reality.”

Although builders across the city are only in the initial stages of figuring out how to build in a post-Sandy landscape, one thing is clear: “People are discussing spending billions of dollars for sea walls around the city or barrier islands, or even redesigning entire coastal communities,” said Vishaan Chakrabarti, an architect and an associate professor at Columbia University’s Graduate School of Architecture, Planning and Preservation.

“But there are many simpler measures that builders can do quickly and relatively affordably. We should utilize these strategies first and foremost, and see where that takes us.”

The architect Vishaan Chakrabarti, in the Netherlands when [Hurricane Sandy](#) sent water crashing over riverbanks and into [Manhattan](#), was inspired by what he saw.

“There, they do not fight the water,” said Mr. Chakrabarti, a partner at SHoP Architects and an associate professor at Columbia’s Graduate School of Architecture, Planning and Preservation, “but rather allow the lower level of buildings and parks to flood to retain the water, which is a much lower-cost strategy. This is not rocket science; places like the Netherlands and Venice have been dealing with this for centuries.”

One beneficiary of his trip may be a 350,000-square-foot retail and hotel project that he is designing for the [Staten Island](#) waterfront. In conjunction with the developer, BFC Partners, Mr. Chakrabarti is considering building the lower level of the complex’s three-floor parking garage to double as a giant water-retention tank capable of holding millions of gallons of floodwater.

“Our lowest point is eight feet above sea level,” said Donald A. Capoccia, the managing principal and founder of BFC, “so if you have a 13-foot surge, you would still get 5 feet of water on the site, so we have to plan for it.”

If a garage reservoir is built, Mr. Chakrabarti said, developers “should get some sort of zoning incentive, since it would help flood control not just at the development, but across the entire neighborhood.”