

View From the Bridge

By Lisa Chamberlain - Monday, September 11, 2006

Long Island City, just across the East River from Manhattan, has been one of those up-and-coming neighborhoods for more than a quarter-century. Despite its proximity to midtown, the once heavily industrial area has been slow to transform itself. Due to air pollution, a lack of green space, and heavy traffic over the Queensboro Bridge, it took nearly two decades to see an uptick in residential and nonindustrial work spaces. But a tipping point has finally been reached, and environmental advocates believe the neighborhood could—over the next 20 years—become a model for green-roof development.

Silvercup Studios is most famously home to Tony Soprano; since last July the former bakery, located next to the Queensboro Bridge, also became the site of New York's largest green roof. In 2002 landscape architect Diana Balmori conducted a study of the city's rooftops to identify the best area where green-roof construction could have an impact not just on an individual building but an entire neighborhood. The study revealed that Long Island City would be the most promising neighborhood for clustering these environmentally friendly roofs, which help clean the air, reduce storm-water runoff, lower energy consumption, and ultimately reduce the heat caused by urban congestion.

There is enough suitable flat roof space in Long Island City to cover more than 26 million square feet with green-roof technology—or 667 acres, nearly the size of Central Park. Known as pancake roofs, the countless flat-topped warehouses were mostly built before 1955, when structures were generally overengineered; therefore they can withstand rooftop vegetation without additional support. Long Island City is in serious need of greening: it has one of the lowest percentages of parkland per acre of any neighborhood in New York, and the area around the bridge is referred to by locals as “asthma alley.”

“If you aggregate lots of buildings with green roofs, you can lower the heat-island effect,” says Balmori, referring to the heat-trapping properties of asphalt, concrete, and black tar, which raise the temperature of dense urban areas. “I really think that is where the ecological contribution is going to be—creating microclimates. How you shape a building, how you place it on a street, what kind of shadows it casts, what types of vegetation you put where: it all contributes to the microclimate.”

Upon completion of the study, Balmori made a presentation to the Long Island City Business Development Corporation, a nonprofit neighborhood improvement organization. Her idea was to develop a demonstration project with high visibility, but she needed committed partners to make it come to fruition. As a longtime contributor to the Environmental Action Coalition, Stuart Match Suna—cofounder of Silvercup Studios along with his brother Alan (both are trained architects)—was immediately interested in Balmori's proposal. Having built a duplex on the Silvercup site, where he lived for ten years and tended to a roof garden, Suna was well aware of how polluted the air could get, especially on hot summer days, and the extent to which greenery can mitigate extreme temperatures. He made Silvercup available as the demonstration site and offered to pay for the necessary architectural and engineering studies.

The green-roof partners then secured a \$500,000 grant from Clean Air Communities—a local organization devoted to reducing air pollution in New York's low-income neighborhoods—to fund the design, construction, and plantation of the roof, which was undertaken last summer at an auspicious time. Donning wide-brimmed hats, landscapers with Greener by Design planted the Silvercup roof just as the city was experiencing stifling temperature spikes and breaking records for electricity consumption. “The need for green-roof technologies couldn't have been more striking,” Suna says.

The green-roof system on Silvercup is a modular one built by GreenTech, a company based in Roswell, Georgia, which donated a third of the modules for the project. Unlike plantings directly on the roof—a more common type of green-roof system—the interlocking modules can be moved and replaced (see “Green How-To” on page 100). Covering 35,000 square feet required 1,500 modules filled with a lightweight soil and then planted with 20 different varieties of sedum. Sedum is heat and drought resistant because it retains a high percentage of water in its shallow root system. Therefore it absorbs and holds more rainwater, reducing storm-water runoff and minimizing landscaping maintenance. Irrigation is needed to get the plants established, but they eventually become self-sustaining.

A green roof is clearly an ecological workhorse rather than an aesthetic amenity like a garden, but that’s not to say it can’t be attractive. The plants were chosen and arranged by Balmori, and then the modules were interspersed with panels of brightly colored fabric to accentuate the yellow, red, and blue foliage. Along with the giant Silvercup sign visible from the Queensboro Bridge, the colored panels attract the eyes of motorists to the green roof. “We call it the fifth facade,” Balmori says, “because it can be very pleasant to look at.”

A monitoring station has also been built on top of Silvercup to measure the green roof’s effectiveness. Run by Earth Pledge, a nonprofit organization that marries environmentalism and technology, the experiment consists of two rooftop conditions, one with a green roof and one without, from which data is being collected to compare the differences in temperature (in the soil, at the vegetation level, and just above).

While energy savings as a result of the insulating properties of green roofs are not likely to be significant in tall buildings with small footprints in Long Island City—where buildings are low and flat—conservation is expected to be significant. A similar control study conducted in Chicago in 2003 showed that green-roof temperatures were 19 to 31 percent cooler during peak daytime hours in July compared with those on a conventional roof. What is expected to be even more significant, however, is the difference in storm-water runoff. The same study demonstrated that a green roof absorbed nearly half the water from a downpour.

Since the benefits are realized by the community at large, green-roof proponents strongly favor government incentives to stimulate property owners to both retrofit green roofs on existing buildings and install new ones. Stress on the city’s sewer system is reduced when rainwater is absorbed by greenery rather than being discharged into the system. Because so much of Long Island City is paved over, the sewage system gets overwhelmed, resulting in back-ups that cause raw sewage to be discharged directly into the East River after heavy rain.

Government incentives might include a tax credit, density bonuses, and an expedited building-permit process. But one question remains: Would that be enough to entice developers and property owners to undertake what is—in the most narrow view—expensive insulation? Chicago has more green roofs by far than any other American city. Like an urban canopy, more than two million square feet of greenery is or soon will be planted on rooftops. That is roughly 49 acres, or equivalent to the entire historic Greenwich Village neighborhood of New York City.

But the vast majority of Chicago’s green roofs are being installed because the city requires them. Any developer that receives financial help from the city must have a green roof, as determined by a complex formula. Mayor Richard M. Daley—in his fifth term in office and known for his autocratic style—can push through whatever regulation he wants. No New York mayor will ever have that much power, let alone use it on behalf of the environment, because developers won’t tolerate it. “I would be reluctant to require them,” Suna says when asked about applying Chicago’s regulations here. “That would make New York City that much more expensive, which isn’t good for the economy or the environment.”

And that is perhaps where even the most enlightened property owners and environmentalists part company. “Our overarching goal is to quantify the benefits of green roofs,” says Leslie Hoffman, executive director of Earth Pledge, “so that building owners, developers, and ultimately city, state, and other government officials can understand where to implement them, what the return on investment is,

and ultimately depending on where the benefits are, who should pay for green-roof implementation.

“In some cases it might be appropriate to have them partially required by building owners,” Hoffman continues. “But if the savings in storm-water treatment is significant enough, the city’s department of environmental protection should provide major incentives; because when you have a whole community of green roofs, everyone will benefit. That requires a little more than just enlightened self-interest.”

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