

A PATCH OF GREEN GROWS IN THE BRONX

By William Spencer



New system included new metal cladding on parapets and penthouses and safety fence at exterior parapets.

The seeds were planted several years ago in Chicago, where Father Nelson A. Belizario, O. Carm., a Carmelite friar, knew of Mayor Richard M. Daley's efforts to make Chicago the greenest city in America. Daley's efforts resulted in green roofs on City Hall, on the new Soldiers Field parking deck, on Millennium Park, on various Parks Department roofs, on the ABN-AMRO Computer Data Centre, on Prudential Plaza, an Apple computer store, a Target store, as well as numerous new planters on highways, city streets, and sidewalks - a virtual urban greening, driven by a visionary and forceful mayor.

Father Nelson left Chicago, accepting an appointment as pastor at Saint Simon Stock church and school located on

Valentine Avenue in the center of the Bronx, a low-income neighborhood that has become a haven for immigrants seeking a new and better life in America. Originally constructed by the New York Archdiocese in the 1920s as a 1st- through 12th-grade school,

it is currently used for grades K through 8. Upon arrival, Father Nelson found the 80-year-old building in need of major masonry rehabilitation, as well as a new roof.

With Mayor Daley's urban "greening" in his mind's eye, Father Nelson knew in his heart that St. Simon Stock's new roof should be a green roof. Imagine a green oasis set in the urbanized center of the Bronx!

Couldn't such a structure catalyze a wave of green in the Big Apple? As luck would have it, the same thoughts had occurred to a progressive borough president, Adolfo Carrion. The benefits of cleaning the air and reducing childhood asthma, creating a more comfortable environment inside the school, using less energy, reducing noise, providing a model for urban stormwater management, and increasing biodiversity were all appealing. But perhaps most im-



Plant growth at approximately one month.



Weather station instrumentation with precipitation collection and thermo-couples set throughout the system.

important to Father Nelson was giving the students and teachers a green space – a healthy, park-like setting where they could grow fresh vegetables, conduct science experiments, and find a place of peace and harmony away from the hustle and bustle of the dense urban environment of Bronx streets.

By luck, Father Nelson found his way to the Gaia Institute, headed by Dr. Paul Mankiewicz. The Gaia Institute is an ecological engineering non-profit organization based on City Island in New York City. Dr. Mankiewicz and the Gaia Institute have been promoting the concept of green roofs and roof gardens for more than two decades, clearly a visionary view in the 1980s.

In March 2004, Dr. Mankiewicz and RCI member Tim Barrett both attended



Student vegetable garden growing area.

the “Roofing for the Next Millennium” conference in New York City. During a break, they met Kate Shackford, director of the Bronx Initiative for Energy and the Environment (BIEE), an initiative of Bronx Borough President Adolfo Carrion’s Bronx Overall Economic Development Corporation (BOEDC). Discussing St. Simon Stock’s desire for a green roof, she indicated that BOEDC could potentially provide a grant for the incremental cost of a green roof on St. Simon Stock, since Carrion had

already secured funds for just such a program.

Dr. Mankiewicz called on Tim Barrett, RRC, for moisture and thermal protection advice in the context of a green roof design for St. Simon Stock. After the basic waterproofing design and budget were drafted by Barrett, the next challenge was funding for the project.

The diocese was prepared to pay for a new, conventional roof but had little money for the masonry rehabilitation necessary in order for any new roof work to proceed in proper sequence, and certainly no money for the green roof enhancement. Karen Argenti, policy advisor for the Gaia Institute



Student vegetable garden growing area.

Recycled PET walkway and concrete paver walkways with 10 inches of recycled growing media.

(and coincidentally, a high school graduate of St. Simon Stock), working with Father Nelson, the archdiocese, and its structural engineers, developed a grant proposal that was submitted to the BIEE. The grant was eventually approved for \$125,000. It enabled the preparation of the roof for children, including a protective fence, planting a garden with the additional lightweight soil, and the installation of technical and weather-monitoring equipment.

The next step was to finalize design details and create bid documents. Barrett prepared and submitted the documents to the engineers for approval and invited three of their locally-approved contractors to submit bids for the project. Dr. Mankiewicz provided the horticultural design and specifications, including a vegetation plan, which incorporated a very unique growing media – a lightweight soil weighing 12 lbs. per cubic foot dry and over 30 lbs. per cubic foot saturated for which Dr. Mankiewicz and the Gaia Institute hold the patent.

Due to high masonry rehabilitation costs and the cost of adding safety fencing, the green roof budget had to be cut. To further complicate matters, all of the roofing bids came in over budget. Barrett redesigned the green roof, reducing some insulation thickness, the extent of concrete paver walkways, and a few other incidentals. Spirited negotiations between the contractors and Father Nelson ensued, with Bulado Construction emerging as the successful contractor, their contract price within the revised budget.

Led by Tony Lado, Bulado Construction started work in February 2005 and completed the waterproofing work in March. The Gaia Institute then proceeded with installation of the growing media and vegetation. Working with Brian Aucoin of the GreenApple Corps, an AmeriCorps initiative of the City of New York Parks and Recreation, 40 well-trained volunteer stewards planted, watered, and cultivated the garden. Jeannette Compton, a graduate student who is using the project as the basis for her masters thesis at Cornell University, monitored and managed the landscaping.

The Greenroof-Roofscape® assembly consisted of 215-mil-thick Barrett “Ram Tough 250” rubberized asphalt membrane, polyester reinforcement, SBS protection course, 60psi extruded polystyrene insulation, root barrier, water retention and drainage mat, and filter fabric. The horticultural portion of the assembly includes the Gaia Institute’s engineered growing media, jute fabric, recycled mulch, and approximately 20 native species of plants, along with some non-native prairie grasses that were planted along an edge expected to experience the driest conditions. There are two walkway paths – one of concrete pavers with steel angle curbing, and one of recycled PET latticework, which has plants placed in the interstices of the latticework. A six-foot safety fence was installed atop the parapet walls, which will be planted with “screening” vine plants chosen by the Bronx Zoological Society to attract hummingbirds and butterflies.

The Gaia Institute will collect data from the green roof installation at St. Simon Stock with a research-grade weather station, along with soil monitoring probes. Gaia Institute hydrologist

Experimental marsh grasses being grown as part of a masters degree thesis by a Cornell graduate student.






Dr. Paul Mankewitz explaining the green roof benefits.

Todd McDonnell will monitor and capture rain from the upper roof to drain pipes, which will be fitted with devices to measure the time lag, rate, and total volume of runoff. Data will be collected and provided to the school and will be easily accessed by students and faculty who wish to use it for educational purposes and scientific research. Finally, a comparative economic study of the heating cost savings will be presented.

In closing out the project, the Barrett Company donated the cost of its Ram Tough membrane and Bulado Construction made an equally generous cash contribution back to St. Simon Stock, both contributions being used to defray some of the upgrades to the green roof garden setting.

Father Nelson is very pleased with the results. Teachers are bringing in vegetable plants, tours are being scheduled, and the student body is excited about all of the possibilities they see unfolding in the months and years to come.

A ground-breaking ceremony was held on Thursday, July 28, 2005 "up on the roof." It was attended by Borough President Carrion, the Commissioner of the NYC Parks Department, several aides to Congressman Jose E. Serrano, and 40-some other dignitaries. In September, when the school children returned, they celebrated the new term with another dedication ceremony to mark their little patch of green in the Bronx. 

William Spencer

William Spencer is national sales manager of the Barrett Company, whose corporate offices are in Millington, NJ. William has been involved in various facets of the roofing and waterproofing industry for over 35 years. Prior to joining the Barrett organization, he held both technical and marketing positions with Koppers Co. and Honeywell, where he was a part of many industry initiatives. He has contributed numerous articles to *Interface* and other trade publications. William is currently helping to focus Barrett's expertise in polymer modified bitumens in the areas of green roofing and plaza deck construction.



RCI, Inc.
800-828-1902
www.rci-online.org