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THE BUSINESS CASE ISSUE

COLLECTORS
EDITION

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GREEN ROOFS DELIVER HUGE ROI FOR CONDOMINIUM DEVELOPERS
HOW EXTENSIVE GREEN ROOFS PROTECT MEMBRANES FROM HAIL DAMAGE
THE MULTIPLE BENEFITS OF FLOOR AREA RATIO BONUSING
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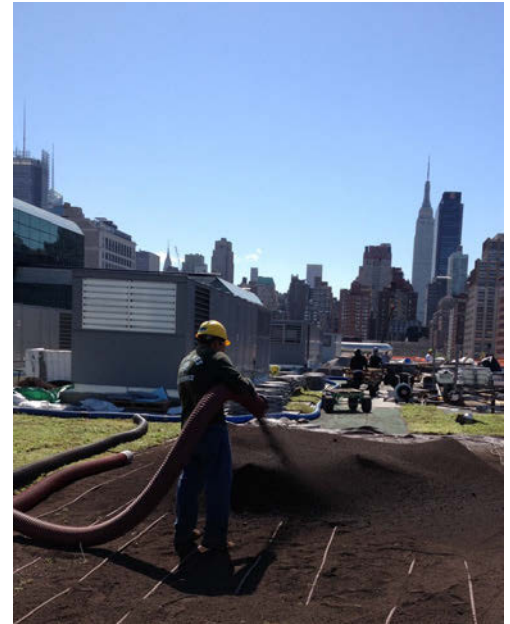
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On the cover: Lindsay Sangster (l) and Micheline Lalonde (r) Selling rooftop farm produce on the street in front of Avling Brewery and Restaurant, Toronto. Image courtesy S. Peck



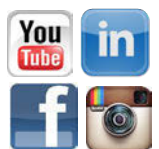
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INCENTIVIZING GREEN INFRASTRUCTURE — THE FLOOR AREA RATIO BONUS

BY RICHARD C. HAYDEN, GARDEN ROOF AND BLUE ROOF DEPARTMENT MANAGER,
AMERICAN HYDROTECH, INC.

There are a lot of incentives for green roofs in the world today which improve the business case for implementation. Many of those incentives rely on making one-time payments based on the size of the green roof. While these incentives are good, I prefer an incentive that is much longer lasting and creates broader benefits for more people. This is the floor-area-ratio bonus.

The floor-area-ratio (FAR) is a city planning term used to determine density of a particular project. It is a ratio of the building floor area to the site area. Simply put, a 10,000 square foot building placed on a site that is 10,000 square feet in size has a FAR of 1.0. If you put that same 10,000 in two floors on a 5,000 square foot site, the FAR is 2.0. Putting three floors of 5,000 SF totalling 15,000 SF, on that same 5,000 square foot site creates a FAR of 3.0 and so on.

FAR is used by planners to encourage or limit densities in certain areas depending on the ultimate goals of the planning

authorities and the city. Dense urban areas typically have high FAR values and often the land values warrant denser construction to offset the increased cost of those parcels. Higher FAR means that developers can typically earn more on a given development project.

Planning agencies have often used FAR bonuses to encourage developers to finance special elements that the community needs to enhance its environment, such as pools or community centers. Green roofs have been included in FAR bonuses.

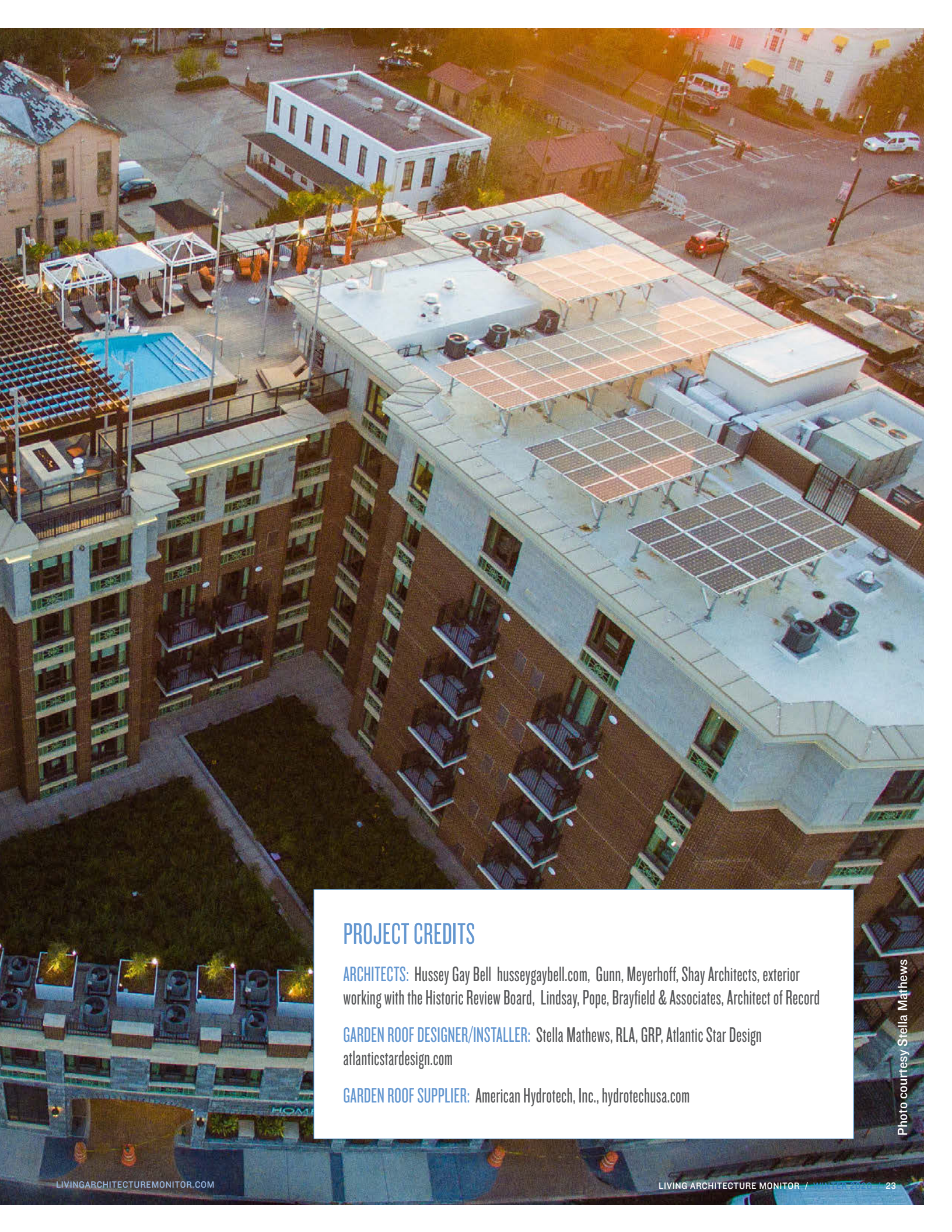
The City of Savannah, Georgia has a portion of its code for its historic district

that encourages green roofs that meet or exceed certain stormwater management criteria. In exchange, the city will allow for the addition of a floor within the building. To achieve the additional floor in the building, the following conditions must be met:

- Green roof must have capacity to absorb at least 1.2 inches of rain
- Green roof must have a certain minimum size to achieve the required retention capacity
- Green roof must be maintained by the building owner.



FAR BONUS FROM SAVANNAH GEORGIA
AMPLIFIES GREEN ROOF BENEFITS AT
HOMWOOD SUITES



PROJECT CREDITS

ARCHITECTS: Hussey Gay Bell husseygaybell.com, Gunn, Meyerhoff, Shay Architects, exterior working with the Historic Review Board, Lindsay, Pope, Brayfield & Associates, Architect of Record

GARDEN ROOF DESIGNER/INSTALLER: Stella Mathews, RLA, GRP, Atlantic Star Design atlanticstardesign.com

GARDEN ROOF SUPPLIER: American Hydrotech, Inc., hydrotechusa.com

Photo courtesy Stella Mathews

"THIS MODEL REQUIRES NO EXTERNAL FUNDING OR GRANTS; BUT IT DOES REQUIRE THE CITY TO CAREFULLY EVALUATE THE POTENTIAL IMPACTS THAT ADDITIONAL ROOM DENSITIES WOULD CREATE, INCLUDING THE GENERATION OF ADDITIONAL, BROAD-BASED BENEFITS TO THE WIDEST POSSIBLE NUMBER OF INDIVIDUALS AND BUSINESS ENTITIES."

- RICHARD HAYDEN

This additional floor allowed for the following:

- Approximately 25 additional rooms
- Additional costs for constructing the additional rooms
- Additional costs for constructing the amenity deck and vegetated roofs

These one-time costs had a significant benefit to the community in Savannah during the construction of the Home-wood Suites hotel project by Hilton in the historic section of Savannah. These costs, borne by the developer were rolled into the overall financing for the project.

The additional floor with the additional hotel rooms that were created in this increased FAR include the following benefits:

- Additional stormwater management capacity in the City of Savannah where facilities are limited. The green roof helped hold and delay stormwater that falls on the project site from entering the storm sewer system.
- Additional room revenue for the developer to pay the additional construction costs.

- Additional revenue for support services to this hotel property. The additional hotel patrons will cause increased wear and tear on the building as well as require additional hotel supplies, furniture, furnishings and similar resources to service those additional rooms. This supports local economic activity.
- Additional hotel room tax revenue for the City of Savannah. The city will collect a portion of the hotel room rate as tax for the additional hotel rooms.
- Additional sales tax revenue to the City of Savannah and State of Georgia. These additional rooms will attract more hotel patrons who will bring their dollars to spend in both the hotel and in the City of Savannah.
- Additional employment opportunities for the citizens of Savannah including:
 - o Housekeeping services
 - o Laundry services
 - o Building maintenance services
 - o Green roof maintenance services
- Additional income tax revenue for the State of Georgia.

Rather than being a one-time-only benefit to the developer for installing a

green roof, this FAR bonus creates perpetual benefits not only for the developer, but also for the City of Savannah, the State of Georgia, its citizens and the businesses that directly support the hotel and those businesses that indirectly benefit from increased business that this hotel generates.

This model requires no external funding or grants; but it does require the city to carefully evaluate the potential impacts that additional room densities would create, including the generation of additional, broad-based benefits to the widest possible number of individuals and business entities. These benefits continue to pump financial and employment resources into the community year-after-year. It is a model that should be considered and adopted by more municipalities across the United States and Canada to encourage creative incentives for expanding the use of green infrastructure.

Richard Hayden, RLA, ASLA, CLARB, A.M. ASCE, GRP, Garden and Blue Roof Manager at American Hydrotech may be reached at rbayden@hydrotechusa.com



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