GREEN ROOF PULLS DOUBLE DUTY AS SCHOOL LAB

BY DAVID M. CHWALIBOG, RRO

Green roofs contain living organisms. This provides an exceptional opportunity for consultants to recommend these roofs to school districts for their educational value. What greater good could roofing and waterproofing consultants and their project partners do for their communities than to provide further learning by installing an outdoor green roof experiment for students? Creating a living lab for students via a green roof can incorporate a new curriculum for educators to offer students. Students can witness science firsthand.

Recommending a green roof for educational purposes allows school boards, school administrators, and the local community to get excited, for once, about replacing a roof. A green roof allows these people to spread some goodwill and environmental awareness – messages every school official would be happy to convey!

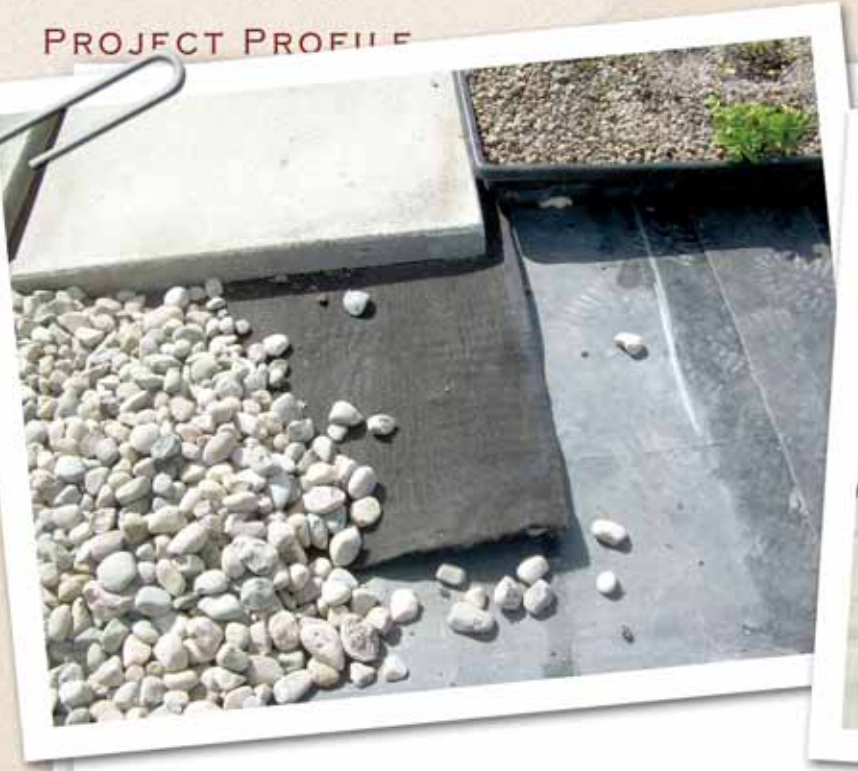
In recommending a green roof to a public school district, consultants need not be concerned with the old adage that they are cost prohibitive and that school districts can't afford them. Green roof systems are now affordable for even the more cost-conscious clients. The new tray-and-mat systems are installed quickly and with little disruption to building occupants.

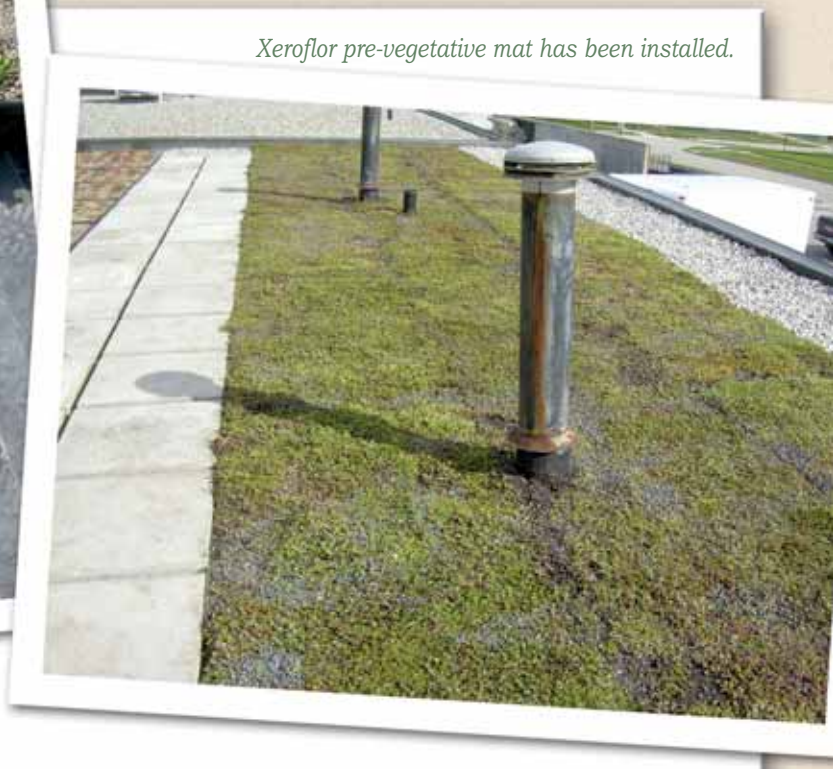
Structurally speaking, the systems we recommend are less weighted than a ballasted roof system (approximately 12 to 18 lbs per square foot). Therefore, they can be used in almost any situation.

The Avrie Group recently completed the first K-12 green roof in the state of Michigan with the forethought of using the roof for environmental benefit and educational purposes. We assisted in developing a curriculum centered on biological and horticultural principles. An observation deck with walkways was installed to accommodate the students on the roof. This adds an opportunity for plant, insect, and bird enthusiasts to further their studies. Safety considerations (OSHA-compliant railing and access) and addi-

Before

After





Xeroflor pre-vegetative mat has been installed.

Shown are the construction material layers: waterproofing membrane, drainage and water retention mat, and green roof tray. Pavers and ballast are used in the nongreen areas.

tional equipment for the classroom were implemented for the 2008-09 school year.

Part of the benefit to the student is the science behind the green roof. Testing climatic efficiencies inside and outside the building with infrared heat guns and measuring rainwater retention are experiments being implemented by science teachers.

At Fraser Public Schools, The Avrie Group has designed two different "tray" systems (Carlisle Green Grid) and a "vegetative mat" system (Xeroflor). All look and feel different. This variety will allow the school to test each system and compare its efficiencies or deficiencies – again, establishing unique science experiments.

The trays are arranged similarly to walkway pavers, and the mat system is rolled out much like sod. Both require accessories that are easily installed prior to the green roof installation (root barrier and water retention mat).

A standard low-slope roofing contractor installed each system (J.D. Candler, Livonia, MI). This offered efficiencies not provided by green roofs of old. Commonly, in the past, a landscape contractor was used for the green roof installation, and a conventional low-slope roofing contractor

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Utilizing three different types of green roof materials will allow students to see the inherent benefits of each system.

The team, left to right: Dave Chwalibog, lead designer and project manager; Tom Brown and Ken Kreichelt, co-owners of J.D. Candler Roofing Co.; Kevin Pollock, building owner services, Carlisle Syntec, material supplier; Richard Repicky, superintendent of schools for Fraser Public Schools; John Thompson, director of operations, Fraser Public Schools; and Carole Bannister, board of education, Fraser Public Schools.

was used for the waterproofing installation. Now it is often possible to hire one contractor and have one source of responsibility.

The three types of green roofs installed at Fraser Public Schools require little maintenance, a quality that is always a plus for John Thompson, the school's busy facilities director. Thompson will have to manually water the plants only when Mother Nature does not cooperate (dry periods extending beyond 90 days). Annual fertilization is recommended to promote healthy growth and is something a maintenance person can do with a hand spreader in about twenty minutes.

In order for a project like this to be successful, the help of a long list of professionals must be solicited, including: a structural engineer (Wakely Associates), an environmental consultant (Nova Environmental), a horticulture expert (AGI), a cross-trained roofing contractor (J.D. Candler), a super adventurous client, a team of generous manufacturers (Carlisle Inc.), and finally, a community willing to support green technology.

David Chwalibog, RRO

David Chwalibog, RRO, is president of The Avrie Group, Inc., a building-envelope consulting firm in southeast Michigan. He has 17 years of design and project management experience in the commercial roofing and waterproofing industry. Chwalibog earned his bachelor's degree at Michigan State University. He is a member of Green Roofs for Healthy Cities' Accreditation Program and currently has the only K-12 green roof installed in the State of Michigan. Dave may be reached at dave@avriegroup.com.