TEXT BY VERNON MAYS
PHOTOS BY IAN ALLEN

STORAGE BARN

WASHINGTON, CONN.
GRAY ORGANSCHI ARCHITECTURE

Pallets of landscaping materials create a mosaic of natural textures on the side of a storage barn in western Connecticut, enhancing the design of the compact structure while cleaning up the previously littered site.

UNTIL RECENTLY, the McGarry property outside Washington, Conn., was cluttered with stockpiles of materials and wooden pallets. Typical for the hub of a landscape maintenance business, yes, but not exactly the picture that state and local environmental staff had in mind for the site's other classification as a sensitive watershed. Their instructions for protecting the nearby stream were direct: tidy up the site and reduce the footprint of the whole operation.

The task was right up the alley of New Haven, Conn.–based Gray Organschi Architecture, which designed a compact workshop/storage barn that reduced industrial sprawl on the old gravel quarry site and produced a green building that runs entirely on solar and geothermal energy. "It seems to be what we do a lot of in our work," says principal Alan Organschi,

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whose firm was recognized this year as an Emerging Voice by the Architectural League of New York. "We get these rural brownfield sites—beat up, dug out, with demolished old buildings—and we go back and try to do a really minimal installation."

Essentially, the building is a utilitarian storage rack wrapped around an 800-square-foot workshop and storage barn for riding mowers, power washers, compressors, and the like. Tightly packed and palletized stone and wood are stored on flexible external shelves that allow easy access to each pallet without having to disturb the others around it. Sheltering the entire structure is a lightweight, translucent, 72-by-28-foot roof canopy that provides an evenly daylit interior workspace and weather-protected storage for stockpiles of loose sand and loam.

Organschi and partner Elizabeth Gray based the plan of the building on a 4-foot-wide module that accommodates several key demands: the standard dimension of a pallet of stone and the wheelbase, turning radius, and reach of the articulated loader that moves and manages the material. The loader is parked inside the building when not in use, so overhead clearances were important as well.

Tubular steel columns form the basic structure, which is supported by diagonal bracing and a continuous steel frame located at the bay door. Cantilevered from the columns on the building's exterior are a series of beefy shelf standards (akin to the lumber racking systems found in commercial lumberyards) holding galvanized steel grates that support the pallets of materials.

Seen from the outside, the barn is a rough and intriguing mosaic of wood and stone, which contrasts with the bright, smooth polycarbonate panel walls. A perforated-steel stair leads down to a basement-level storage/mechanical room.

The client was willing to pay more up front to include sustainable systems that will recoup the principal investment over time. The entire building is heated and cooled by a ground-source geothermal system consisting of three wells, each between 350 and 400 feet deep. The geothermal system is combined with a rooftop photovoltaic array that powers the heat pump system, work lights, and power tools.

The solar panels are translucent and integrated into skylights in the roof—admitting daylight into the workspace below. The building produces more electrical energy than it consumes, allowing the owner to sell surplus electricity back to the regional utility company. It is a progressive system for such an unassuming building, says Organschi, who notes that "everything else about this building is very basic."

The materials may be basic, but the result is a stunning object that elevates landscaping materials to a decorative level. And the incredibly compact footprint allayed the concerns of local officials. They signed off on the project without objection.

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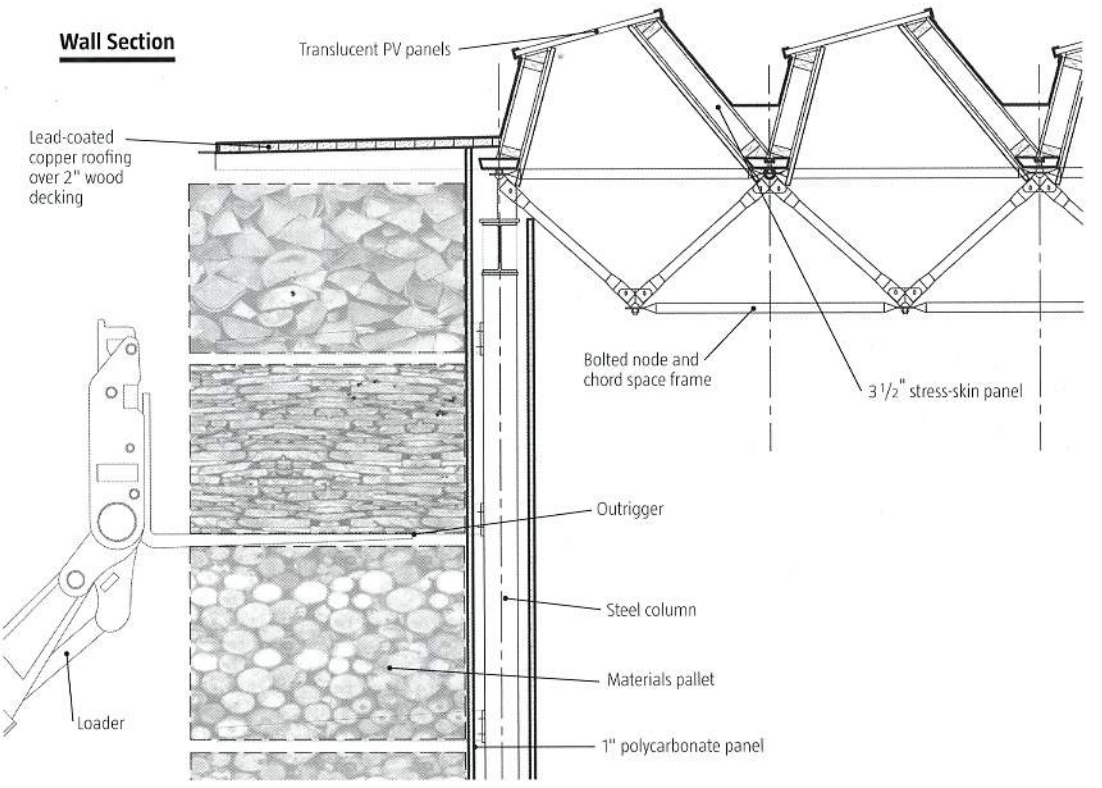
1. The barn's space-frame roof projects out over a paved area, providing a shelter for the storage of sand and other materials. An outdoor shower is a water source for wetting materials and a place for the owner's family to rinse off after taking a dip in the nearby lake.

2. Translucent photovoltaic panels are integrated into skylights on the building's roof. The system produces more than enough energy to power the building, allowing the client to recoup principal costs for the system more quickly by selling the excess electricity back to the local utility company.



Project Credits

Project Storage Barn, Washington, Conn.
Client Kevin McGarry, Catalpa Land Management
Architect Gray Organschi Architecture, New Haven, Conn.—Elizabeth Gray, Alan Organschi (principals); Thomas Sawyer (project architect)
Structural Engineer Edward Stanley Engineers
Mechanical and Geothermal Engineer Beacon Mechanical Service
Solar Energy Design Spire Solar
Construction Catalpa Land Management
Size 1,200 square feet (including basement)

1. The building was designed around the proportions of the 4-foot-wide pallets and around the turning radius and width of the loader used to move them. A bi-fold door can close to keep the loader secure and out of the elements.

2. The main interior space is an 800-square-foot ground level garage and workroom. Daylight filters in through the skylights and the white polycarbonate walls, reducing the need for interior lighting. A staircase leads down to the 400-square-foot basement level that houses the heat pumps and other mechanical systems.

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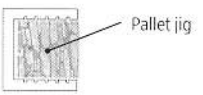
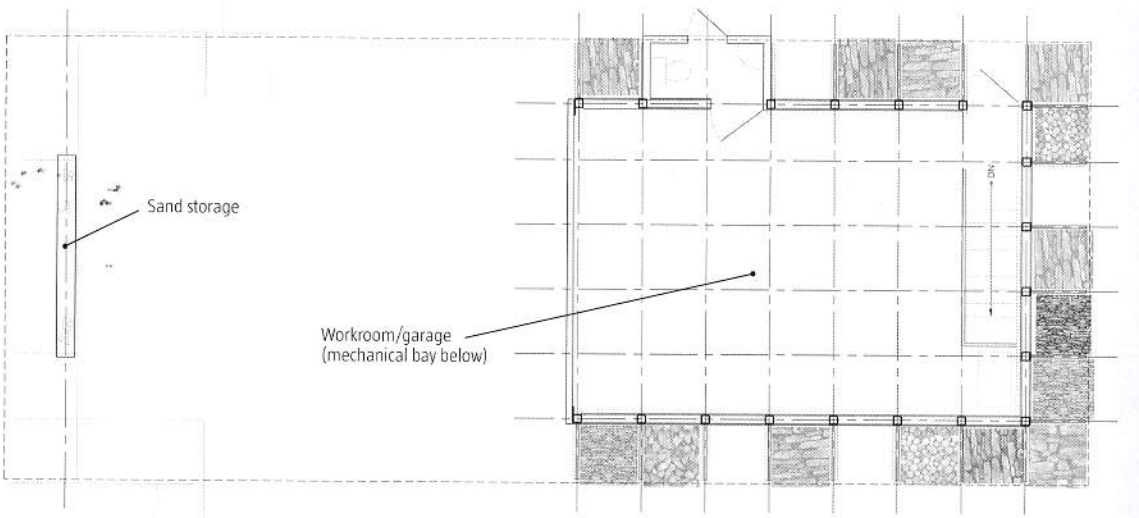
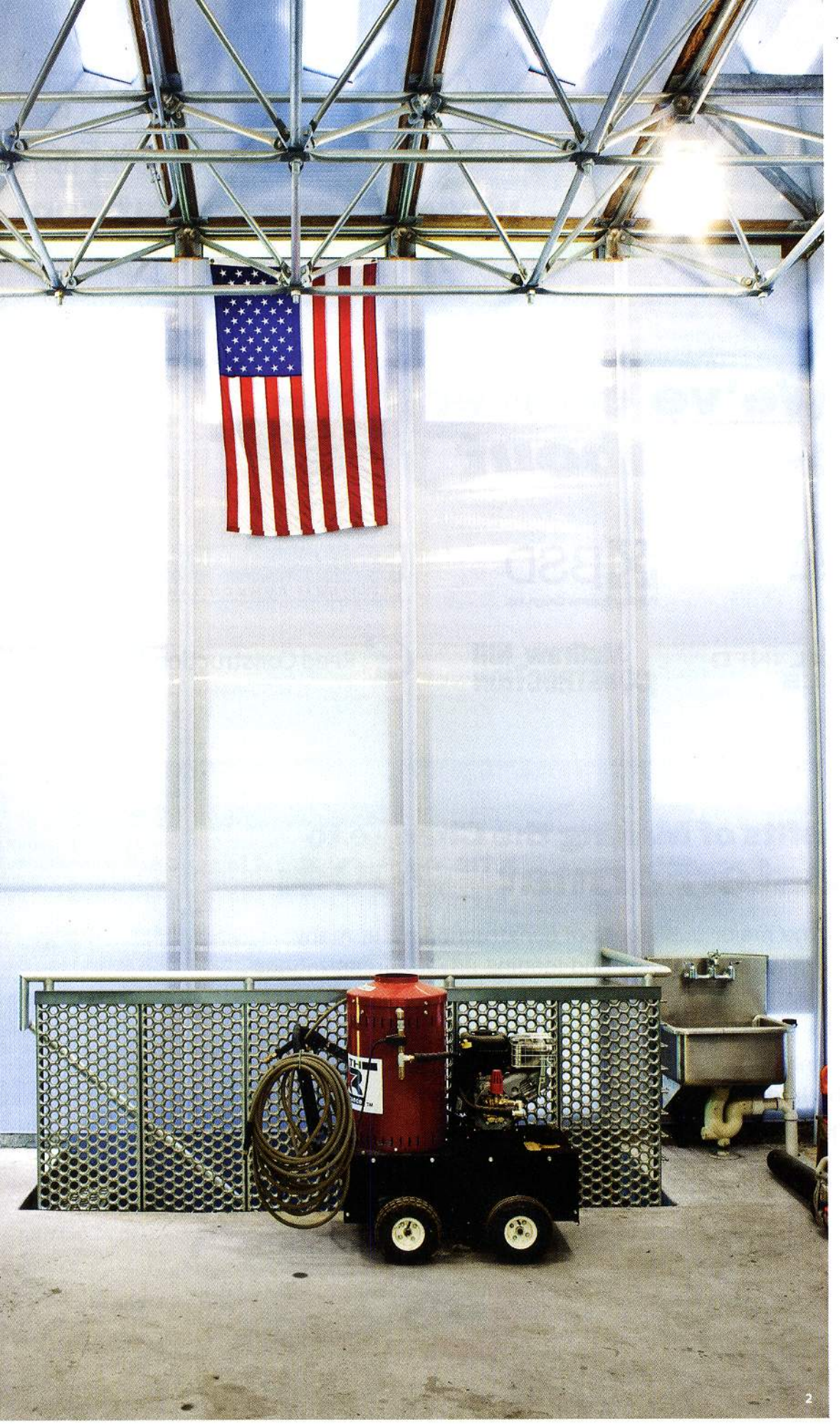


Floor Plan





TOOLBOX

Photovoltaic Panels
Spire Solar
spiresolarchicago.com
For the rooftop array, Gray Organschi specified the Spire Solar Chicago SS85 photovoltaic system because the silicon cells are integrated with the glazing panel, combining the daylighting function of the skylights with the energy production of the photovoltaic cells. The translucent PV panels allow even, natural illumination of the building's workspaces while reducing solar heat gain by removing energy from the sunlight.

Bi-Fold Door
Wilson Doors
wilsondoors.com
The horizontal bi-fold garage door by Wilson Doors eliminates the interference of interior overhead support structure and the operating mechanisms of more conventional garage door systems. By lifting outside the building, the door also does not block the skylights inside. A winch mounted at the top of the door assembly lifts the bottom edge of the lower door panel, which rides against a steel track that frames the door opening.

Space Frame
Delta Structures
deltastructures.com
The roof structure over the building is a lightweight, structural space frame by Delta Structures. Gray Organschi wanted to minimize the presence of the building so that the stacks of material read as the primary architecture. The space frame achieves the necessary span in both directions without requiring deep rim beams at the building edge. The Delta Structures bolted node and chord system was assembled on the ground and then lifted into place.

Polycarbonate Panels
Polygal
polygal-northamerica.com
The architects selected Polygal's 25-mm polycarbonate Thermogal sheet in ice white as a sheathing material for a few reasons. It is translucent—allowing 55 percent light transmission for even illumination of workspaces. It is durable—with low susceptibility to ultraviolet deterioration—while being extremely flexible and impact-resistant.