WOOD: ADVANCING ENVIRONMENTAL LEARNING AND LEADERSHIP

The 180 students of **Common Ground High School** do more than study urban farming and sustainability. They live it each day in a building that's now a national model of what is possible in green school construction.

"Find me a high school student anywhere in the country that knows where their school's sheet rock was processed."

It's a provocative challenge and at the heart of a new $7.5 million, 14,000 square foot addition to an environmental charter high school in New Haven, Conn.

The school is called Common Ground High School, and it offers public school students an innovative curriculum of urban agriculture combined with sustainable land-management practices. Last April it honored that earth-first ethic by opening the doors to the nation's first building to use cross-laminated timber (CLT) as a "stressed skin" assembly. The facility is targeted for LEED Gold certification.

School as Metaphor

The person responsible for the design (and sheet rock challenge) is Alan Organschi, designer and principal at New Haven, Conn.-based Gray Organschi Architecture. Gray Organschi's project portfolio represents an eclectic mix of commercial, educational, and residential projects across the northeastern U.S.

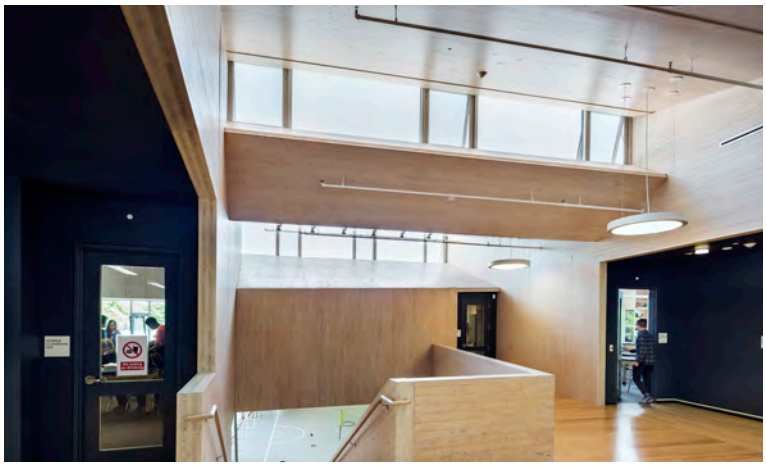
"Common Ground High School asked us for design recommendations," Organschi reports. "I suggested using mass timber as the construction material. I said we would source the wood. We know exactly what Canadian forest this wood is coming from. The school will be a great pedagogical lesson for the students. School leadership liked it. They were committed from the beginning."

Black Spruce

Working in close collaboration with design partner and co-principal of the firm Elizabeth Gray, along with respected local timber and structural engineers, Organschi and his team devised a construction strategy that deployed cellulose-based building materials throughout the addition. Black spruce CLT panels act as the tension surface and final ceiling finish. Vertical CLT panels form bearing and shear walls, while glue-laminated rafters and heavy timber trusses span the large ground-floor multi-purpose space.

Black spruce was selected because it's "super dense and has an incredibly high bending stress capacity," Organschi says. "The grain is tight and very beautiful. It's a very exciting material to work with."

"The air is really fresh." An unexpected outcome for students, faculty, and staff is the air quality, according to co-designer Alan Organschi of Gray Organschi Architecture. "Air quality is the bane of most public school construction. The students at Common Ground tell me the air feels really fresh, just like being outside. I didn't think that would be the big takeaway. I can only attribute that to the material, wood, quite honestly."



The sawtooth roof provides diffuse natural lighting for key spaces, allows for simple installation of photovoltaic panels on the south facing slopes, and directing warer to the surrounding rain gardens. The architect says artificial light is sparingly used, helping reduce energy expense and improving student and faculty visual comfort.

Supportive Code Officials

City of New Haven building code officials proved to be virtual partners. "The building authorities and fire marshal are incredible. They're very supportive. They read the documentation. They know all about charring and heavy timber construction and balancing. Sometimes they even present code information that helps us innovate," reports Organschi.

Gray Organschi Architecture is a long-time advocate for wood-based construction. Organschi started out as a furniture and cabinet maker before making the jump to architectural design. Today their architectural practice includes a workshop ("our laboratory") and a full-time technician.

Four-Week Construction

"Wood is amazing. It is remarkably durable, protective, and has enormous bending elasticity, a huge seismic benefit. It's also a beautiful material that looks good even when scuffed. Wood is also forgiving. If you make a mistake in fabrication, you can easily correct it in the field. That's not easy to do with steel, and you certainly can't do that with concrete." Organschi says that the new school building was framed in just four weeks by a crew of five, using prefabricated materials.

School Spirit

For Organschi, the environmental story of wood is most compelling. "You can talk about wood in terms of energy performance, renewability, and carbon sequestration. There's nothing like it. We need wood more than ever," asserts Organschi.

For now, the staff and students of Common Ground couldn't be happier with their new addition. "It's a triumph for the school, the state of Connecticut, and education building design."

"Common Ground students can point on a map where the wood for their school was grown and the CLT fabricated. That's a connection that matters. Students are proud of their school."

Owner: The New Haven Ecology Project
Architect: Gray Organschi Architects
General Contractor: Newfield Construction
Timber Engineer: Bensonwood
Photography: David Sunberg
Location: 358 Springside Avenue, New Haven, Connecticut
Year Completed: 2016

Black spruce CLT panels act as the tension surface (and final ceiling finish) in a system of prefabricated stressed skin assemblies that span the upper classrooms and circulation spaces. Vertical CLT panels form bearing and shear walls throughout the building.

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