



Ron Rambo brings a unique approach to green living

Ron Rambo is many things: a friend, a son, a volunteer and advocate for the disabled community, and a well-known figure of the city of Lancaster, Pennsylvania. Now, he's adding the word "pioneer" to that list, thanks to the Rambo Project, a cutting-edge home that will not only provide a totally accessible place for him to live with his wheelchair, but also one that will be radically sustainable.

Nicknamed "Ramboland," this ambitious project has been years in the making and has attracted the attention and cooperation of green builders, designers, government officials, and many others who have been inspired by Rambo's desire to create a home that embodies the word "independent" in every way, from personal independence for the disabled, to complete energy and water independence for the home itself.

"I hope this house will give me a more safe and accessible home with more independence, including independence from high utility bills!" says Rambo.

Rambo was born with cerebral palsy, which limits his speech and his ability to move his arms and legs. He uses a wheelchair exclusively and faces mobility challenges every day, the biggest of which is in his own home, a subsidized apartment that isn't accessible and isn't required to be: The Americans with Disabilities Act (ADA) applies to public accommodations, while the Fair Housing Act applies to new design and constructions. Rambo's apartment has front steps leading from the sidewalk to the front door, narrow doorways, and a tiny bathroom that's hard to maneuver in.

Eventually, Ron added a ramp so he could access the apartment via the rear door.

“The apartment is not wheelchair friendly, but I was desperate. Because of steps, the front door is not accessible, and I can’t even access the front porch or front hallway from my apartment because of the narrow doorways,” says Rambo. “But the biggest problem is the bathroom. It is so small that it is almost impossible to use either the toilet or shower safely. Even with two aides, I’ve slipped and fell in the tub.”

The struggle to find an accessible place to live has been ongoing for Rambo, but it was an offhand comment from his mother, Joyce Killian, who owns a small plot of land next to her house in Lancaster, that would change the trajectory of his life. “I said, ‘Gee, too bad you don’t know an architect, we could get a house back here for you,’” she remembers. “And he took off running from that.”

In fact, Rambo did know an architect: Max Zahniser, a LEED fellow, educator, and green building and corporate sustainability consultant. When Rambo approached him with his idea to build a green, accessible home, Zahniser’s imagination took off and he became project facilitator for the Rambo Project. “Realizing that there were actually these huge synergies between universal access design and sustainability got me really excited,” Zahniser says.

There’s also the idea of fostering health, from the health of the planet as a whole to everyday human health, and how they intersect. For instance, using polished concrete floors will not only provide a smooth surface for wheelchair users but also better indoor air quality than carpeting, Zahniser says. In addition, lights that go on and off without a switch when you enter and leave a room not only save energy, but also remove the barrier of light switches that are out of reach for wheelchair users.

Beyond "good enough"

Rambo is certainly not alone in his struggle to find accessible housing. A 2015

report by the U.S. Department of Housing and Urban Development Office of Policy Development and Research found that “although around a third of housing in the U.S. is potentially modifiable for a person with a mobility disability, currently less than five percent is accessible for individuals with moderate mobility difficulties and less than one percent of housing is accessible for wheelchair users.”

One barrier to accessible housing is how expensive it is to retrofit existing structures. But innovation is lacking too, Zahniser says. In setting accessibility standards in 1990, the Americans with Disabilities Act actually halted much incentive for exceeding those standards.

“Innovation in the field of accessibility completely ceased,” Zahniser says. “Although we brought the floor up for accessibility, we brought the ceiling down as well.”

The Rambo Project wants to far exceed ADA standards. For instance, according to the ADA rules, doorways must be at least 32 inches wide, but in a wheelchair, you can “lose your knuckles if you’re not careful,” Zahniser says. Although 32 inches might technically be “good enough,” it’s not really very good. That’s why the doorways in Rambo’s house will be a comfortable 40 inches wide. “Did we really want to stop at good enough?” Zahniser asks.

A model for the world when it’s complete, Rambo’s home will demonstrate how the core of a city block might function, says Zahniser, serving as an infrastructure supplement for its small part of the city. The plan is to provide energy, water, and ecosystem services to the surrounding neighbors, as well as Rambo.

The house’s design includes a full rooftop solar array that will produce more than four times as much energy it uses, eventually helping to power its neighbors, too. An onsite system for collecting rainwater and treating it through constructed wetlands and other technology will mean that the house won’t rely on municipal water or sewer services. Plus, the energy and water systems will work together through smart-grid technology. Zahniser says these water and energy smart grids

will be “making decisions” about moving electrons from this battery to that battery or water from this cistern to that fixture, based on sensors to tell them, for instance, that the potable water system is getting low, or even that there’s a rainstorm coming, and that they need to make room in the system for it.

“To our knowledge we haven’t seen an integrated water and energy smart grid, and that’s exactly what this will be when we pull it off the way we want to,” Zahniser says.

The Rambo Project also aims for Rambo to eventually get 50 percent of his dietary needs from his own land— growing fruits, vegetables, nuts, and herbs with the help of an integrated irrigation system.

“There are two big words that we have kind of latched onto: independence and interdependence,” Zahniser says, and Ramboland aims to achieve both, improving life for the people who benefit from it without degrading the environment in the process. Not only will the house help provide energy to its neighbors, but Rambo wants to make sure that whoever lives there after he does will also be able to use the house to its fullest extent. “There’s nothing selfish about this,” Zahniser says.

Among those tasked with making this idea a reality is Jesse Pellman, LEED AP, a partner at the Lancaster- based LongView Structures, an Organizational-level member of USGBC. “The hope is to combine parallel but often disparate goals: really high performance, healthy housing, and universal access and design,” Pellman says. “There’s not much that isn’t going to be pushing the envelope here.”

The house will feature other elements that marry universal access with sustainability, as well. Reclaimed and recyclable materials like reclaimed wood and steel both minimize off-gassing and reduce the number of virgin materials needed for the house. Extra-wide doorways, automation, adjustable-height equipment, lots of natural light, and air filtration and indoor plants also add up to the healthiest home possible for Rambo.

“We’re saying all of these things matter and we’re taking that holistic, equitable approach as the baseline,” Pellman says. “If not everyone has access, obviously someone is left behind, and that’s not how we want to envision a future.”

Partnerships at work

The sheer number of people involved with Ramboland is staggering, from ecologists, to plumbers, to civil engineers, to architects. They’ve been drawn to the project by its groundbreaking approach to systems and the performance they will yield, but even more so they have also been inspired by Rambo’s excitement, vision, warmth, and generosity of spirit.

“That’s him,” says Rambo’s mother, Joyce. “If you know Ron, he’s your friend or you’re his friend.” Among the most inspiring things about the project is the way it’s drawn in unexpected stakeholders. friend or you’re his friend.” Among the most inspiring things about the project is the way it’s drawn in unexpected stakeholders.

“These amazing synergies and symbioses come out of it,” Zahniser says. For instance, inner-city students with the partner nonprofit, the Philadelphia-based Coded by Kids, will be doing some of the coding for the house’s smart grids.

And the project wouldn’t have been possible at all without the cooperation of the city of Lancaster, which is allowing the project to move forward even though a lot of what it’s asking to do is unprecedented in terms of building and permitting for urban residential areas, such as allowing onsite capture and utilization of rain-water for drinking and other uses, and onsite bioremediation for gray and black water.

“This is one of the examples of living laboratory functions we are not proposing houses ultimately do, but perhaps city blocks,” Zahniser says. “And tying those systems in with healing ecosystems (which will provide food and reduce pests) is not something you see in cities much yet, if at all.”

Lancaster Mayor Richard Gray has been an enthusiastic supporter of the project.

“They didn’t have to talk to me long to convince me,” says Gray. “I’ve told the people in this city we want to be as friendly as possible and be as assisting as possible...we shouldn’t get hung up on technicalities.”

“Ron’s way”

What started as an idea for a new home for Rambo has evolved into something incredibly ambitious, and perhaps even unique in the world. When it’s complete, the Rambo Project aims to serve not only as a place for Rambo to live, but also a living laboratory and a model for equitable living space. Throughout the project Zahniser says the phrase “Ron’s way” has been a touchstone for their goals.

“We’re going to do it the way Ron wants,” Zahniser says. For instance, Rambo insisted on height-adjustable features, like cooktops and sinks, inside the home so that anyone who lives there after he does can do so comfortably.

Moreover, “Ron’s way” always comes back to Rambo’s desire to be a pioneer. Zahniser has taken him at his word. The team is pushing the boundaries for green and accessible design, making the house as meaningful and innovative as possible, even if it means a greater expense and longer timeline. Fundraising for the project is crucial and ongoing.

Even so, Zahniser says they’ve “designed a building that will be cost-competitive to build if it were plumbed and wired like a normal home, and compared to standard custom-built homes of that size, in that part of the country.” Moreover, the team believes that the cost of the sustainability systems “is far outweighed by the economic, social, and environmental resilience they will establish for not just one household, but a neighborhood,” Zahniser says.

For Rambo, the house will be more than a dream come true. “I hope that my house will lead the way to other homes like it that help heal the earth, give back to the neighborhood, and improve the quality of life for any person facing a mobility challenge,” he says. “It makes me feel useful.”
