



Chris Brandt of Carbondale, Colo., takes a spin over the roof of the 165-square-foot Oculus.

Alan Brandt



OFF-GRID CABIN COMBINES CYCLING AND ARCHITECTURE IN ALL WAYS POSSIBLE

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Words by Trina Ortega



Brent Moss

They say it's not a party till something gets broken. In the case of the Stomparillaz bike collective party to celebrate the completion of its off-grid, bike-rideable cabin, it was the face of a local Frenchman named Jacques "Frenchy" Houot.

There were about two-dozen joyful cycling enthusiasts in attendance, as expected. There was lots of dancing in a small space, as expected. It was the night of a full moon, as expected. Jacques was brash and forcefully sociable, as expected. He grabbed a bottle of unopened champagne and announced it was time to party. This sent a shiver down the spine of architect Steve Novy, who had spent the previous 10 weeks taking lead on the ambitious plan to construct a carbon-neutral cabin with materials being biked and hiked in to the remote building site in the foothills near Glenwood Springs, Colo.

The project had caught national attention and was being filmed for DIY Network's "Building Off the Grid" show. The video crew was still hanging out at the overnight party, and Novy didn't want

things to get out of control — even if it was an accidental champagne cork flying through the cabin's south-facing glass wall made up of several precisely milled panes filled with glass and arced in the shape of an eye (hence the name Oculus). He didn't want any part of the structure to get damaged, period, much less have an incident get filmed. But Jacques was careful; he expertly opened the champagne, strategically pointed the cork toward the ceiling, and let it pop. Novy breathed a sigh of relief.

Then Jacques put his thumb over the mouth of the bottle, shook it with his strong 90-year-old hands (the guy still races cross and rides nearly every day), and started spraying the champagne as if he had just taken a podium spot on the Tour.

Novy is as game to party as the next guy. This celebration, after all, was called the "REAL" StompOculus Dance Party. But he had spent his own money, and invested time, expertise and employee power from his business, Green Line Architects. He and six of his

friends — each with his own skillset — had spent hundreds of tough, long hours constructing the cabin as well as building trails to the site and for the approach to ride the structure. They had chosen the Oculus project over family time and singletrack outings. It was his pride and joy, his “rideable, huckable, huggable” architectural baby. And the fact that all of it was being filmed by a cable network meant he had a chance to really influence others to consider this type of anthropomorphic, energy-efficient building that works with its natural surroundings.

Sticky champagne all over the windows, walls and custom hand-hewn wood furniture just could not happen. So in the 165-square-foot space packed with happy bouncing friends, sometime near the witching hour, Novy tackled Jacques, and as the two men fell to the floor, Jacques’ head hit the square edge of the small sink counter. It wasn’t comfortable — Jacques’ cheek got cut, and blood was spilled. Jacques has seen a lot in his day and doesn’t get tripped up by little things like that, so with the champagne spray suppressed, the dancing continued. The juicy little scuffle would’ve been great for made-for-reality TV, but the camera crew reported that they had missed it all. But the sound guy came running in and said, “I heard everything!”

The cable network captured the important parts, in terms of what it took to construct such a unique project. The story of The Oculus and the team’s cycling-powered project premiered on “Building Off The Grid-Rocky Mountains” in December.

The broadcast was a notable point in the life of Novy’s brainchild and offered a venue within which Novy could show the general public that buildings can be constructed in a conscientious, organic manner and to share his belief that buildings should be rideable. Novy doesn’t picture Danny MacAskill-level trials riders balancing on 10-inch-wide rooflines and handrails 30 feet off the ground (although there’s always an open invite for MacAskill to ride The Oculus).

“Buildings are becoming more curvilinear and anthropomorphic. We, as humans, crave biophillic design,” said Novy describing structures that mimic organic forms and integrate natural elements. “Look at today’s modern architecture, and you’ll see sweeping roof lines that are just begging to be ridden.”

The team studied bike park features to construct the rounded roof designed like a table-top jump as well as the trails leading up to the rideable roofline. It’s no small feature and the angles are steep, but it’s wide and safe. If you’re going fast enough from the bermed uphill trail, you can catch air. If you’re Stomparillaz founder Max Cooper, you’ll clear the entire 18-foot rooftop.

“It’s a great example of how to get more out of our roof forms,” Novy said. “The roof is not just a roof — it is a rideable part of the trail system. All buildings should be rideable.”

Opposite page: The interior of The Oculus features woodworking by Board by Design and lighting by Alpenglow Lighting Design.

The local artisans and bike nerds who spearheaded the construction, pictured below, are (L-to-R): Darin Binion, Aaron Humphrey, Rob Hollis, Steve Novy, David Rasmussen, Max Cooper, Dan Giese, and Brad Reed Nelson.





Steve Novy

The structure was built on Stomparilla Aaron Humphrey's property, 12 acres of private land at about 7,000 feet in the high desert of Western Colorado where sage, juniper, piñon and prickly pear cactus dominate the terrain. It has a solar-thermal system used for in-floor radiant heating; a wood stove; custom solar-powered LED light fixtures built on DuraAce wheels with bladed spokes; a built-in sound system to play music via wi-fi; and charging ports. The majority of the materials were either salvaged, donated, recycled or reclaimed in some fashion, but the team purchased new OSB sheathing panels, screws and joist hangers. It has an extremely low carbon footprint, according to an analysis performed by Green Line Architects. Novy has plans to create a water catchment system as well, now that it's legal for Colorado residents to collect rainwater.

With its innovative, south-facing glass wall, the cabin takes advantage of the high Colorado sun. There are a number of important components to the project, but the pinnacle design piece is the eye-shaped south-facing wall, designed for maximum passive solar gain.

"It's an exercise in biomimicry. Oculus means 'eye,' and as an optimized passive solar design our eye-like-faced-window-wall is designed to take in heat energy from the sun," Novy said.

"Picture the entire structure as an eye," he explained. "The irregularly faceted window wall is the cornea and lens of that eye. The floor and the back wall absorb solar radiation as heat, store it, and release that heat back into the space overnight. We control how much sun hits the window wall with our overhangs and with selective pruning of the juniper and piñon on the south side of the structure. The overhanging roof becomes our eyelid."

Novy eventually aims — with Oculus 2.0 or 10.0 — to integrate

those functions into a control system (optic nerve) that automatically extends and retracts the overhangs when more shading or sun is needed.

Another key aspect to aiming for carbon-neutral was to use bicycles for both transportation and the construction process. The DIY Network imposed a date for the show, and the team had just 10 weeks to source the materials and haul them on cargo bikes five miles up a county road (with about 800 feet in elevation gain) from the staging area. Because the deadline was moved up for the TV show, there were days when the work party drove the county road then hiked or rode the short trail to the build site. That altered the goal of being completely carbon neutral with the build, but the process was exemplary in regards to energy offset.

"The Oculus is a great example of sustainable construction, not just design. We brought in materials by bike and by hand in order to be sensitive to the natural setting of the build site," Novy said.

It did end up putting to test the group's cargo bikes. The project required ingenuity in how to transport heavy and awkward items, such as 2x4s, a concrete

mixer, tools, beams, a water tank, and windows. They developed an energy-generating system using a trainer, a bike and some heavy-duty work stands to mix concrete in a defunct mixer whose motor had burned out. The system can also be connected to the building to charge the PV batteries.

Novy described using his cargo bike, a Surly "Big Dummy," to carry 16 80-pound bags of concrete mix (not all at once) across a shallow roadside ditch and onto the singletrack leading to the cabin.

"I tried three different times, before I stopped to rethink everything," he said. "You don't want to fall, and you certainly don't want to be falling down the trail backward ... which I did."

Those failed attempts resulted in the construction of a little land bridge out of rocks. He also became efficient at centering the load on the bike and cinching down the bags of concrete with inner tubes.

DIY Network's senior vice president of programming and production John Feld says the bicycle component attracted the network to highlight The Oculus. "I love the incredible off-the-grid ingenuity these bicycle enthusiasts utilize to get their house built. They use their bikes to transfer supplies to the build site, to mix their cement, and even to prepare their morning protein smoothies. Brilliant," Feld said.

Those same guys make up the heart of the Stomparillaz bike collective. They celebrate the key components of a life well-lived: cycling and art. They spend much of their time on two wheels. They commute by bike, swing polo mallets, fabricate bikes, paint bikes, pedal to the highest points of the USA Pro Cycling Challenge to cheer on the pros, fat bike to warming huts in the dead of winter, ride tall bikes, hold full-moon cruiser rides; and of course "rip sickly



Brent Moss

sweet singletrack at high speeds,” according to Novy. The group is open, with members hailing from Glenwood Springs, Carbondale and Telluride, but there are a handful of regulars — each with his own colorful nickname — who keep the spirit strong.

“Eight friends agreed to come together as the core build team,” Novy said. “Everyone chipped in on evenings and weekends to get it done. We all got to know each other a little bit better and managed to navigate some tricky issues along the way.”

Although based in traditional construction techniques, the very nature of the structure required some creative problem-solving. Since the posts and beams were assembled first, the walls could not be framed and sheathed in standard fashion. The posts stand in front of the walls, so there was no way to install the interior OSB sheathing for shear strength. Humphrey had studied technical theatre in college and was a professional stagehand before becoming a lighting designer, so his solution was to build the walls like theatrical flats. 2x4 framing was attached to sheets of OSB, then these were stood up behind the posts. This left the exterior of the walls open, so insulation and exterior sheathing were installed, making all of the walls strong torsion boxes. This was a critical structural aspect so that the building stayed rock-solid as cyclists rode over it.

“We had to be creative, not only to build something with such

an unusual shape, but also with random materials. There’s no ‘Oculus Kit’ out there, so we ended up with roofing materials for siding, we made our own concrete with materials on site, and Dura Ace wheels wrapped with LEDs for custom light fixtures,” Humphrey said.

More than 50 community members donated time and expertise to construct the Oculus, but that core team consistently showed up. Steve Novy who also goes by “SteveZee,” “Snovy,” and “Scooba” (architect and cat herder); Aaron “Hump” Humphrey (property owner, lighting designer); David “Yaya” Rasmussen (master craftsman, CNC machining wizard); Brad “BRN” Reed Nelson (master woodworker, creator of the built-in bench and bunk); Daniel “Diesel” Giese (logistical expert, strong man, artist); Darin “NiRad” Binion (bike designer/mechanic); Max “Slappy” Cooper (Stomparillaz founder, artist, cycling advocate); and Rob “RockHolla” Hollis (Green Line architectural intern).

The project caught the eye of more than a national cable network. Locally, a large nonprofit, Habitat For Humanity, has hired Green Line Architects to design its 40,500-square-foot ReStore retail warehouse in Glenwood Springs. Alpenglow Lighting Design, Humphrey’s company, is designing the lighting and controls. Novy says Oculus 2.0 is already in the works, as well. 🌞

For more about the project, visit www.whatistheoculus.com.