

HOW VULCRAFT HELPED LOCHSA ENGINEERING AVOID A ROCKY MOUNTAIN WINTER.

When a Homewood Suites needed to hit its completion date despite using a new product and winter looming, Nucor Vulcraft stepped up its cooperation. Even though Lochsa Engineering had used Vulcraft's Ecospan® structural floor system on previous projects, the nationally recognized engineering firm relied on Vulcraft's collaboration to complete the project using both Ecospan and one of Vulcraft's newest products, RediCor® modular steel form system. Due to Vulcraft's cooperation, this first project implementing these systems together went smoother than any project in Lochsa's 25-year history.

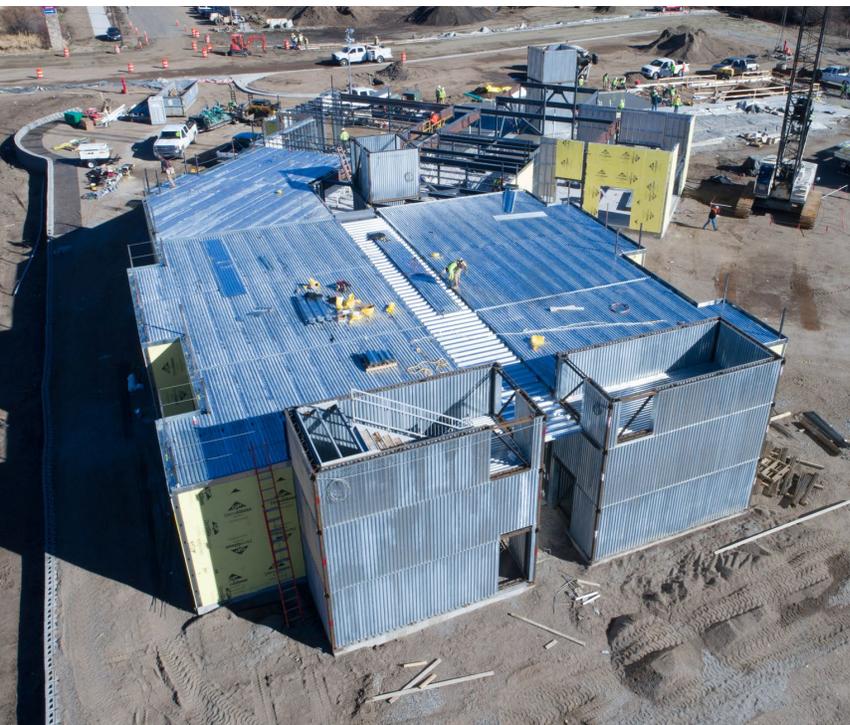
Background

Homewood Suites in Steamboat Springs, Colorado is an 87-room, four-story hotel. The building's framing system is cold formed steel (CFS) on a structural steel skeleton.

The project's EOR, Quiroga-Pfeiffer Engineering Corporation (QPEC), contracted much of the structural engineering work to Lochsa Engineering.

Lochsa is a full-service engineering company licensed in all 50 states. Its team engineered lateral wind and load bearing walls and floors, as well as worked with Vulcraft and panelizer, Fastwalls, to keep the project on track.

Project: Homewood Suites, Steamboat Springs
Structural Engineer: Lochsa Engineering
Engineer of Record: Quiroga-Pfeiffer Engineering Corporation (QPEC)
Wall Panelizer: Fastwalls
General Contractor: Brown Contractors, Inc.
Architect: Gary Frank, Architectural Group III
Developers/Owners: Homewood Suites by Hilton
Square Footage: 145,086 sqft.
Completed: 2018



“ I've traveled for years with my team to talk to different contractors, and this was the first project where everything lined up perfectly. It just worked. Happy owner and happy contractor. Perfect teamwork and collaboration.”

- Riley Mahaffey, P.E., Principal at Lochsa Engineering

Why were Vulcraft's Systems Chosen?

Ecospan is a structural floor system comprised of joists, decking, and Shearflex® screws that work compositely with the concrete slab. It offered many advantages for Lochsa, including:



- Minimal or no costly shoring is required, allowing for easier trade access and faster construction
- More open space with fewer load bearing walls, creating more flexibility in the use of the interior space
- Fewer structural pieces required to distribute the loads of across the CFS walls due to Ecospan's integrated Load Distribution Member (LDM)
- MEP can be run easily through interstitial space
- One-, two-, and three-hour UL fire-rated assemblies without sprinklers
- All parts, including closure plates, are supplied, making it easy for the contractor to get the floor in place

Nick Hrico, P.E., Senior Engineering Manager at Lochsa, emphasized a key benefit of Ecospan structural flooring system is that **“the overall composite design eliminates shoring and allows for open spans, all while using a thinner slab. That saves head room and makes clients happier.”** He also valued that fire ratings have been tested. **“One-, two-, and three-hour UL fire-ratings without a sprinkling space makes it easier and cheaper.”**

The integral Load Distribution Member reduced the amount of red iron steel needed for the project and was a key point for Hrico, who said **“the one thing we love is the bond beam (LDM) created over the walls. It helps to transfer loads and eliminate columns, and we don't have to line up everything directly, some variance is okay.”**

Riley Mahaffey, P.E., Principal at Lochsa, also focused on the value of the Load Distribution Member. **“The LDM is a selling point for Ecospan. With no shoring, the day after concrete is poured above, subcontractors can start to put in mechanical and electrical below because shoring won't be slowing down the overall process.”**



RediCor

The RediCor modular steel form system is a series of prefabricated core sections that are stacked on-site like building blocks and then filled with concrete. RediCor was chosen for this project for the following reasons:



- The core erection process is significantly faster and requires less on-site labor
- Pre-installed connections for floor and roof framing means framing can be connected sooner, with no need to wait for core curing
- RediCor reduces construction coordination issues with trades, due to reliable fit-up from pre-planning and precise engineering
- Cores allow for earlier and safer upper floor access due to built-in stairs
- Finished sections are structurally equivalent to Cast-In-Place walls of similar thickness

“ Using RediCor meant we framed *with* instead of *around* the foundation, so the framing was connected quicker. Everything was buttoned up and dried in very quickly, so construction in winter months wasn't exposed.”

- Riley Mahaffey, P.E., Principal at Lochsa Engineering





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Project Challenges: Timing and the First Time Using RediCor

Although the reasons for choosing Ecospan and RediCor were clear, Lochsa couldn't help but be a bit nervous using a system new to them on a project with a tight timeline. The Homewood Suites site was about to be hit by the approaching Colorado winter.

One issue was a concern by the EOR, Quiroga-Pfeiffer Engineering Corporation, about using a “proprietary” system. Riley Mahaffey, P.E., Principal at Lochsa, said that QPEC had to be educated in why and how Ecospan was the most effective solution, but that the issue was easy to overcome. He said that **“one of the hurdles is that people think Ecospan is a proprietary system, but it's not. Once they understand this, it really helps, knowing that it's all just standard construction material.”**

What Vulcraft Did

Nucor Vulcraft's team worked with Lochsa throughout the design, detailing, and construction. Riley Mahaffey, Principal at Lochsa, described Vulcraft as **"highly collaborative and accurate."** Nick Hrico, P.E., Senior Engineering Manager at Lochsa, said that **"one way Vulcraft helped was with virtual coordination meetings to look at the models. We were able to find problem areas and congestion, and we resolved them internally without having to involve the contractor, so there were minimal RFIs during construction."**

Jeff Gowans, Senior BIM Designer at Lochsa, said that **"from a modeling/coordination standpoint, Vulcraft's team can provide a model which makes things easier because we can insert their model into ours. Coordination is much easier."**

“ I'd like to commend the Nucor team - they have the ability to fix errors and coordinate with us on them. Customer service is huge. Not only is Ecospan itself an asset, Nucor stepped up to provide closure plates, exterior and interior.”

- Riley Mahaffey, P.E., Principal at Lochsa Engineering





What Was The Result?

With the advanced planning and coordination, the construction delivery process was universally described as **“very smooth.”** The first RediCor module was delivered in the first week of October, and the dry shell was up in well under three months, with the erector off the site the week before Christmas. Mahaffey said that **“using RediCor meant we framed *with* instead of *around* the foundation, so the framing was connected quicker. Everything was buttoned up and dried in very quickly, so construction in winter months wasn’t exposed.”** In the end, Vulcraft’s planning, delivery, and coordination lead to the project being completed early.

“ With Nucor Vulcraft’s planning, we were able to shave weeks off the project schedule. The project just clicked, it went really well.”

- Riley Mahaffey, P.E., Principal at Lochsa Engineering

Ask An Expert

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