Colorado mountain passes get remote-controlled gas avalanche control — finally

CDOT installs 16 Gazex exploders along Loveland, Berthoud passes

By Jason Blevins
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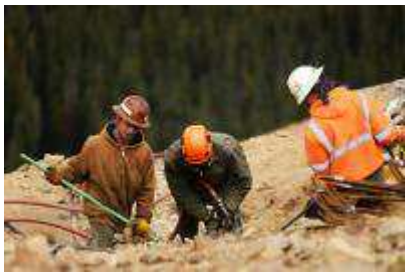
There's a new tool in CDOT's avalanche-taming arsenal that doesn't involve the time-honored, but dangerous, strategy of hurling bombs into sketchy snowpack along high mountain highways.

Contractors this month are installing 16 Gazex exploders on Loveland and Berthoud passes, hoping the remote-control systems will keep roads open — and reduce reliance on World War II-era cannons and compressed-air launchers that shoot ordnance into avalanche zones.

"This is a big change," said Ray Mumford, who started triggering avalanches for the Colorado Department of Transportation in 1975 and retired from training the agency's avalanche experts last winter. "The biggest I've seen."



Ground crews work on installing the pipes for the Gazex avalanche mitigation system on Friday, Sept. 18, 2015 at Loveland ski area. (*Hyoung Chang, The Denver Post*)

WATCH: Video as CDOT installs the Gazex avalanche mitigation system

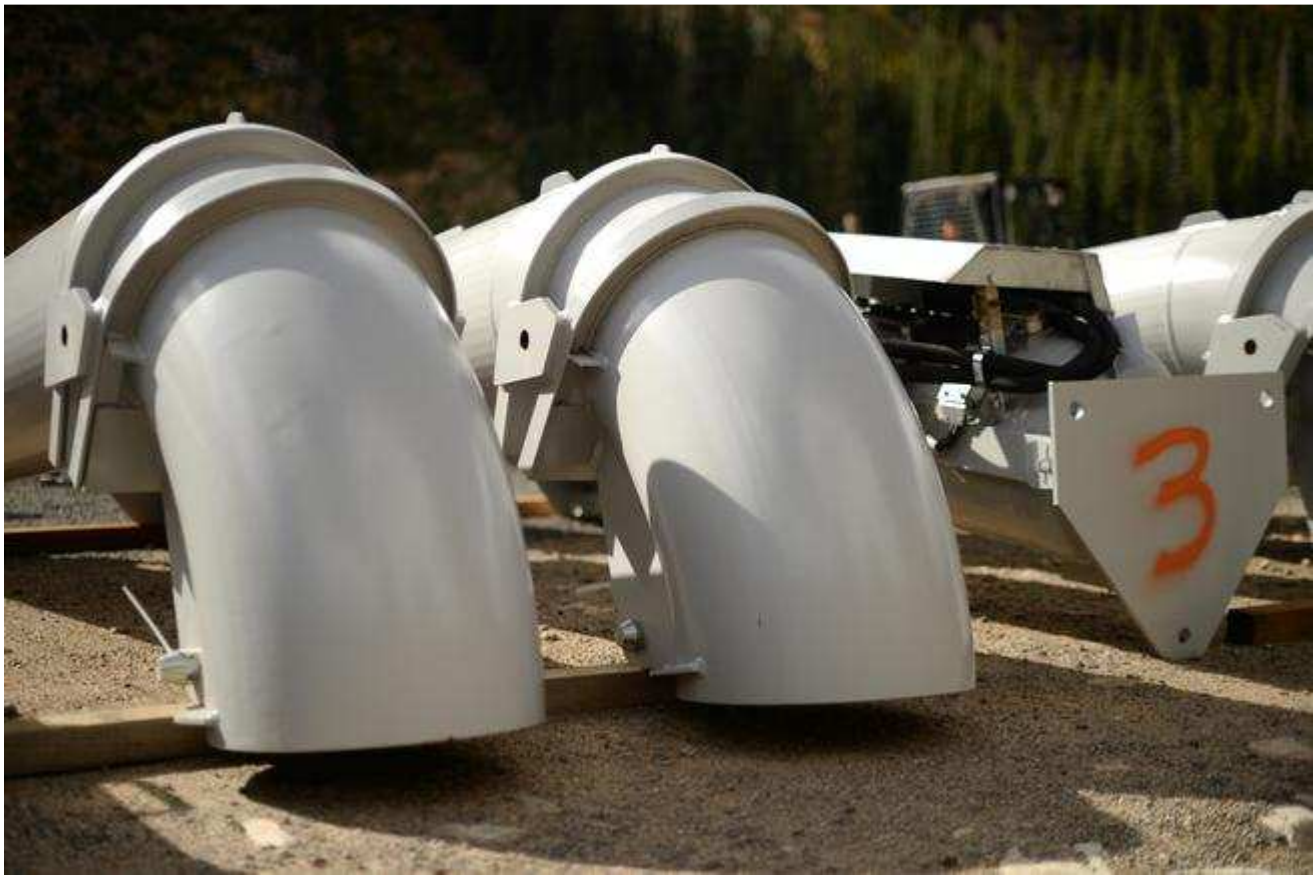
The solar-powered Gazex system uses propane to trigger concussive blasts of compressed air in snow loading zones.

CDOT has been studying the system for years, but the urgency was amplified in March 2014, when an agency explosives expert and a Colorado Avalanche Information Center forecaster were injured by an explosive round that prematurely blew up inside the barrel of a compressed-air cannon known as an Avalauncher.

The team was shooting explosives into the avalanche-prone slide paths known as Seven Sisters that tower above U.S. 6 just east of the Loveland Ski Area near Loveland Pass.

"It certainly changed perspectives. If we can reduce explosive use, that's a good thing," CDOT's highway maintenance director Kyle Lester said Friday as he toured the terrain atop the Seven Sisters.

The 11 Gazex exploders on Loveland Pass and the five in the Stanley slide path that twice crosses U.S. 40 on Berthoud Pass will cut CDOT's statewide use of the Avalauncher by a third, Lester said.



CDOT unveiled a Gazex avalanche mitigation system Friday that remotely uses compressed gases to create a concussive blast to trigger a slide. (*Hyoung Chang, The Denver Post*)

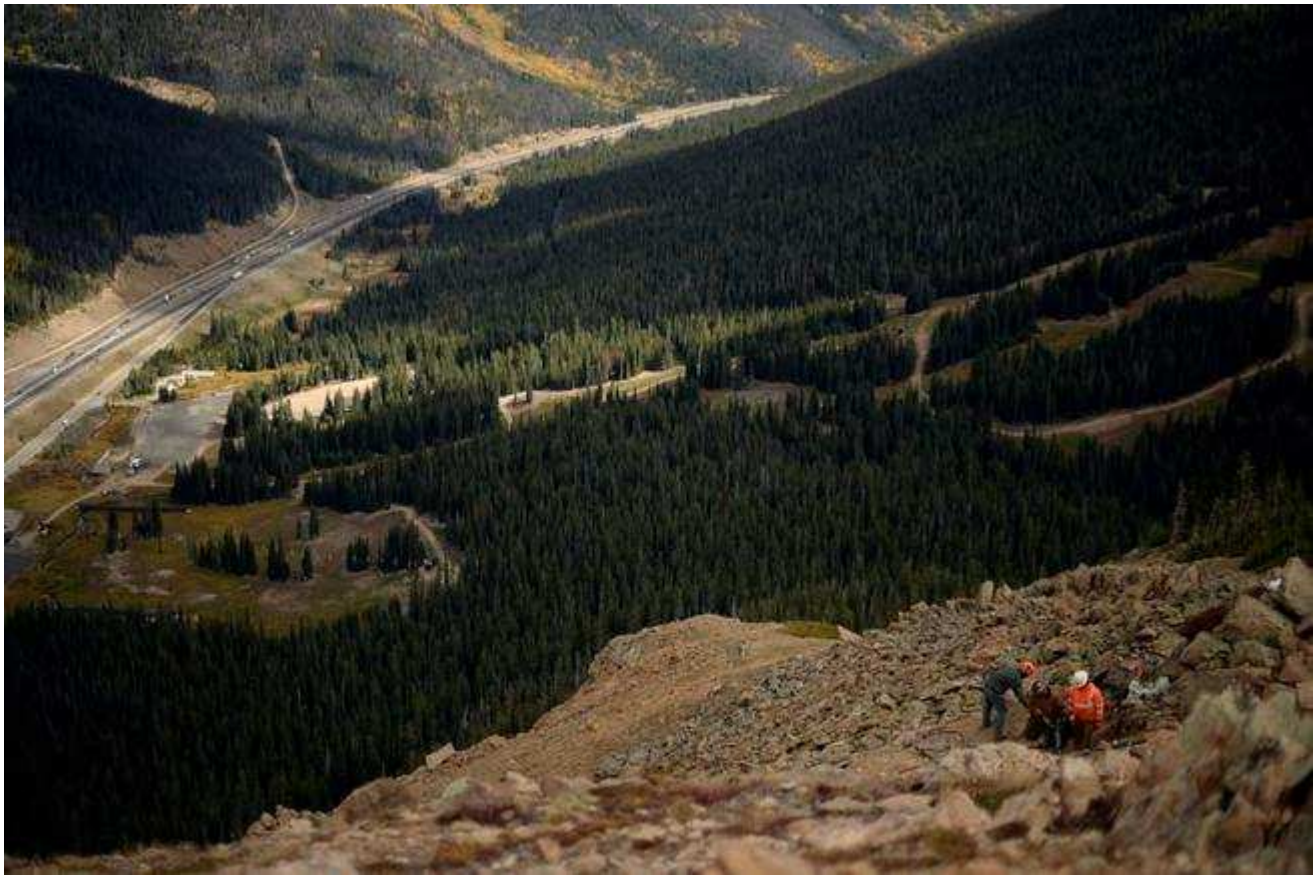
CDOT approved the installation of five Gazex exploders on Berthoud Pass in April 2014, hoping to reduce the threat of avalanches that cut off access to Winter Park. But the bids came in high, and the pilot project was delayed.

There are almost 2,000 Gazex exploders — 12-foot arcing pipes that project snow-destabilizing blasts — around the world. But there's only one in Colorado: in a back bowl at Wolf Creek Ski Area.

Lester and other CDOT officials visited with colleagues from Washington, California, Wyoming and Nevada, where Gazex exploders are used to protect highways. They heard enough praise that in early 2014, CDOT asked the Federal Highway Administration to waive "Buy America" regulations so it could acquire the French-made Gazex systems.

Avalauncher is the only domestic avalanche-mitigation system. The CDOT waiver request noted that the system's hurled explosives were "exactly what CDOT, USDA Forest Service,

and the U.S. Army want to reduce; namely the practice of firing artillery shells to reduce avalanche risk."



Ground crews install the pipes for the Gazex Avalanche System at Loveland ski area. The system is controlled remotely by operators from a secure distance, creating a safer operation. (*Hyoung Chang, The Denver Post*)

The Gazex exploders detonate with the push of a button on a laptop. And CDOT and CAIC experts will press that button regularly — basically every time it snows.

The idea is that persistent blasting will prevent the accumulation of large slabs of snow that can become devastating avalanches.

Roads still will close during detonations, but the chance of lengthy closures caused by large avalanches will be reduced. And workers will be much safer pressing computer keys than handling bombs.

"I think this is going to be real important — a big change — for how we do things on this pass," said Ethan Greene, the executive director of the Colorado Avalanche Information Center, which has contracted with CDOT since 1992. "This is going to give us more flexibility ... and allow us to blast more often. That will keep the road open more often."

CDOT and CAIC monitor and mitigate avalanche conditions in 278 slide paths above Colorado roads. In winter 2013-14, roads were closed for 616 hours for avalanche control.

That same season, CDOT plows spent more than 8,900 hours clearing more than 30,000 feet of snow from roads covered by 283 agency-triggered avalanches and an additional 158 natural slides.

Keeping Loveland Pass open means fewer closures on Interstate 70 at the Eisenhower and Johnson tunnels. When the pass is closed, other traffic is held while tractor-trailers hauling hazardous materials pass through the tunnels.

"If we can keep the pass open more often, we can reduce traffic closures on I-70," said John Crowder with Parsons Corp., the engineering firm orchestrating the Gazex installations.

Winter Park ski area is a big supporter of the Gazex installation, kicking in $75,000 of the $225,000 that Grand County governments and businesses put up for the project. Last season, two closures of Berthoud Pass hurt business. The year before, five long closures pinched traffic at the ski area.

"Berthoud Pass shuts down, and it's bad news for us," Winter Park ski area spokesman Steve Hurlbert said.

The 16 Gazex exploders and support materials cost CDOT $1.5 million. Installation of five exploders on Berthoud Pass, by Henderson-based Midwest Rockfall, cost $655,755. Installation of the 11 exploders on Loveland Pass, by Lakewood's Harrison Western Construction, cost $979,000.

The return on the investment should be immediate.

Each 105mm round fired from a World War II-era howitzer or fused bomb from an Avalauncher costs close to $200. About 1,000 of them are launched into the Seven Sisters slidepaths every winter. Last year, 21 did not explode, requiring dangerous recovery efforts.

CDOT is researching and prioritizing other potential slidepaths for Gazex installations.

The Loveland and Berthoud pass installations were studied by the Forest Service under a categorical exclusion of the National Environmental Policy Act, which means the project did not require intensive environmental review. The footprint for the Gazex exploders on Loveland Pass was less than 5 acres.

"The major things we were looking at were public safety, wildlife and visual impacts," said Arapaho and Roosevelt National Forests spokeswoman Reid Armstrong.