Ready to Chop, Chip, Blast Away Winter

Memory of Last Season's Deluge Fresh, Caltrans Crews Ready for Battle Again

Caltrans has bulked up its defenses for the coming winter as it continues to deal with the aftermath of last season's weather onslaught.

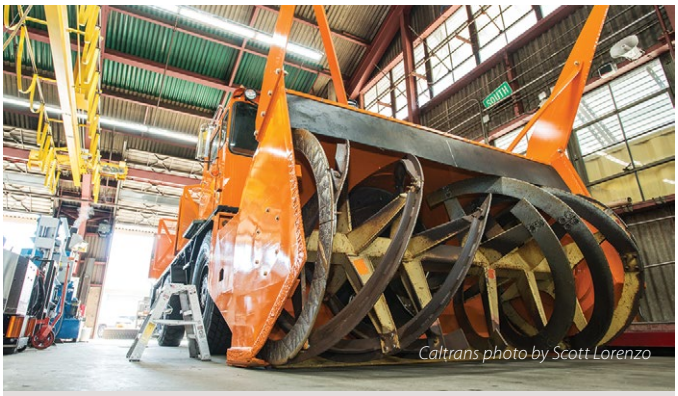
Winter 2017 battered California, and the State Highway System. Fierce storms dumped a mind-boggling 63 feet of snow in parts of the Sierra Nevada, washed out a portion of Highway 50 east of Sacramento, ruined a bridge in Big Sur, triggered a landslide along Highway 1 so massive that it altered the coastline, and unleashed a torrent of mudslides in Southern California.

Damage to state and local roadways from last winter's storms in California totaled more than $1.46 billion through December — and estimates continue to climb. The number of damaged sites on state highways reached 431; 338 of those required "director's order" declarations to authorize the immediate hiring of contractors to begin repair work. The amount of money spent on those emergency repairs topped $920 million.

To get ready for this season, Caltrans staff beefed up its winter-busting arsenal and performed considerable maintenance work. Crews cleared debris from pipes and culverts, stabilized slopes and banks, tuned up equipment, and stocked up on de-icing materials.

Last winter, Caltrans deployed a new generation of ice-melting equipment called an Epoke spreader, which treats highways with a less-abrasive ice-melting brine solution. Also, two "pusher" trucks will again be available to assist big rigs that lose traction on Interstate 80 when icy weather descends.

Winter 2017-2018 brings a new addition to the winter-preparation toolbox — a self-propelled personnel hoist with a reach of 83 feet. With it, maintenance workers can inspect and repair bridges, and perform emergency tree trimming in all weather conditions. The all-terrain vehicle can be operated by a driver, or remotely. It can be positioned on uneven surfaces, and allows repairs in areas that crews have a hard time reaching.



The arrival of storm season means extra duties for Caltrans' mechanics who must tune up the arsenal of snow-fighting equipment.

Big to-do list for cold-weather prep

Keeping more than 1,200 plows, almost 200 graders and myriad other equipment working during winter is a daunting task. The Department's 342 mechanics throughout the state serviced nearly 2,000 pieces of equipment in preparation for winter. The Division of Equipment creates service requests for each piece of equipment that needs work, which makes jobs easier to track.

On the to-do list: Mechanics in Caltrans main equipment shop in Sacramento spent weeks refurbishing eight huge diesel-powered snow blowers, which can blast up to 5,000 cubic tons of snow per hour off roadways. Mechanics refurbished blower boxes, engines, and hydraulic and electrical systems, and applied fresh paint.

Keeping the freeways passable during heavy rain and snow is a challenge. Crews work around the clock during snowstorms, which requires an army of workers. Typically, the Maintenance Division has about 3,000 field employees who can be called upon

to respond to weather-related events at any one time. About 600 seasonal workers are bolstering the cold-weather work force, although an improved economy, coupled with a wave of retirements, is making it harder to find seasonal help.

Maintenance also has added five ice breakers to its fleet, bringing to nine the number of these machines that chew up snow and clear icy debris off roads. Caltrans also has brought in six brine-making systems used in the de-icing process in Caltrans' regional districts that deal with snow in the Northern and Central Sierra. These systems melt roadway ice in a less abrasive and more environmentally-friendly manner.

By late summer to early fall, Caltrans districts in snowy regions are stocked with equipment and materials to respond to the upcoming winter weather conditions.

Higher elevation strategies

Caltrans is in the process of replacing aging avalanche-control equipment in high-altitude sections of Districts 3 (Sacramento-northern Sierra), 9 (Inyo/Mono counties) and 10 (Stockton-central Sierra). Strategically placed in avalanche zones, these "cannons" — some of which were designed specifically for the Department — use a mixture of propane and oxygen to unleash a controlled avalanche to reduce the risk of a dangerous uncontrolled event later.

After last winter's deluge, Caltrans is adding to the supply of machines that drain debris from pipes and drains, and is making tips on "weathering the storm" available to the public. The Department also distributed winter preparedness reports to district offices. These checkoff lists are reminders to district staff about winter procedures, and provide useful contact information. MM

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Panels Deflect Danger

Part of Caltrans' winter preparation in the central Sierra Nevada involves fine-tuning "jet roofs" — metal panels carefully positioned on snowy summits to redirect wind and prevent the formation of overhanging slabs of ice. If allowed to form, these deposits pose a danger to passing motorists if dislodged.

A jet roof acts as an aerodynamic structure, placed on the crest of a ridge where snow buildups known as cornices form on the leeward side. Supported by angled iron legs and staked to the ground, the 10 foot-by-10 foot panels direct wind downward, discouraging such formations.

Caltrans maintains 142 of these structures along the ridge lines above Highway 88, in an avalanche-prone area known as the Carson Spur. Caltrans also maintains 65 wind fence installations, each 8 feet by 10 feet, on the windward side of lower passes near the Kirkwood Ski Resort. The total length of the system protects .63 miles of exposed ridge line from cornice buildup.

Metal panels called "jet roofs" line a section of a Central Sierra ridge above Highway 88 to keep potentially deadly cornices from forming.

District 10 Maintenance crews inspect the jet roof stock every summer. Because the climate is inhospitable during the winter months, wear and tear is expected. This year, 23 units required repairs, such as new legs, wires or metal panels, or, in some cases, entire replacement.

Heavy snow and howling winds last winter season buried and crushed sections of jet roofs. High winds can wreak havoc if panels aren't kept in tip-top shape.