



RoadView™ Advanced Snowplow

SUMMARY: Provide vehicle position, guidance, and obstacle detection information to snowplow drivers thereby making snow removal safer and faster.

NEXT MILESTONE: April 2000: Demonstration in Arizona

FUTURE PLANS: Multiple vehicles, commercialization.

PARTICIPANTS: California Department of Transportation (Caltrans), UC Davis AHMCT, UC Berkeley PATH, Arizona DOT (ADOT), MSU Western Transportation Institute

The job of clearing busy highways during the winter months can sometimes be treacherous. Since the economy in the Sierras and Northern Arizona depends so much upon tourism and, of course, supply couriers, the main highways must stay open during the winter. The Advanced Highway Maintenance & Construction Technology (AHMCT) Research Center is working on giving snowplow operators assistance to locate the road and avoid obstacles, such as parked vehicles, during stormy conditions.

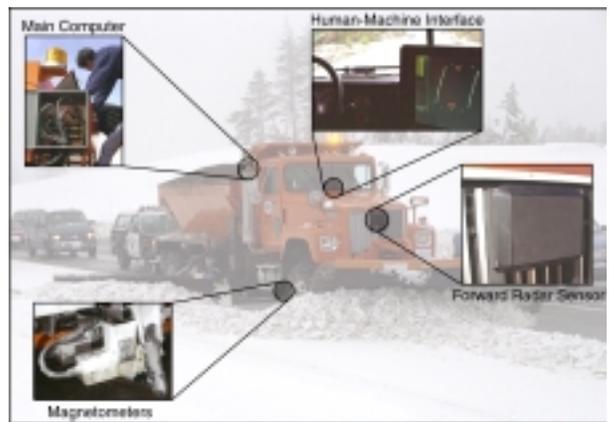
The Advanced Snowplow Project, Phase II (ASP-II) continues research, development, and testing of RoadView™, a driver information system. A display designed for maximum comfortable driver assistance will show where the plow is in relation to the roadway, provide guidance information, and also alert the driver if obstacles are detected within the path of the plow. The sensors used are designed to operate in the snowy, icy, and otherwise harsh conditions typical in the snowplow environment.



Future advanced winter maintenance work may include automation to steer a rotary plow (snow blower) down the snow-covered highway shoulder and avoid collisions by stopping, slowing, or moving around a detected snow-covered obstacle.

Technical development for RoadView™ ASP-II involves a partnership between the AHMCT Research Center at the University of California - Davis, and UC Berkeley's Partners for Advanced Transit and Highways (PATH) Center. System

evaluation is provided by Montana State's Western Transportation Institute. Funding is provided by Caltrans as part of the Intelligent Vehicle Initiative Specialty Vehicle & Infrastructure Consortium Partnership. ADOT is providing a second primary test site and snowplow operators. Caltrans Maintenance is providing test vehicles, and Caltrans Equipment Service Center is assisting in instrumentation of two next-generation ASP vehicles under the next RoadView™ project.



VEHICLE GUIDANCE

PATH researchers are providing expertise in the area of magnet-based vehicle positioning technologies used for the vehicle guidance, as well as human factors expertise for design of the human-machine interface.

COLLISION AVOIDANCE

Radar technologies are used for the detection of obstacles in the path of the snowplow vehicle, as well as the wingplow, which projects into the adjacent lane. With the careful consideration of the harsh and complicated snowplow environment, UC Davis' AHMCT researchers have installed radar units designed to provide both the sensitivity needed for accurate obstacle detection and also the ruggedness needed for durable reliability. Being the leader in this project, the AHMCT researchers provided the vehicle integration and installation expertise for the multiple technologies on the plow.

TEST SITES

ASP-II is being operated in the Winter 1999-2000 at two primary locations: Interstate 80 near Donner Summit in California, and US 180 north of Flagstaff, Arizona. Magnets have been installed in these test areas, and additional test section installations will occur in California, Arizona and other states.