

# DRISI

CALTRANS DIVISION OF RESEARCH,  
INNOVATION AND SYSTEM INFORMATION

# Research Notes

Equipment

APRIL 2024

Project Title:  
Evaluation of Mobile Robot Teams  
for Security of Caltrans Equipment  
Yards and Maintenance Stations

Task Number: 4288

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## Evaluation of Mobile Robot Teams for Security of Caltrans Equipment Yards and Maintenance Stations

This project plans to research security systems to reduce component theft at Caltrans yards and Maintenance stations.

### WHAT IS THE NEED?

The California Department of Transportation (Caltrans) Caltrans currently experiences high amounts of vehicle component theft at equipment yards and maintenance stations. Cumulatively, the state has had over \$4 million in catalytic converters stolen to date. Equipment yards and maintenance stations typically have perimeter fences and sometimes standing guards, but guard service is prohibitively expensive for wider usage across the state. These current security measures are inadequate to deter criminals.

Caltrans needs evaluation of a modern security system. A system type being investigated in this task are teams of mobile robot security guards for potential deployment in Caltrans yards. Such systems hold the promise of greatly reducing this theft problem and associated costs.

### WHAT ARE WE DOING?

The project plans to first survey the mobile robot security guard landscape. Once the options have been determined, the project panel will select one system to be evaluated. The researchers will develop a pilot test plan to perform specific tests to assess the system's ability to deter theft at a test site selected by the panel. Caltrans personnel are expected to participate in the pilot test.

After the tests have been conducted, a cost-benefit analysis will be completed to compare the theft cost versus the system cost in addition to a survey of the pilot testers' experiences with the system.



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knowledge that improves  
California's transportation system



## WHAT IS OUR GOAL?

The goal of this project is to determine if modern security systems can provide overall reduced costs due through reductions in theft in Caltrans facilities.

## WHAT IS THE BENEFIT?

This project plans to address the security needs of Caltrans equipment yards and maintenance stations. These advanced security systems are expected to deter theft and streamline the process of alerting responding agencies to intruders at sites where these systems are deployed.

## WHAT IS THE PROGRESS TO DATE?

The Boston Dynamics robot dog “Spot” was procured and deployed for pilot testing at Caltrans Shop 8 in San Bernardino. A demo day was held for shop staff, panel members, and local law enforcement to view the system in person. The robot dog system has already detected several security events since pilot testing began.

The demonstration can be viewed at this link:  
<https://youtu.be/wEmglslzcjI?si=y6kwY4Rbj2CSlnET>

For the latest task information, please contact the task manager.