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CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION
TRANSFORMING IDEAS INTO SOLUTIONS

Research Notes

ATC Cabinet Pilot Project

Caltrans District 10, in partnership with the METS (Materials Engineering Testing Services) Lab and HQ Traffic Operations, is piloting the use of Advanced Traffic Controller (ATC) Cabinets to replace traditional 33X and 34X models due to their enhanced capabilities and compatibility with existing infrastructure. The pilot will install cabinets from two manufacturers at a signalized overpass, with risk mitigation through spare units and interchangeable wiring. This project aims to evaluate ATC performance across maintenance, operations, and construction, potentially setting a new statewide standard.

Rural

MAY 2025

Project Title:
ATC Cabinet Pilot Project

Task Number: 4445

Start Date: December 28, 2023

Completion Date: DECEMBER 31, 2025

Task Manager:
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WHAT IS THE NEED?

Current traffic signal cabinets are of a dated design that require specialized knowledge to operate and maintain. This presents a significant challenge for new and under resourced maintenance staff. The ATC cabinet was designed to increase efficiency and safety by going from an integrated system to a completely modular system with remote diagnostics and troubleshooting capabilities.

METS EQASI (Electrical Quality Assurance and Source Inspections), in collaboration with Caltrans District 10, would like to pilot ATC cabinets on both ends of an on/off ramp intersection (2 neighboring locations). Because the Caltrans Traffic Signal Control Program (CTSCP) does not have the capability of communicating using the SDLC (Synchronous Data Link Control) protocol of the cabinet, this project will also require the use of non-standard traffic signal control software. These programs are like those used by cities, counties, and other states' DOTs (Department of Transportation). HQ Traffic Operations is aware of this and is willing to provide a variance to the requirements to deploy and test this equipment on Caltrans Right of Way.

WHAT ARE WE DOING?

This research will deploy 2 cabinets with third party software to evaluate the usability and maintainability of the ATC cabinet system. The timeline of this research will include 1 year to

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WHAT IS OUR GOAL?

The goal of the research is to evaluate the effectiveness and feasibility of deploying Advanced Traffic Controller (ATC) Cabinets as a modern replacement for standard 33X and 34X traffic signal cabinets. By piloting installations in District 10, the project aims to assess performance across maintenance, operations, and construction, while identifying potential statewide implementation benefits.

WHAT IS THE BENEFIT?

The benefits of piloting the ATC cabinet will be a controlled test of whether this system will integrate into the existing Caltrans ecosystem. Many local agencies rely on Caltrans Specifications (including TEES (Transportation Electrical Equipment Specifications)) for their traffic signal equipment. Providing a thorough evaluation of this system will allow not only Caltrans, but also all other DOTs with data on how these systems integrate into existing networks and the potential benefits that can be seen by utilizing this new technology.

Caltrans can leverage existing deployments by other agencies to streamline the deployment process and utilize test criteria developed by METS to qualify products in the future. The ATC cabinet is expected to provide a significant decrease in troubleshooting time required by maintenance personnel, and this change will be measure through the testing criterion developed.

IMAGES

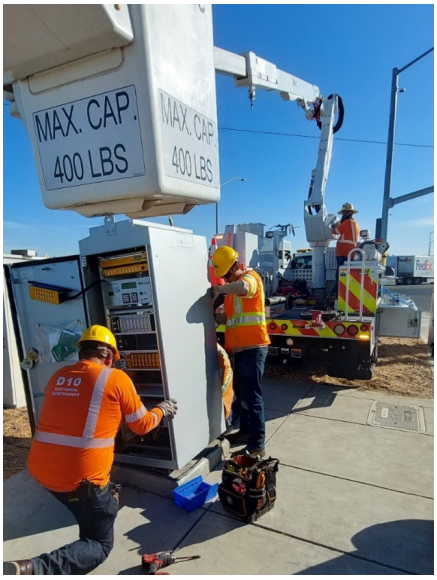

Image 1: Installation of Swarco ATC Cabinet on French Camp Rd.

Image 1: Safetran ATC Cabinet Installation