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Project Title: Support Caltrans
Unmanned Aircraft Systems (UAS)
Program

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TPF-5(556)-Uncrewed Aircraft Systems (UAS) Standardization

Standardized UAS data practices are urgently needed to support consistent, defensible, and scalable DOT operations.

WHAT IS THE NEED?

State Departments of Transportation (DOTs) have increasingly integrated Uncrewed Aircraft Systems (UAS) into activities such as surveying, construction inspection, bridge inspections, incident response, earth movement monitoring, and asset management. Despite this widespread adoption, there are still not nationally recognized UAS data collection standards.

The absence of consistent standards results in uneven data quality, varying flight procedures, inconsistent accuracy expectations, and fragmented quality control practices. These inconsistencies limit interoperability across agencies and vendors, increase project risk, and hinder the ability of DOTs to scale UAS operations effectively.

To fully realize the benefits of UAS and ensure defensible, repeatable, and interoperable workflows, State DOTs need clear, reliable, and uniform UAS data collection standards for leading use cases such as surveying, construction inspection, and bridge inspections.

WHAT ARE WE DOING?

A multi-year pooled fund research project is being launched to develop, validate, and publish UAS data collection standards for the transportation industry. Over five years, the project will deliver one major use case per year, each supported by literature reviews, focus groups, gap analyses, test flights, standards development, validation activities, and the creation of guidebooks and field references. Deliverables will be reviewed and approved annually by the Technical Advisory Committee (TAC).



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WHAT IS OUR GOAL?

The main goal of this project is to deliver a unified, comprehensive UAS Standards and Specifications Guidebook that equips State DOTs with clear, defensible, and practical UAS data collection practices. This guidebook will establish validated standards for key applications including Survey, Construction, Bridge Inspections, As Builts, Incident Management, Earth Movement, and Asset Lifecycle & Maintenance ensuring consistent and reliable outputs across agencies. In the final project year, earlier use cases will be updated to reflect advances in technology and evolving industry needs, keeping the standards current and future ready.

WHAT IS THE BENEFIT?

Standardized UAS specifications will enable DOTs to generate consistent, high-quality, interoperable datasets that support engineering, surveying, digital delivery, and asset management workflows. Benefits include improved data reliability, reduced duplicative validation, more efficient cross-agency collaboration, increased worker safety through reduced field exposure, and greater scalability of UAS programs across districts, projects, and asset classes.

WHAT IS THE PROGRESS TO DATE?

The kickoff meeting was held on April 2, 2026. An advisory committee has been established and working groups have been formed.