Implementation Procedure Summary for Survey and Mapping

Introduction:

The use of UAS has created a substantial return on investment for DOTs for survey and mapping applications. Using UAS with a variety of tools and incorporating their strengths into one data set can provide the most significant benefit. The steps below illustrate procedures to assist with the successful implementation of using UAS for surveying and mapping.

Define Mission Objectives

- Data Collection Goals (Monitoring, Design Data, Quantities, Point Cloud, Aerial Imagery)
- Timeframe
- Data Quality and Accuracy (Design or Mapping Grade, Ground Samping Distance)

Develop System and Staffing Plan

- Team Selection (Internal or Consultants)
- Aircraft Platform (Fixed Wing or Rotorcraft)
- Sensor Selection (RGB Camera, Lidar, Multi-spectral)
- Ground Control Point Placement and Collection
- Quality Control Plan
- Software

Develop Flight Plan and Conduct Risk Assessment

- Pre-Flight Plan to Meet Goals (Overlap of Images, Cloud Cover, Lighting and Shadows,)
- Site and Operation Analysis for Risk (Flight Lines, Weather, Airspace, Traffic, Population, Wildlife, Private Property)

Obtain Permits or Waiver

- LAANC
- COA
- National Park
- Airport
- Private Property Notification

Obtain Approval and Perform Flight Operations

- UAS Manager Approval
- Site Preparation (Lane Closures, Take-off and Landing Sites, Signage)
- Perform Flight

Assess Outcomes and Document Lessons Learned

Data Management

- Data Processing Required
- Storage
- Deliverable Formats (Orthomosaic, Point Cloud, etc.)