



COMMONWEALTH *of* VIRGINIA
Office of the
SECRETARY *of* TRANSPORTATION

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UAS Activities in VDOT

- VDOT has participated in a number of pilots and demonstrations in a variety of functional areas to “get our feet wet” and begin to understand where we can bring UAS into agency operations now
 - Early demonstrations of infrastructure assessment
 - Tethered and untethered systems for traffic and incident management
 - Assessment of rock slope condition and risk of slide
 - Public communications for large scale projects (Rt. 29 Solutions)
- Hosted a Peer Exchange to gain insight from other states

Infrastructure Inspection

- The Structure and Bridge Division (S&B) is modifying contract language to include robotic inspection (to include UAS) as an allowable option for ancillary structures. VDOT does not specify Means and Methods in contracts.
- S&B will incorporate the use of UAS for inspection of difficult to access elements and larger areas to direct follow-up inspections.
- S&B will investigate the use of unmanned underwater vehicles to conduct visual inspections of scour.
- S&B will support several demonstrations this year on the use of robotic technologies including a robot that applies cementitious material inside a culvert and a robot that “crawls” up a column and removes contaminated concrete prior to repair. Both will extend the service life of existing infrastructure in a more cost effective manner.

Incident and Traffic Management

- VDOT is partnering with the Virginia State Police to deploy UAS for data collection when a severe crash requires scene reconstruction. To date, an assessment of available UAS technology has been conducted and FAA Part 107 classroom training (pilot certification) is underway. Four VDOT staff and 12 Virginia State Police (VSP) Crash Reconstruction Troopers have received the classroom training and “hands on” training is planned for fall 2018.
- VDOT will be prepared to conduct post event damage assessment via UAS in the event a severe weather event or other natural disaster should occur that impacts the transportation network. UAS will be valuable in determining the extent of flooding, debris, or other damage to the infrastructure.

Environmental Applications

- The Location and Design (L&D) MS4 program will coordinate with the Maintenance Division to incorporate UAS as a tool in the post-construction stormwater management (SWM) facility inspection program.
- L&D will coordinate with the Environmental Division to incorporate UAS as a tool for evaluating potential wetland areas during project development.
- The Environmental Division will utilize UAS technology in lieu of traditional aerial flyovers of at least one wetland mitigation site to demonstrate that use of such technology would result in a cost savings to the department and provide better resolution imagery.

Rock Slope Stability

- **VDOT is partnering with Radford University to establish the methods, protocols and workflow for safely using UAS for rock slope stability investigations. This work will result in a framework that will guide both in-house and contracted investigations.**

Surveying

- VDOT's Construction Division will use UAS to provide weekly progress photos on up to 10 construction projects across the state, and ideally, the progress photos could be embedded into the construction plans to verify the correct horizontal placement of construction elements.
- VDOT's Construction Division will use UAS to document as-built conditions of up to 10 construction projects across the state to verify the horizontal location of construction elements, including storm water management facilities, vegetation establishment, and/or structures.
- UAS will be used to estimate the extent of sediment runoff after large storm events on up to 10 construction projects across the state.
- UAS will be used to verify that work zones are properly maintained and comply with the Maintenance of Traffic (MOT) identified in the plans, Manual on Uniform Traffic Control Devices (MUTCD), and Virginia Work Area Protection Manual (VWAPM) on up to 35 projects throughout the state.

Thank you!