

TECH HELPER

Drone Usage

now a must for construction projects

By Christopher Scott D'Angelo

While historically the construction industry has generally been slow to adopt new technologies, of late it has shown an increasing—and necessary—acceptance of the use of drones. In fact, it appears that the construction industry is the leading sector in using drones.

Drones provide effective and efficient capabilities for inspections, surveys, designs, monitoring, progress reports, site management and safety, as-builts, etc., or in troubleshooting or responding to warranty or other issues, or in addressing claims—and with good reason. More and more firms are recognizing the importance of this tool, especially as technology and user-friendliness has advanced and more personnel have become accustomed to and proficient in the use of drones. In this article, we update our earlier article on the use of drones.

Drones have improved dramatically and continue to do so almost daily. Airframes are better, flight capabilities are better, cameras have higher and impressive resolutions, and more cameras and sensors can be deployed. Artificial intelligence and laser scanning are being used to eliminate unwanted data and improve accuracy and reliability, to make a more usable and accurate model.

Of course, as we noted in our January 2019 article published in *Modern Contractor Solutions*, “Beneficial on projects—but they’re not toys,” drones are not toys but sophisticated pieces of equipment subject to regulations under the Federal Aviation Administration (FAA) and Occupation Health & Safety Administration, as well as possibly under state and local regulations.

A discussion of FAA requirements and references to state and local requirements is included in that article. See also www.faa.gov/uas. As an aside, the Association for Uncrewed Vehicle Systems International has launched a multi-state initiative, called Drone Prepared, to help federal and state lawmakers embrace drones for uses such as infrastructure inspections, package delivery, wireless internet, agricultural surveying, search and rescue, firefighting, etc.

Likewise, the use of drones involves risks and so must be managed and used by competent, trained (and licensed) personnel. Being reasonably new technologies and activities, it is also important to investigate insurance issues to be sure that you have coverage of the activity and are not later surprised should there be an incident or claim.

DRONES ARE MULTICAPABLE

Drones are no longer only cameras in the sky—that alone is an enormous benefit—but also can have infrared sensors, geo-location sensors, lasers, and LiDAR systems capabilities. These capabilities provide crucial data collection and allow for 3D modeling and renderings of a construction site to identify challenges and drive considerations to address and overcome them. They further allow for monitoring the developments of the site preparations and construction continuously and in real time, and also allow the data and details to be relayed directly to computers, again in real time, that can create accurate 3D models and renderings giving the managers, engineers, and architects crucial details of the project and its progress.

The collection and accuracy of data is greatly enhanced by newer artificial intelligence or augmented reality capabilities. Drones can feed into augmented reality systems, allowing for 3D visualization of sites and proposed buildings, automated measurements, analysis and presentation of design changes, and efficient decisions.

Drones can also tie into orthographic imagery whereby the computer corrects distortions, again enhancing precision, usability and reliability: www.dronegenuity.com/orthomosaic-maps-explained.

MANAGING COMPLIANCE, RISKS

Combining the inputs from the drones and artificial intelligence adds the benefit of not only ongoing monitoring but also anticipating issues and giving alerts to issues as well as potential solutions that the managers, engineers, and architects can study, and making informed decisions in real time. Having this data, videos and photographs, and the modeling capabilities, accessible in real time and in virtual format increases the collaboration among the engineers, design teams, managers, and owners.

The use of drones also provides enhanced safety, accident avoidance, compliance with applicable regulations, and risk management, as well as reduces the potential for accidents, liability or government citations.

Safety and security on the site are greatly enhanced by the use of drones. Employee training is crucial to safety and can be enhanced by using simulations of the conditions in the field or up on the girders. Likewise, dangerous situations can be

discovered in advance and accidents avoided, and the security of the site can be monitored as well. Drones can access areas that are otherwise inaccessible or in unsafe areas.

Even equipment inspections and safety can be enhanced. For example, most jurisdictions and insurance companies require regular inspections of cranes and towers. The drone, with its enhanced capabilities discussed above, can be used to conduct those inspections. It saves time and personnel, and is most likely more accurate. Hopefully the enhanced inspections will avoid an accident, but in the event of an incident, the drone fed data and imagery (assuming that they are saved as they should be) will be helpful in determining what happened and why, and in the defense of any claim.

Drones can be more than an eye in the sky. Drones can now be used to transport and deliver materials and equipment, improving efficiencies and accelerating deliveries and availability of such items. It is not far off that drones, like vehicles, will have autonomous capability.

INSURANCE, DOCUMENTATION

Obviously, there are risks associated with using drones and it is imperative to be sure that your operators are qualified and that you have the appropriate insurance in place (be very careful about exclusions often found in general commercial policies). Likewise, contracts must be reviewed and updated to address these and all concerns arising from the use of drones, such as controlling the use of drones, maintenance of required records, who bears the responsibility for compliance with laws and regulation, what oversight will be in place, liability and indemnification

issues, insurance, and the intellectual property and privacy issues mentioned above. Plans and procedures should also be addressed and put in place for responding to and reporting an accident, including for providing required notices to the FAA. And consideration should be given to appropriate signage and perhaps consent forms for notice to employees and visitors.

CLOSING THOUGHT

Drones provide tremendous benefits to the construction industry, which yields happier owners and reduces the risk of misadventure or claims. ■

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