

## AFRL DEMONSTRATES URBAN FAST SENSOR CAPABILITIES



Engineers from AFRL and the Mustang Technology Group teamed for a Phase II Small Business Innovation Research effort to develop and test Urban Fuze Air-to-Surface Technology (FAST). Urban FAST is a precision height-of-burst (HOB), ground-profiling fuze sensor capable of engaging targets in urban terrain. Regardless of target structure and background, AFRL's Urban FAST sensor can accurately discriminate true ground height from surrounding structures, enabling accurate HOB weapons operation. The sensor technology has demonstrated its capacity to operate effectively in urban environments and will significantly reduce the potential for collateral damage associated with employing ordnance in those densely structured and populated areas.

The test team designed and constructed an innovative urban scenario, using shipping containers as structural bases and reconfigurable wooden modules stacked atop the containers to vary structural height. The test airframe housed the Urban FAST sensor, antenna, and hardened data recorder. The team executed a total of ten parachute drops and two functional drops over the mock town. Conducting low-cost drop tests over such a mock-up enabled researchers to collect data representative of an actual urban area, verifying both Urban FAST sensor system performance and predictions of discrete ground structure reflectivity. The drop test results proved Urban FAST's accuracy in extracting ground elevation data throughout the weapon's operation in proximity to discrete structures. Subsequent data analysis identified what algorithm and simulation adjustments would be necessary for perfecting radar algorithms and preparing Urban FAST for drop testing in an actual tactical scenario.

Weapons with precision HOB accuracy are crucial to military operations conducted in urban terrain, wherein the risks to nearby civilians and friendly forces and the potential for collateral damage are far greater than in other environments.