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Constructing the First TUAV Landing Zone on Fort Bragg

By Captain Stephen C. Amato

The 618th Engineer Company (Light Equipment) (Airborne) completed the first dedicated tactical unmanned aerial vehicle (TUAV) landing zone on Fort Bragg in early August 2005. The project has long been needed to provide training space for the TUAV aircraft. Named “Ram Landing Zone,” it was constructed with the installation support of the Land Rehabilitation and Maintenance (LRAM) section of Integrated Training Area Management (ITAM)—an element of the Directorate of Plans, Training, and Mobilization. The 618th completed the landing zone, which covered just less than 5 acres, in approximately 5 weeks—a quick turnaround for a multiagency project.

Selecting a Site

The 82d Airborne Division’s pinnacle event each training quarter is the joint forcible-entry exercise (JFEX) that includes United States Air Force aircraft dropping personnel and equipment and possible support from A-10s or other attack aircraft. This brigade combat team (BCT)-level event includes airborne operations followed by air-land support into a drop zone’s landing zone to build combat power for the exercise. The 313th Military Intelligence Battalion’s TUAV platoons participate in the JFEX, but they needed their own training space. The airspace coordination required that the TUAV flight path be a given distance away from the Fort

Bragg training area boundary and situated where it would have little effect on Army aviation airspace or artillery restricted operations zones to fire through when the TUAV was launched or landed.

Once range control decided to allow the construction of the landing zone at Ram Drop Zone, the next task was to fit the landing zone within the area around the endangered wildlife and plants, marshes, and perimeter tree line and in line with the prevailing wind. The TUAV specifications also require a clear area at the ends of the landing zone.

Design Criteria

The requirements for a TUAV launch-and-recovery site are more stringent than most of the specifications for expeditionary aircraft (for example, the C-130 Hercules) primarily because of the nature of the Shadow 200 TUAV. But even though the landing zone would be built as a launch-and-recovery site, it is described as a landing zone because it can still be used to land small aircraft, if required.

Project Design

Construction of the landing zone began soon after the project was approved by the division as a good concept and worth applying funding toward. The initial courses of action consisted of three possibilities:



Drainage swale and check-dams provide drainage for the landing zone.

- An aggregate subgrade on geotextile with a clay cap.
- An aggregate subgrade on geotextile with a stabilized clay cap.
- An aggregate subgrade on geotextile with a concrete cap.

The primary problem with all of these courses of action was cost, and after much consideration, the third one was deemed the only affordable solution. During the discussions over funding sources for the site, a new idea emerged. ITAM personnel asked if it would be feasible for the 618th Engineer Company to clear and grub, then grade and level, the site. A contractor would be hired to stabilize the in-place surface of the landing zone, using ITAM tillers and the 618th's Caterpillar® CS-433C Type III "Z-lite" steel drum vibratory rollers. The LRAM section would assist with runway stabilization and erosion control measurements—further reducing the cost—and would coordinate with the North Carolina Department of Environment and Natural Resources of Fayetteville and Raleigh for compliance with state regulations and policies. Lastly, ITAM would fund hydro-seeding of the area around the landing zone to provide soil stabilization.

ITAM contacted Midwest Industrial Supply, Inc., Canton, Ohio (because of the company's ability to stabilize soil using custom-made emulsions), and a Midwest chemist visited the site and took soil samples in order to prepare an admixture for the landing zone. The material used would consist of polyvinyl acetate acrylic polymer emulsion known as Soil Sement®. When this customized mixture is added to the native soil, the material provides a dense, compacted surface. The benefits of such a runway are that it requires little maintenance for long periods of time, eliminates the need for dust control, and can be used during inclement weather. Many Midwest products have been approved by the Engineer Research and Development Center (ERDC) and are in the General Services Administration catalog. These include dust suppressants, additives for improved asphalt road longevity, and a high-mobility multipurpose wheeled vehicle (HMMWV) dust control water distributor.

Project Timeline

Clearing and grubbing the site required several days. This operation, which was fairly straightforward, involved removing all the organic material from the site. The initial topographical survey completed by the company's surveyors revealed the site to be generally flat, but it still required a considerable amount of cut-and-fill operations to build the needed drainage and slope for the landing zone. The grading and leveling of the landing zone required the company to manage the poor water percolation on-site with drainage swales and check-dams to prevent soil erosion on and off the project site.

Once the 618th brought the site to the proper grade, it compacted the surface in preparation for the stabilization phase. ITAM used its offset disk tillers and scarified the landing zone surface, and Midwest followed the tillers with its applicator



Grading, leveling, and drainage construction operations using the 613BS Scraper and DEUCE

truck—applying roughly 18,000 gallons of Soil Sement to the surface of the soon-to-be landing zone. The 618th then graded the tilled soil to a level grade and followed up with Caterpillar CS-433C rollers (without using the vibrator) for compaction. The stabilized landing zone was allowed to “cure” for 24 hours before Midwest sprayed a final surface application of 1,500 gallons of Soil Sement, which sealed the surface and provided additional strength.

Training With the Landing Zone

The first training exercise at Ram Landing Zone was during the August 2005 JFEX. The TUAVs were integrated into the ground tactical plan of the JFEX without affecting the air coordination of numerous airborne drops of personnel and equipment that same week.

The 313th Military Intelligence Battalion is proposing additional facilities adjacent to the landing zone, which will improve the overall value of the site. These include a covered TUAV maintenance area, an improved vehicle parking area, and a power/telephone drop.

The landing zone project was a resounding success. It served as a realistic training event for the Soldiers of the 618th Engineer Company, facilitated realistic TUAV training, and improved TUAV training locations on Fort Bragg.

Reference

Midwest Industrial Supply, Inc.; Canton, Ohio, 800-321-0699, <www.midwestind.com>.



Captain Amato is the commander of the 618th Engineer Company (Light Equipment) (Airborne). Previous assignments include S-4 for the 307th Engineer Battalion during Operation Iraqi Freedom; brigade engineer for the 505th Parachute Infantry Regiment; and plans and exercises officer for the 2d Infantry Division Engineer Brigade. He holds a bachelor's in civil engineering from the Illinois Institute of Technology and a master's in engineering management from the University of Missouri-Rolla.