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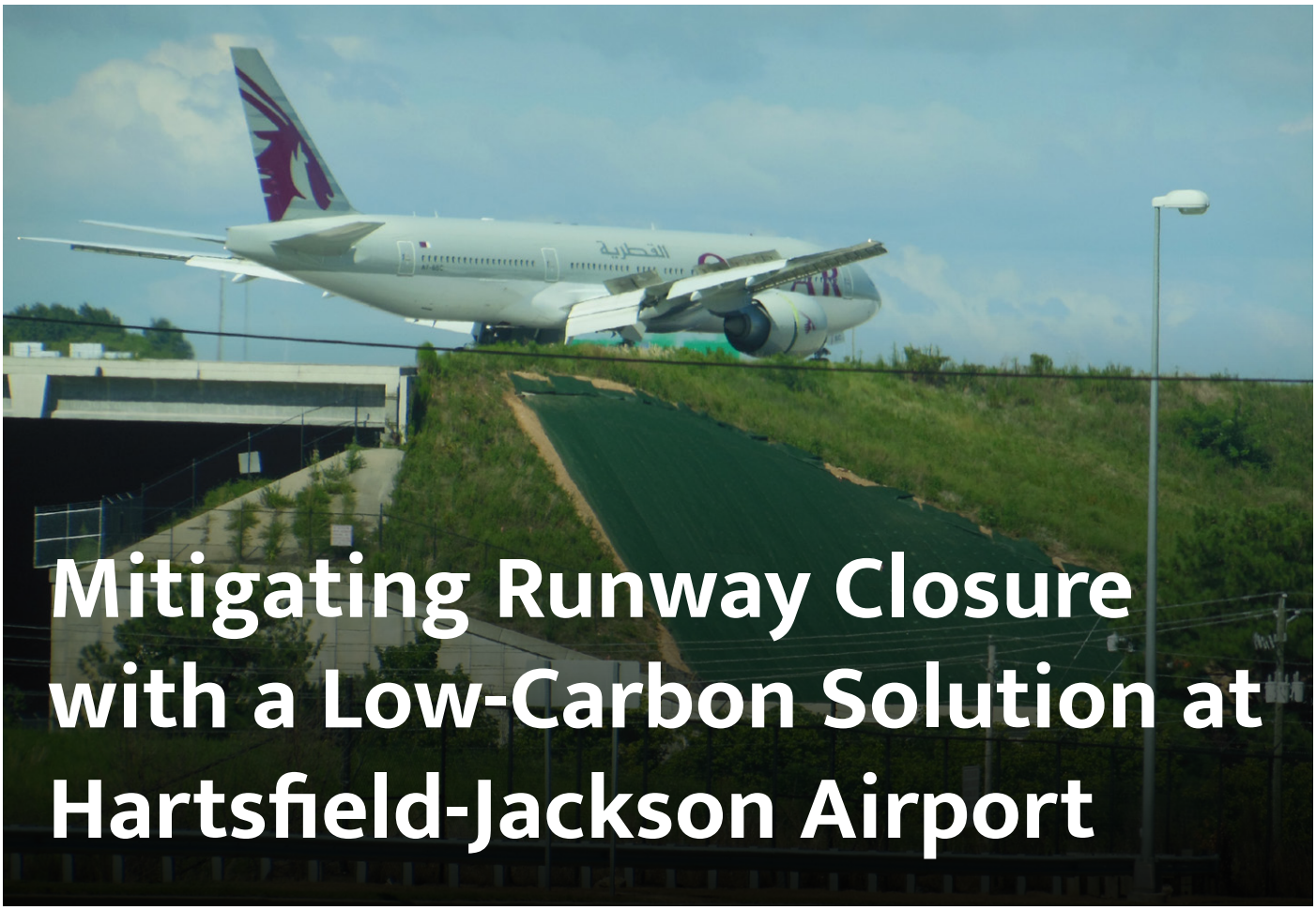


Mitigating Runway Closure with a Low-Carbon Solution at Hartsfield-Jackson Airport

Hartsfield-Jackson International Airport in Atlanta, Georgia, is one of the world's busiest airports, accommodating 100 million passengers and more than 950,000 flights per year.

Heavy rainfall was causing severe erosion and slope failure along the fifth runway. If not corrected, the increasing erosion and surficial failures could have grown to create a globally unstable slope. It is critical to stabilise slopes and landscapes adjacent to airport pavements to mitigate closures of taxiways and runways due to landslides and erosion. The airport wanted a resilient solution that would stabilise the slope, mitigate erosion, and provide a vegetated outcome that would be easy to maintain.

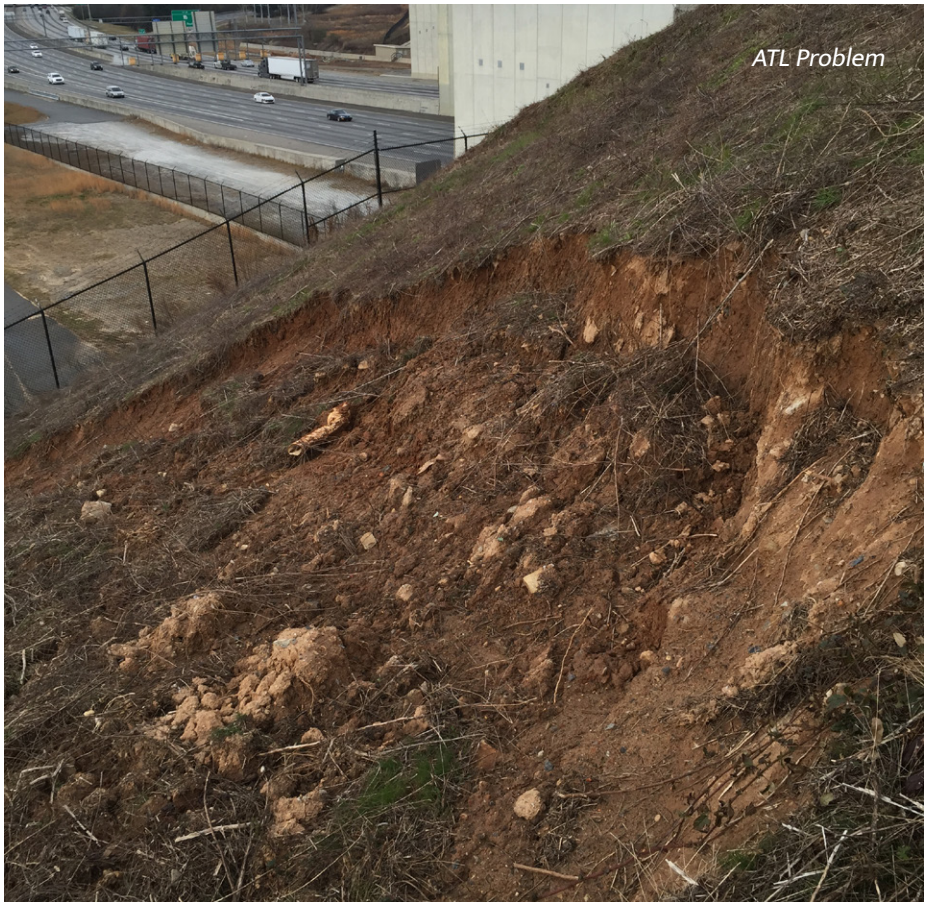
More than 836 square metres of slope needed to be stabilised with a geotechnically engineered solution to provide long-term surficial stability against a 1.2 metre failure. To meet this criterion, ARMORMAX® was selected. The

system is composed of Engineered Earth Anchors that are designed and tested for compatibility and performance with our High Performance Turf Reinforcement Mats (HPTRM) to increase slope stability for up to 75 years.

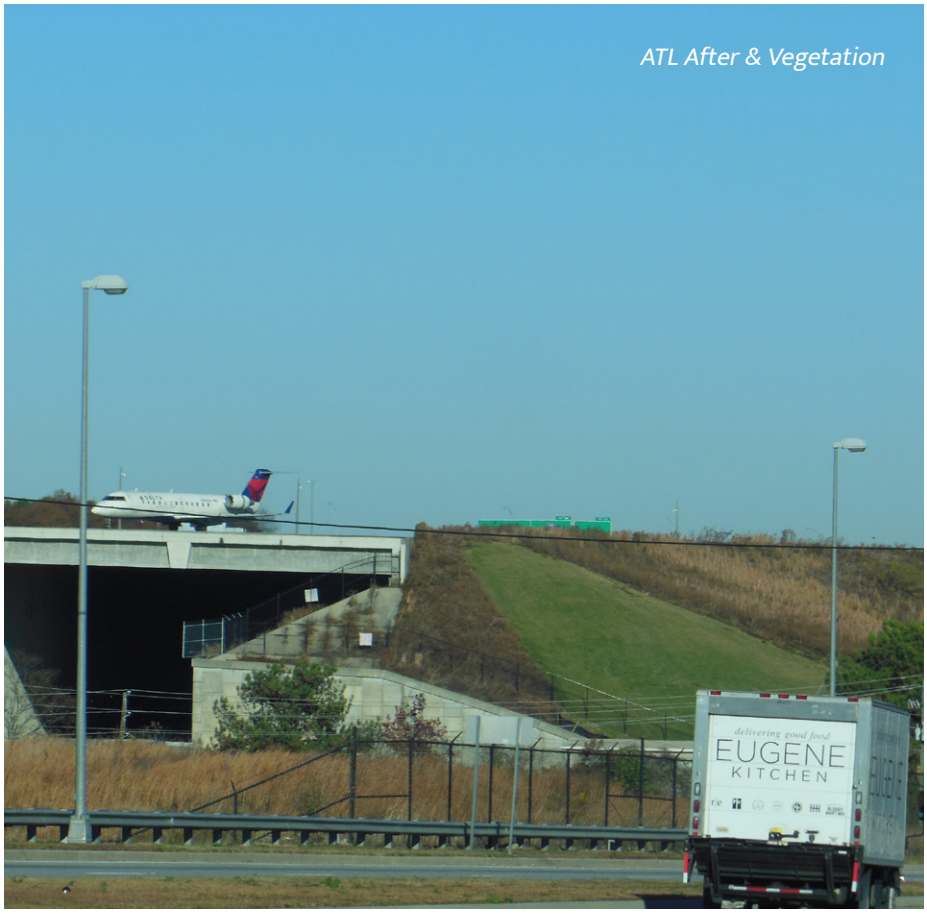
One challenge of this project was that all work had to be completed within the airport's aircraft movement area (AMA). The close proximity to an active runway meant that machines and large equipment could not be used above the slope. Traditional hard armouring such as rock riprap and concrete, requires large trucks and multiple machines. In contrast, the equipment used to install ARMORMAX is compact and minimal. This enabled the project team to easily execute the installation.

Initial analysis of the slope showed that the factor of safety (FoS) was 1.0. This level of FoS can be classified as a pending failure because any new element, such as heavy rain, can push the slope over the stability threshold. After ARMORMAX was installed, the FoS was significantly increased to more than 1.3.

ARMORMAX is engineered to promote rapid root development for long-term vegetation, which is another reason it was selected for this project. In addition to providing aesthetic improvements, the vegetation helps improving groundwater quality and has a significantly smaller carbon footprint than traditional armouring solutions. Water quality benefits of the system include decreased sedimentation and pollutants and increased infiltration of water back into the groundwater table. These are two reasons why the Environmental Protection Agency (EPA) has



ATL Problem



ATL After & Vegetation

identified systems that utilise HPTRMs like ARMORMAX as a best management practice (BMP) for improving water quality. Alternative hard armouring solutions do not promote vegetation and offer poor filtering and pollutant removal capabilities.

ARMROMAX also offers a low-carbon alternative to traditional hard armouring solutions such as rock riprap and concrete. One square metre of its HPTRM has a cradle-to-grave carbon footprint of 2.7 kgCO2e. Comparatively, the carbon footprint of concrete-based alternatives is up to 10 times higher, and rock riprap is up to 30 times higher. The carbon footprint of the HPTRM is verified by an independent third party, which certified that it meets criteria for the Greenhouse Gas Protocol (World Resources Institute), PAS 2050:2011, and ISO 14064-3:2006.

Transportation requirements are a main factor contributing to the difference in carbon footprint.

Projects that utilise ARMORMAX require significantly fewer truckloads of material, reducing transportation emissions by up to 95 percent.

The slope quickly vegetated, and the resilient HPTRM component of the system has withstood routine mowing and maintenance for more than four years. Today, the runway remains stabilised and has had no further issues with erosion.

For more information about ARMORMAX, please contact Randy Thompson at **Randy.Thompson@PropexGlobal.com**

Propex® GEOSOLUTIONS

ARMORMAX®
Engineered Earth Armoring System