

ACCESS ROAD DOPPLER RADAR CAYEY PUERTO RICO LOS BALDIOS , CAYEY, PUERTO RICO

Reinforced Soil Walls and Slope Reinforcement

Problem

Just before 6 a.m. on September 20th, 2017 Hurricane Maria a Category 5 with violent winds slammed into the island demolishing the FAA Doppler Radar Dome and ripping it from its mountings.

Hurricane Maria and its 190 km/h winds demolished this radar that forecasters and mariners used to monitor storms and navigate the Caribbean Sea. The radar was critical to determining rain intensity and path, which was vital to residents of the island, especially during hurricane season. A huge void had been left between Antigua and Cuba with no available radar in the eastern Caribbean Sea.

The access road to the radar location experienced a landslide failure due to the mountainous terrain and extreme precipitation of up to 963mm that accompanied the hurricane. Impassable roads and bridges across the island would make the initial access to site and damage assessment difficult.

Solution

It was determined that a Mechanically Stabilized Earth(MSE) Rock Faced Terramesh wall system was an ideal solution for this cut slope construction. This system of retaining wall has successful historical use in similar slope failures all across the island.

It consists of a rock filled wire facing unit with dimensions of 2.4m high by 0.8m deep, and a length along the front face of 2.7 m. Rockfill is comprised of size ranges of 100 mm to 200 mm. The coarser facing rockfill is separated from the structural backfill by use of a nonwoven geotextile(MacTex N47.1).

The facing mesh is comprised of a double twist(DT) wire mesh, along with PoliMac coating for durability and longevity of the structure. The depth of burial in front of the wall is approximately 1.5 m, which is important when founding a wall on a sloping toe.

All units are connected during installation to achieve the design intent of a monolithic mass retaining wall facing. The primary soil reinforcement noted at the base of the wall overlaps with the DT mesh on the lower return.

The soil reinforcement is comprised of a WG11 uniaxial geogrid with an ultimate tensile strength of 110 kN/m. Geogrid lengths of 7 m are noted to extend to the cut slope face to ensure continuous soil reinforcement to the stable bank excavation.

Client: Federal Aviation Administration

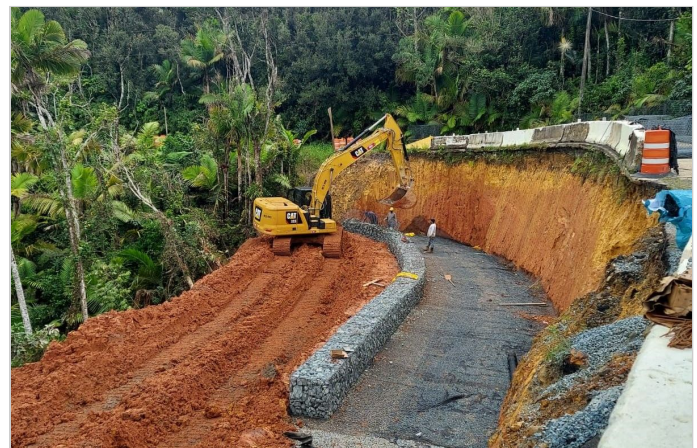
Designer / Consultant: Maccaferri In House Design Services

Contractor: Melendez Contractors

Products used (Qty.)

- Terramesh 290 m2

Date of construction: 08/2021 - 09/2021



Access Road for FAA Doppler Radar



Site location



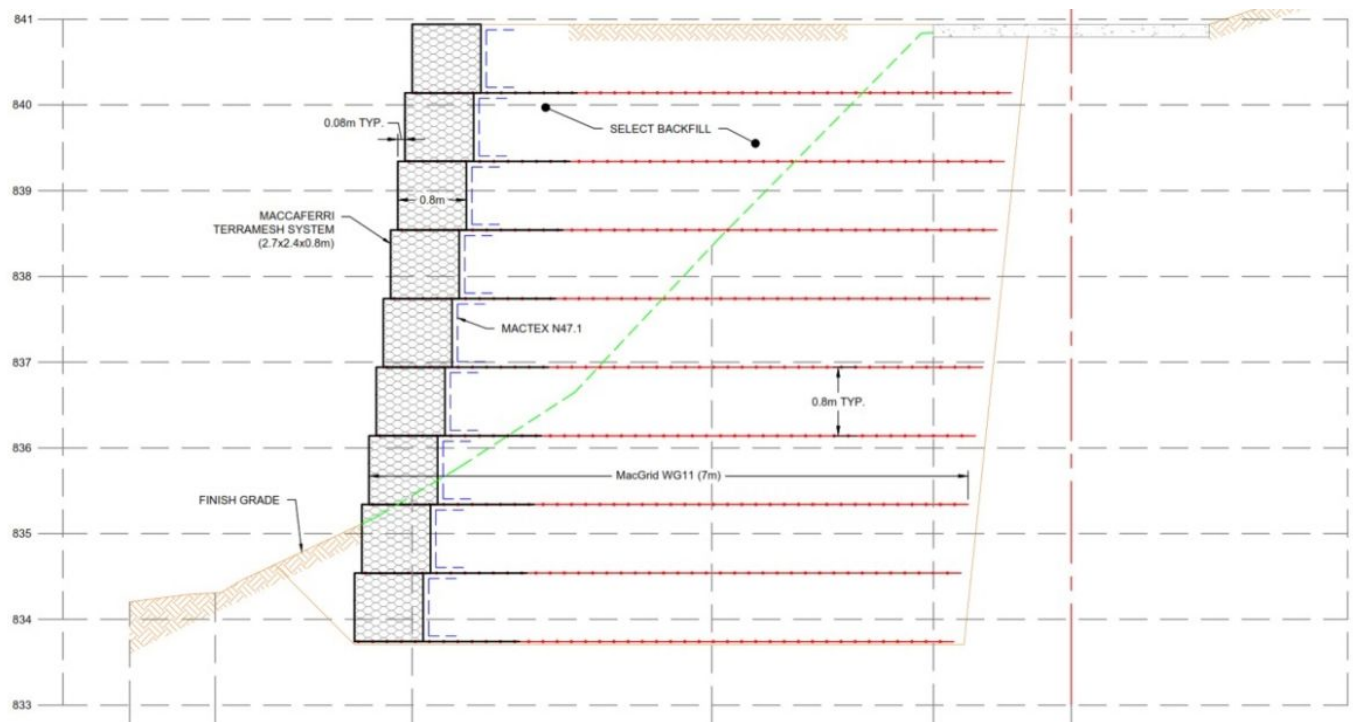
Access Road for FAA Doppler Radar



Radar after Hurricane Maria - Courtesy of NWS Radar Operations Center



Radar Reconstruction Courtesy of NWS Radar Operations Center



Terramesh Cross Section

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