MACCAFERRI

CASE HISTORY

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# DIGOS-MAKAR ROAD

## DIGOS CITY, DAVAO DEL SUR, REGION XI, PHILIPPINES

Reinforced Soil Walls and Slope Reinforcement

**Problem**

The Department of Public Works and Highways implemented various infrastructure projects since the start of the new administration in 2016. The projects formed part of the administration's program called, "Build, Build, Build". In this, bridge construction and road widening works have been prioritized.

In Mindanao, the DPWH Davao del Sur District Engineering Office allocated portion of its infrastructure budget to one of its most challenging projects to date - the rehabilitation and reconstruction of roads with slips and landslides along the Digos-Makar Road, a two-lane national highway in the mountainous portions of the city and is part of the Asian Highway, a network of highway routes of international importance within Asia and covers a total of 3,517 kilometers of roads in the Philippines.

In order to achieve the rehabilitation and to upgrade the existing road to a four-lane highway as a minimum requirement for all Asian Highway-classified roads, the only viable solution at the moment was to build a retaining structure in the cliff side of the Digos-Makar road.

**Solution**

With close coordination among DPWH personnel, Maccaferri engineers recommended a mechanically-stabilized earth (MSE) wall using Paramesh - a combination of high tenacity polyester geogrids (ParaGrid) as primary soil reinforcements and Terramesh system units for facing of the wall. The designed total wall heights ranged from five meters up to 21 meters. Due to space constraints, majority of the walls were required to have a vertical facing.

Upon submission of detailed analysis and design of the ParaMesh MSE wall system, DPWH engineers approved the recommendation and proceeded with the construction. Backfill materials were qualified and tested, and frequent compaction tests were required.

During the construction, a series of heavy rainfall and moderate earthquakes (up to magnitude 5) have tested the wall system and to date, the wall has stood still without any dangerous signs.

**Client:** Department of Public Works & Highways - Davao del Sur District Engineering Office

**Designer / Consultant:** DPWH - Davao del Sur DEO

**Contractor:** TSquare Construction Corporation

**Products used (Qty.)**

| | |
|---|---|
| - Terramesh | 4,717 cum |
| - ParaGrid | 33,345 sqm |
| - MacTex Non-woven Geotextile | 20,720 sqm |
| - MacDrain W | 4,368 sqm |
| - Reno Mattress | 533 cum |
| - HDPE Pipes | 1,620 lm |

**Date of construction:** 10/2018 - 11/2019

July 2018 - Start of construction

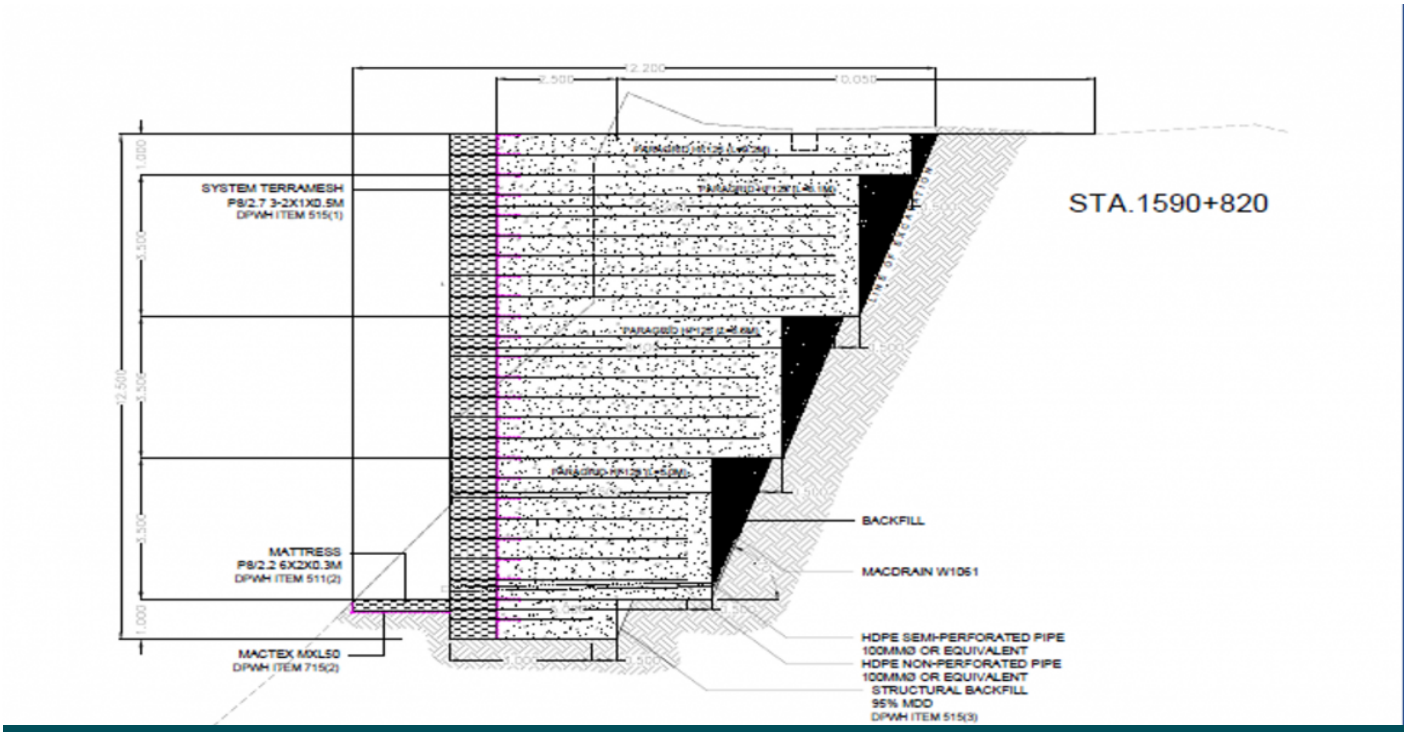
December 2018 - Construction progress

December 2018 - Construction progress (HDPE geopipe)

April 2019 - Construction progress

November 2019 - End of construction

January 2020 - Site inspection after a series of earthquake




Typical section details of Paramesh MSE wall

Maccaferri (Philippines), Inc.
11/F, Asian Star Building Alabang, 1781 Muntinlupa City - Philippines
Tel: +63-2 8889-0623
E-mail: info.ph@maccaferri.com