MACCAFERRI

CASE HISTORY

Rev: 1, Issue Data 20.10.2020

LANDSLIDE MITIGATION WITH FLEXIBLE STRUCTURES IN JHARKHAND

RANCHI-PATRATU-DEM ROAD, JHARKHAND, INDIA

Mass Gravity Retaining Walls

Problem

Ranchi-Patratu-Dem road project was a prestigious road project being executed by the Jharkhand Accelerated Road Development Company Limited, a joint venture of the State Government (road construction department) and IL&FS Transportation Networks (India) Limited (ITNL), on PPP mode.

The State Road Construction Department aimed to improve the road safety and traffic flow on Ranchi-Patratu-Ramgarh Road.

The proposed road was aligned through a variety of terrains and many locations were proposed to have widening, thus retention of hill and cut slopes was required. At two locations, landslide occurred when an attempt was made to excavate the toe of the slope for widening of road. Mass Gravity structure was proposed to provide slope stability against environmental effects.

Client: Jharkand Accelerated Road Development Company

Designer / Consultant: Maccaferri (Designer)/Stup Consultant Pvt Ltd

Contractor: Montecarlo Construction Ltd.

Products used (Qty.)

- Gabion 4,822 cum
- MacTex N 3,600 sqm

Date of construction: 01/2012 - 07/2012

Solution

The State Road Construction Department was on look out for appropriate mass gravity wall for slope stabilisation. Gabion retaining walls were selected amongst the available alternatives considering its flexibility and permeability.

Further, on hilly terrain, gabions are found suitable to retain cut and fill slopes, especially widening on curves and workplace restricted slopes. The height of retention structure was ranging from 6m to 12m. So it was proposed to construct the gabion wall in 2 steps with a horizontal benching in-between which was formed naturally when the landslide took place at the hairpin bend location. This was done for higher height sections.

Gabion walls being flexible and permeable in nature, could be economized to a considerable extent. The speed of construction achieved at site was impressive and further landslides were prevented during the course of construction.

Advantages of gabion:
- Flexibility.
- Good permeability.
- Monolithicity.
- Eco-friendly.
- Cost-effective.
- Simple to construct.

Photo 1: Site after landslide

Photo 2: Removal of excess earth

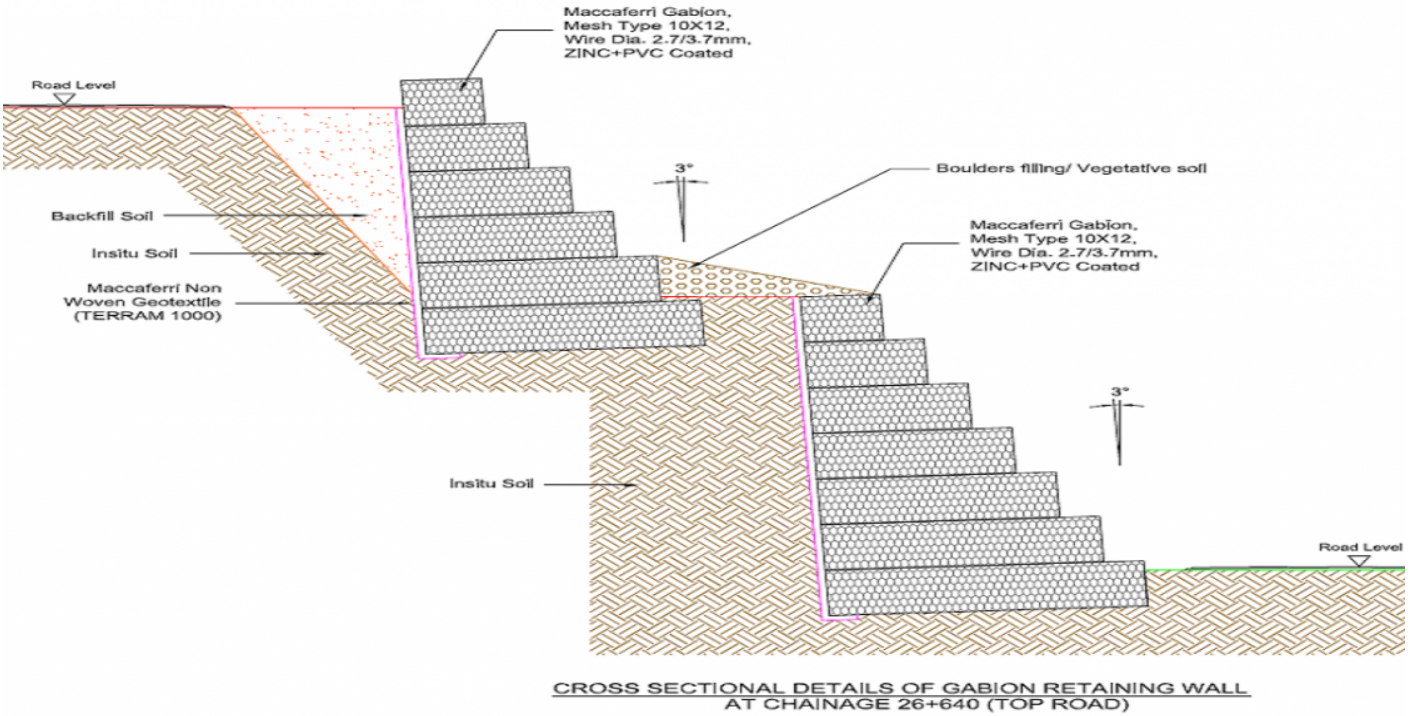
MACCAFERRI

Photo 3 : During construction

Photo 4: During construction

Photo 5: During construction

Picture 6: Completed structure



CROSS SECTIONAL DETAILS OF GABION RETAINING WALL
AT CHAINAGE 26+640 (TOP ROAD)

Cross sectional drawing

MACCAFERRI ENVIRONMENTAL SOLUTIONS PVT. LTD
D40, MIDC Ranjangaon, Tal-Shirur, Dist. Pune - 412 220
Tel: +91 2138 393000 , Email: info.in@maccaferri.com