

MSE STRUCTURE SUPPORTS HIGHWAY

LOS ALAMOS, NEW MEXICO, U.S.A.

Reinforced Soil Walls and Slope Reinforcement

Problem

The Cerro Grande fire of 2000 destroyed vegetation which resulted in dramatic increases in stormwater run-off in the canyons surrounding Los Alamos; only 2% of the watershed area was not burned. The increased flows through Pueblo Canyon were carried by an 86" diameter storm drain which transported the flow beneath Diamond Drive. Hydraulic modeling indicated that under these increased flows, a 1 in 100 year storm would overtop Diamond Drive, which stands some 140' above the invert of the storm drain. It was calculated that a 12' diameter tunnel would be required to accommodate these flows.

In addition, debris basins, silt traps, culverts, and channelling works would be necessary to control the flows. Mechanically Stabilized Earth (MSE) and retaining structures would be constructed to retain and reinstate highways washed out during storm events.

Solution

URS Corporation designed the solutions with assistance from Maccaferri's technical department. The project consisted of; Three MSE and Gabion structures: Max. 36' high MSE structures using Paralink® and Terramesh® soil reinforcement geogrids, with a 9' high gabion wall above, supporting North Road Retaining walls: Terraced gabion walls of 30' total height (12', 12' and 6') supporting Diamond Drive.

Channeling works and sediment / debris traps: Gabions, Gabion mats® and wire enclosed rip-rap were used to form drop structures and channel linings to control the flow and prevent sediment and debris from damaging downstream structures.

The MSE structures incorporated different varieties of geogrid within the design; Terramesh®, a steel woven wire mesh geogrid used as secondary reinforcement; and Paralink®, a polyester geogrid with a tough polypropylene protective sheathing used as primary reinforcement. Paralink® strengths of up to 55,000 lb/ft (800 kN/m) were used on this project. Structural backfill was compacted in layers upon the reinforcing geogrids as the embankment was constructed

Client: LOS ALAMOS COUNTY, NM

Designer / Consultant: URS CORPORATION INC.

Contractor: TWIN MOUNTAIN INC. ALBUQUERQUE, NM

Products used (Qty.)

- Terramesh	9999
- ParaLink	9999
- MacTex EC	999
- Gabion	999
- Reno Mattress	999

Date of construction: 03/2003 - 11/2003



Detail of Paralink® sandwiched beneath Terramesh® unit (unfilled)



Compacting structural backfill onto the Paralink® and Terramesh®



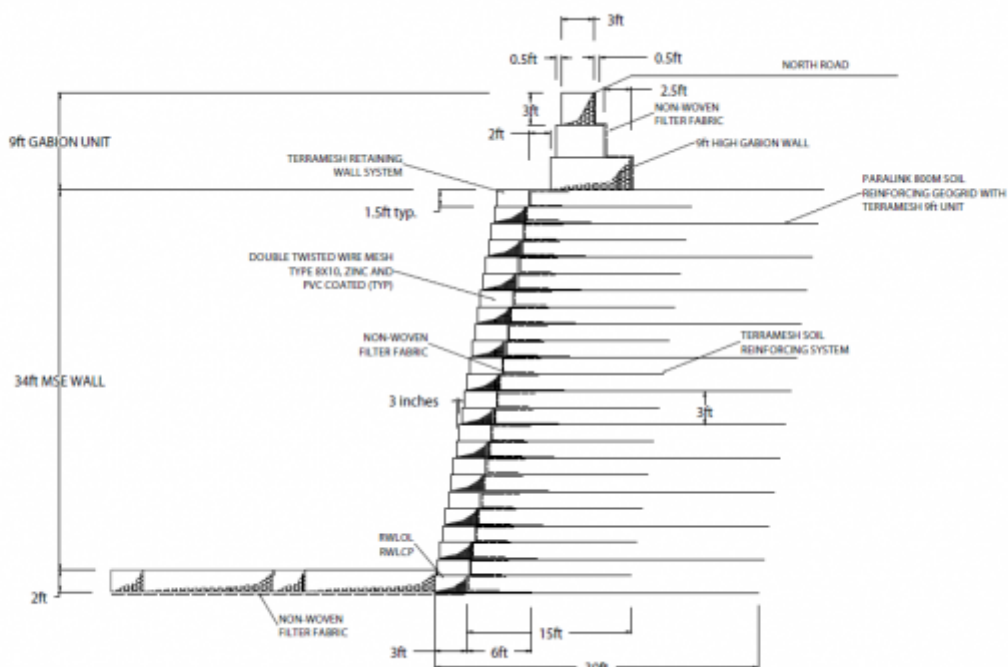
Gabion and Gabion mat® revetment, and debris basin



36' high MSE structure supporting North Road



Example of debris (on top of Gabion Mat®) following storm



Typical cross section through MSE structure using 56,000 lb/ft Paralink®

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