

DRAPERY PROTECTION STATE ROUTE 79, PENNSYLVANIA, USA

ROCKFALL MITIGATION SYSTEM

Product: Rock Mesh® B900

Introduction

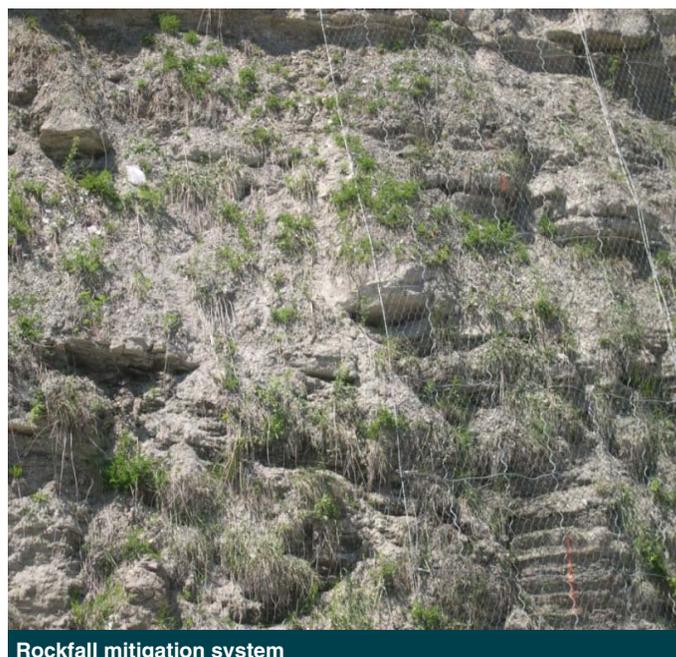
Rock Mesh® was used by the Pennsylvania Department of Transportation on SR 79 near Pittsburgh, Pennsylvania as a rockfall mitigation system. The system consists of PVC coated double twisted mesh with steel cable integrated within the mesh during the manufacturing process. The incorporation of steel cable within the wire mesh provides multiple advantages in the installation and in the product characteristics. In the project, the maximum height of the rock slope protection was 120 feet high with a total surface area of 40,000 square yards.

Problem

With the improvement of an existing portion of the State Route 79 (SR 79) located in Collier and Robinson Townships, Allegheny County, Pennsylvania, a rockfall drape netting intervention was required in three distinct rock slope areas of the project: located along SR 79 between Exit 59 (i.e., State Route 279) and Exit 57 (i.e., Carnegie, Pennsylvania); The rock faces for all three areas are parallel to the roadway alignment. Rock blocks were observed within the catchment areas for each of the three designated rock slopes which indicates these slopes are currently subject to active rockfall events. The initial bid document was asking for an alloyed high strength carbon steel wire with a minimum strength of 256,000 psi (1765 MPa) and coated with Galvan®. Mesh construction was in a single twist diamond form with a twisted loop at the end. The mesh was required to be colored to match the existing rock.



Rock face before construction



Rockfall mitigation system

Client:

PENNSYLVANIA DEPT. OF TRANSPORTATION

Main contractor:

TRUMBULL CORPORATION

Designer:

GOLDER ASSOCIATES INC.

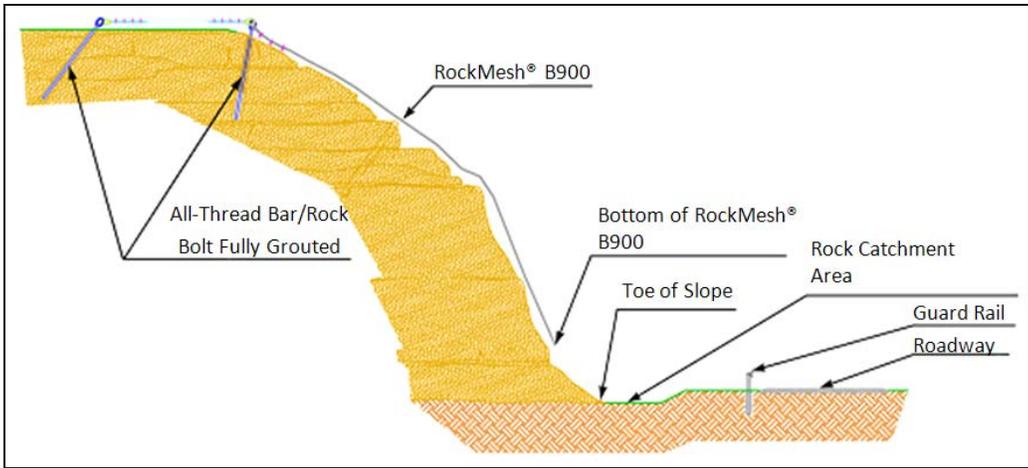
Products used:

ROCK MESH® B900

Date of construction

SPRING-FALL 2006

MACCAFERRI



Typical cross section of the drape netting

Solution

As an alternative product, Maccaferri contacted Trumbull Corporation to offer a functional equivalent product made of steel wire mesh and steel cables. The Rock Mesh® B900 was proposed as an alternative for the SR 79 project. This product consists of a PVC coated double twist steel wire mesh with steel cable of 5/16 (8 mm) inserted within the mesh during the weaving process. The steel cables are inserted every 2 feet (0.6 m) in the mesh direction and 3 feet (0.9 m) in the cross direction. The transversal cables are secured at both ends with aluminum sleeves. The Rock Mesh® B900 rolls were made 12 feet (3.66 m) wide with customized lengths for each section. The wire mesh color selected was black PVC that blended well with the existing rock (see picture). The Rock Mesh® was installed with all adjacent panel sections connected together using lacing cables 5/16 inch (8 mm) and secured at the end. Maccaferri had retained the service of Golder Associates, Inc. to perform the design. The design was done in accordance with industry standards and PennDOT's initial drawings, by considering mesh weight, rock size and existing site conditions.

This system required no overlap for the panel to panel connection, compared to the specified system, which reduced the quantity of material by 10%. The panel to panel connection did not require using clips and cabling as was required for the specified material, providing a considerable saving for the contractor.



Lacing cable at every mesh opening



Installed Rock Mesh® B900

MACCAFERRI

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