

"ARMORFORM®" ARTICULATING BLOCK MAT EROSION CONTROL SYSTEM

October 1991

RSN 91-5

ODOT recently completed construction of a unique erosion control system. This is an Articulating Block Mat (ABM), used in place of riprap to protect the banks of Salmon Creek near Oakridge, Oregon. The ABM was chosen because the site has a long history of bank erosion. A flood in 1957 nearly washed out a bridge abutment after sweeping away the riprap. Designers believe that the ABM will prevent such problems in the future. Unlike riprap, the ABM acts as a single structural unit and can resist powerful stream currents that carry away riprap. It also continues to provide protection even when undermined.

What is an ABM?

The name for the particular type of ABM chosen for this site is "fabric formed concrete." This simply means that a strong synthetic fabric, sewn into a series of interconnected bags, forms the concrete shape. Polyester cables, strung through the bags in both directions, provide structural integrity. A geotextile filter fabric underlying the entire structure prevents the erosion of fine soil particles. When completed, the ABM is a blanket of concrete "pillows" or blocks. Each block weighs about 400 lbs. and measures 19" X 24".

Articulating Feature

If undermined, these blocks can bend or "articulate." This allows the ABM to continue its effectiveness by filling in the voids created by undermining. This articulating feature is important at the Salmon Creek site for two reasons:

- 1) The stream bed elevation has gradually been dropping or "degrading" over the years. If the stream should degrade beyond the 6' depth of the ABM, the articulating feature provides continued protection against erosion.
- 2) The ABM is subject to undermining upstream from the bridge. At this location the ABM does not cover the stream bank where it is outside the State right-of-way. Erosion here, as it undermines the ABM's flank, will severely test the articulating feature. An Experimental Feature study will monitor this problem for the next five years.

Conclusions

Whatever the study's outcome, ABM's can be effective in locations where riprap has been ineffective. It can also be cost-competitive with riprap, but this should be checked for each project. In any case, an ABM can be a unique and effective way to control erosion.

For a copy of the Experimental Feature construction report, contact:

Lew Scholl or Scott Nodes
Materials and Research Section
Oregon State Highway Division
800 Airport Road S.E.
Salem, OR 97310
(503)378-2318