

Flexterra® FGM and ProPlus® Agronomic Formulations Case Study: Onward and Upward—Establishing Vegetation on a Mechanically Stabilized Earthen Wall



Vegetating Vertical Walls

Tasked with vegetating 2.2 acres of a vertical Mechanically Stabilized Earthen (MSE) Wall stretching up to 46 feet at its highest point, contractor Carolina Outdoor Services searched for a “one-time” vegetative solution. The imposing earthen walls in Raleigh, North Carolina, were established on a former golf course that will become a shopping center with mixed use and a pedestrian greenway area.

Already under tight time constraints, Carolina Outdoor Services brought in Susan Keen, PE with Trajan, Inc., to vegetate the earthen basket walls. Keen contacted Brian Free, business development manager with Pennington Seed, to determine the best seed and amendment solution that would adhere to the vertical walls—and work right the first time without costly reapplications.

Living in Raleigh, and having completed many other projects in the Southeast, Free was familiar with the soil conditions and typical challenges the heavy clay

and lack of topsoil created. He suggested the use of a specially formulated seed mixture, combined with agronomic soil solutions, to increase the organic matter and bring the soil pH up into the range of 6.3 to 7.0, ideal levels for ultimate nutrient uptake.

Seed-to-Soil Contact

Site challenges included soft ground at the base of the slopes, which limited vehicle access, and finding a favorable method of applying the seed mix to ensure it adhered to the geotextile element on the wall’s face.

“I suggested a two-step hydroseeding process,” said Free. “First, we would apply seed, fertilizer and soil amendments with a trace amount of Profile’s Flexterra® Flexible Growth Medium (FGM™), followed by a second capping application of the remaining Flexterra.”

Flexterra® FGM

Free had consulted with Sandy House, technical associate for Profile Products, on the use of amendments, that when mixed with the best seeds for the region, would rejuvenate the soil for ideal seed to growth establishment.

Free specified a custom-blended SlopeMaster™ Professional Erosion Control Seed Mix, which contained Myco-Advantage™, a beneficial mycorrhizal fungi to enhance root mass, root growth and overall nutrient uptake. The mix was also treated with Germ Max™ to enhance germination and plant establishment. Seeds included Mohawk Bermudagrass, Greystone Tall Fescue, Predator Hard Fescue, Weeping Lovegrass, Vetch, Ryegrass and Durana White Clover, an extremely persistent legume addition to any stand of grass.

House had identified Profile's ProPlus® Agronomic Formulations including JumpStart™, BioPrime™ and NeutraLime™ as good additives to the seed mix for this region. Specified at two and a half gallons per acre, JumpStart improves soil moisture infiltration and retention and provides hormonal plant response for root development.

BioPrime was applied at 40 pounds per acre to enhance long-term vegetation sustainability. With four active ingredients, including slow-release nitrogen, this biostimulant helps ensure plant health and optimizes delivery of macro and micronutrients to plants.

NeutraLime, a limestone derivative, helps correct soil with pH values under 6.3. Specified at 80 pounds per acre, it mixes easily in the tank and raises soil pH within seven to 10 days following application.

Flexterra provided a chemical and mechanical bond to lock the engineered medium in place. Thermally Refined® wood fibers, crimped man-made fibers and performance-enhancing additives form a lofty, interlocking matrix that creates air space and water-absorbing cavities that accelerate germination, reduce the impact of raindrop energy and minimize soil loss.

“You need to have a mechanical bond, which is why the FGM would perform so well,” said House. “You cannot have a vertical wall without a mechanical bond in the solution. It just won't work.”

After receiving the order, all materials were delivered to the job site two days later. Operators used a Turbo Turf mechanical hydroseeder and an 80-foot Genie lift to apply the seed and amendment mixture, as well as 3,500 pounds per acre of Flexterra. They applied the first layer on a 30-40 foot section, reloaded the

550-gallon hydroseeder, and returned to cap the section with the second layer of product.

Achieving Sustainable Growth

Following severe storms and heavy flooding that hit the region a few weeks after application, the walls were holding strong.

“All parties were looking to successfully vegetate the wall the first time,” said Free. “We found a permanent and sustainable vegetative solution by picking the right mix to establish a viable stand of grass and eliminate costly reapplications.”

Free mentioned that the contractor insisted that any reseedings would be completed at the cost of Pennington and Trajan, Inc. Free confirmed that they have never had to touch up the project.

“The solution was very innovative,” said Marc S. Theisen, vice president of erosion control solutions for Profile Products. “Pennington Seed did a great job of providing the best possible conditions conducive to establishing vegetation on difficult vertical slopes. We only had one opportunity to provide the correct solution out of the gate, and we were successful.”



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