



ANCHOR REINFORCED VEGETATED SYSTEM (ARVS) UTILIZING THE NEXT GENERATION OF HIGH MODULUS TURF REINFORCEMENT

The Xtreme Armor System (XAS) is an Anchor Reinforced Vegetated System comprised of Western Excelsior's ground breaking PP5-Xtreme™ High Performance Turf Reinforcement Mat (HPTRM) and Percussion Driven Earth Anchors (PDEAs). By installing the PDEAs and HPTRM as a system, the strength of the HPTRM is transferred to the ground surface, reducing the possibility of shallow plane failures, improving the durability of the system, and maximizing the overall performance of the installation. Additionally, the system is significantly more resistant to non-hydraulic stresses like debris flow, ice flow, foot traffic, and tire/wheel loading.

The PP5-Xtreme HPTRM utilizes Western Excelsior's breakthrough woven technology, providing greater strength at lower elongations, further improving the ground securing potential of the system. PP5-Xtreme also offers the highest possible resistance to ultra violet degradation as well as chemical and biologic degradation. Xtreme Armor System PDEAs are available in a variety of configurations to suit project requirements. A variety of strengths, durability and cable lengths can be utilized. Proper selection of anchors will allow for the long term stability of the system in virtually any climate/condition.

The Xtreme Armor System is specifically intended to replace rock rip rap, concrete rubble or poured concrete as a channel liner. The system can be installed solely on the channel bank to reinforce and secure the bank or on unstable slopes (i.e. roadway cuts) for additional stabilization. Specifically, XAS offers a number of advantages compared to traditional hard armor. First, XAS is a natural, aesthetic system, in its completed form. Second, XAS reduces costs. Third, installation of XAS does not add significant overburden to the slope or channel bank. Finally, XAS imparts strength to the soil matrix, improving stability.

Anchor frequency may be varied to affect the level of geotechnical reinforcement provided by the system. A variety of anchor patterns are available to provide multiple installation options. Manual and automatic tools are available to facilitate the installation of the PDEAs. Steel pins are installed in conjunction with the anchors to ensure the system remains in intimate contact with the ground surface over the entirety of the project.

XAS is available in 9 ft (2.7 m) or 12 ft (3.7 m) widths. Vegetation for the system may be established from seed or sod

and may be soil filled, if desired. Additionally, a geotextile may be attached in the field for channel and pond bank applications where soil pumping is expected.

XAS is produced exclusively by Western Excelsior. The production of the system is monitored by a rigorous quality control program meeting or exceeding the requirements of ASTM D4354 and accredited by GAI-LAP.



EXAMPLE OF XAS IN CHANNEL

TYPICAL SYSTEM CONFIGURATIONS

HPTRM	Anchor Type	Anchor Details	Typical Frequency (Anchors/yd ²)
PP5-Xtreme	S2	Various Lengths, Copper Ferrule	0.5, 1.0
PP5-Xtreme	S2	Various Lengths, Wedge Grip	0.5, 1.0
PP5-Xtreme	S06	Various Lengths, Stainless Steel Wedge Grip	0.5, 1.0

Document # WE_EXCEL_XAS_ES. This document serves as an executive summary of material properties and performance thresholds. Additional information is available on Document # WE_EXCEL_PP5XT_SPEC, WE_EXCEL_PP5XT_PERF, and WE_EXCEL_XAS_INL_GEN. Performance thresholds herein are provided as general guidance, site-specific evaluation should be conducted prior to application. Contact Western Excelsior for more information. Updated 03/23/12.