

PREMIER MANUFACTURER OF EROSION CONTROL PRODUCTS

TEMPORARY | EXTENDED | SEDIMENT CONTROL | MULCH

PERMANENT | WOVEN | HIGH PERFORMANCE



BLANKETING NATURE WITH NATURE





“A nation that destroys its soils, destroys itself.”
 — U.S. President Franklin D. Roosevelt, 1937

Common Erosion Problems

The impact of erosion on the environment can be serious and potentially irreversible. Our landscape, water sources, agricultural resources and wildlife can all be affected by the devastation.

Billions of dollars are spent each year to manage the effects of erosion. Slopes are washed away by storm water runoff, channels are filled with sediment, shorelines can be altered forever and topsoil can be lost to harvests. Designers, specifiers and installers can prevent much of this destruction by using the latest developments in erosion control. Western Excelsior provides the products and expertise landowners, contractors and government agencies need to protect natural resources from land and soil loss. Western Excelsior's innovative solutions save many natural resources, save time and save money.



Blanketing Nature with Nature

Western Excelsior is the only single-source supplier of excelsior, straw, coconut/straw, 100% coconut erosion control blankets, 100% synthetic Turf Reinforcement Mats (TRMs), woven TRMs and High Performance TRMs.

Western Excelsior manufacturing facilities are located in Mancos, Colorado, Macon, Georgia, and the corporate offices are located in Evansville, Indiana. Western Excelsior maintains an extensive network of distributors with offices from coast to coast and primary stocking in Middlesex, NC.

Utilizing timber harvested from logging initiatives aimed at dramatically reducing forest fires in the Rocky Mountains, Western Excelsior has been manufacturing machine-produced Excelsior since 1977. Our products are engineered to provide maximum ecological stewardship while delivering the best value for our customers.

Western Excelsior is a proud member of the International Erosion Control Association (IECA) and an active member and supporter of the Erosion Control Technology Council (ECTC).



Western Excelsior provides the ultimate partnership between nature and technology, using natural resources engineered to preserve our natural landscapes—"Blanketing Nature with Nature."

Erosion Control Regulation



In March, 2003, the U.S. Environmental Protection Agency implemented Phase II of the National Pollutant Discharge Elimination System (NPDES). Currently, the regulations apply to virtually all construction activities. Any construction site of one acre or more must comply with the Phase II regulations. NPDES requirements pertain to simple erosion control on slopes, drainage channels, shorelines and the control of sediment.

State and local officials also regulate the control and release of in-situ soil material. Western Excelsior is approved for use in virtually every state and for all types of projects.

Western Excelsior has the expertise to aid in compliance with NPDES and other regulations. Further, Western Excelsior manufactures the products necessary to fulfill the requirements for any erosion problems contractors, designers and specifiers face.

Best of all, Western Excelsior solutions are complete and cost effective.

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THE EXCELSIOR STORY



Why use an erosion control blanket?

Accelerated global soil erosion decimates 12 to 15 million acres of land per year, and the costs to society are immeasurable.

Erosion is a naturally occurring process on all lands, with effects ranging from topsoil degradation to gullies and shoreline degeneration. Soil erosion can develop practically unnoticed, over time, or it can occur at an alarming rate, with potentially catastrophic consequences.

A Rolled Erosion Control Product (RECP) is a matrix consisting of various organic or inorganic materials confined by netting, stitching and/or geo-composites. When properly placed, RECPs prevent seed and soil loss, which aids in the establishment of healthy vegetation, to prevent erosion in the future.

Western Excelsior products are engineered to control erosion on slopes, drainage channels, canal/river banks, levees and shorelines; establish vegetation in bare areas; reinforce the stems and roots of vegetation;

and control the release of sediment into streams, lakes and rivers. Western Excelsior products are engineered to provide variable longevity, allowing for degradation quickly after placement, or a permanent presence. All Western Excelsior products serve as a mulching layer and the Excel PP5 series of Turf Reinforcement Mats provide permanent enhancement of vegetation stability.

For more information about erosion control, visit the The Erosion Control Technology Council (ECTC) web site at www.ectc.org.



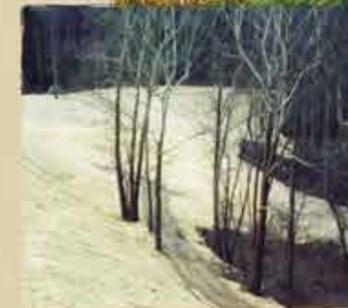
Aspen excelsior was an original erosion control material. One of the earliest materials manufactured, evaluated and specified for erosion control, Excelsior has proven to provide excellent erosion control, superior mulching and unique and useful longevity.

Excelsior is a man-made wood fiber; created by shaving Aspen logs. Logs are harvested from overgrown forests or fire-reduction activities. Once harvested, the logs are dried, de-barked, sawn, split and shaved. The resulting fiber is unique in its properties and more consistent than other natural fibers.

Excelsior achieves excellence in erosion control by bonding with the soil surface when wetted. Excelsior fibers interlock uniquely and adhere to one another protecting the soil surface. Further, the open matrix and superior mulching of Excelsior allows for easy and rapid establishment of vegetation.

Excelsior is the final step in the life cycle of an Aspen tree. After it is harvested, Excelsior is applied to the soil surface and wetted to facilitate vegetation. Then it degrades, leaving no trace and only clean water.

Excelsior has been used in countless projects, providing erosion protection and mulching unmatched by any other degradable material.



Environmental Benefits of Erosion Control

Western Excelsior's erosion control products are specifically engineered to lessen the impact of soil erosion due to wind and/or water and provide a mulching layer for the establishment of vegetation.

High-Altitude Rocky Mountain Aspen yield an outstanding Excelsior for this purpose. Typically harvested from elevations over 8,000 feet and in a semi-arid climate, Rocky Mountain Aspen-Produced Excelsior consists of strong, durable and absorbent fibers.

Use of Excelsior as erosion and sediment control completes the cycle from harvesting to re-growth. Recycling natural components in the establishment of new vegetation to mitigate erosion results is the highest form of environmental stewardship.

TACKMAT SERIES



ENHANCED SINGLE NET STRAW BLANKETS]



ENHANCED SINGLE NET EXCELSIOR BLANKETS]



Tackmat_s was designed to be the ideal choice for economical, low risk RECPs. As a single net, straw matrix ECB, Tackmat_s, the material is among the most economical, ideal for low risk / low gradient installations. However, the addition of an all-natural, high performance tackifier for extended erosion and vegetation establishment performance. The addition of the tackifier holds every soil particle in place, maximizing the potential vegetation establishment. The straw matrix provides mulching and twelve-month protection.

Tackmat_x represents a new evolution in Excelsior ECBs. Combining a high-performance, single net Excelsior ECB with a high-performance, soil-stabilizing polyacrylamide (PAM) yields a new ECB with extended capabilities. Tackmat_x was designed to be utilized on projects with steep gradients and requiring longevity up to fifteen months. Yielding no measurable soil loss in full-scale trials, Tackmat_x provides a stable soil structure for the establishment of vegetation, holding soil and seed migration to an absolute minimum, thus minimizing the potential for fines.

Western Excelsior produces Tackmat_x and Tackmat_s in Regular, Rapid Go and All Natural nettings.



NETTINGS and STITCHING

- Regular** – UV stabilized synthetic, photodegradable
- Rapid Go** – UV accelerated synthetic, photodegradable, rapid degradable
- All Natural** – Leno woven jute/scrim, 100% biodegradable

Property	Units	Tackmat _s			Tackmat _x		
		Regular	Rapid Go	All Natural	Regular	Rapid Go	All Natural
Mass per Unit Area	lbs/ yd ²	0.5	0.5	0.5	0.5	0.5	0.5
Matrix	N/A	Straw	Straw	Straw	Excelsior	Excelsior	Excelsior
Top Netting	N/A	Synthetic, Photo-degradable	Synthetic, Photo-degradable	Jute/Scrim Biodegradable	Synthetic, Photo-degradable	Synthetic, Photo-degradable	Jute/Scrim Biodegradable
Bottom Netting	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stitching Thread	N/A	Synthetic, Photo-degradable	Synthetic, Photo-degradable	Biodegradable Cotton	Synthetic, Photo-degradable	Synthetic, Photo-degradable	Biodegradable Cotton
Stitch Spacing	(in)	2	2	2	2	2	2
Longevity	Months	≤ 12	≤ 3	≤ 12	≤ 15	≤ 3	≤ 15
Enhancement	N/A	All Natural Tackifier	All Natural Tackifier	All Natural Tackifier	Broad Spectrum Polyacrylamide	Broad Spectrum Polyacrylamide	Broad Spectrum Polyacrylamide

TEMPORARY

EXCEL SR-1™ [SINGLE NET STRAW BLANKETS]



EXCEL SS-2™ [DOUBLE NET STRAW BLANKETS]



Constructed of certified weed-free, agricultural straw, Western Excelsior's Excel SR-1 and Excel SS-2 series temporary blankets offer an ideal solution for rainfall/rainsplash protection on shallow slopes and channel protection for low-risk, low-flow channels. These superior straw blankets incorporate Regular, Rapid-Go and All Natural nettings and are available in both single and double net varieties. Each blanket is manufactured to ensure a consistent thickness and distribution of fibers, allowing for excellent flexibility, moisture absorption and the ability to conform to the soil surface.

Straw matrix temporary ECBs are used extensively for DOT applications on slopes, roadside ditches and swales. The most important features of straw blankets are quality and consistency. Many producers provide these common products, but Western Excelsior quality means the job is done right, the first time. Western Excelsior uses only high quality straw, netting and stitching, produced to the highest possible standards. The coverage is specifically selected to optimize erosion control and mulching for the life of the installation. Don't just cover the soil, cover yourself by choosing the highest quality ECBs available.

Western Excelsior produces blankets with custom widths and lengths covering 200, 500 and 1000 square yards; providing savings in installation labor.



NETTINGS and STITCHING

- Regular** – UV stabilized synthetic, photodegradable
- Rapid Go** – UV accelerated synthetic, photodegradable, rapid degradable
- All Natural** – Leno woven jute/scrim, 100% biodegradable

Property	Units	Excel SR-1			Excel SS-2		
		Regular	Rapid Go	All Natural	Regular	Rapid Go	All Natural
Mass per Unit Area	lbs/ yd ²	0.5	0.5	0.5	0.5	0.5	0.5
Matrix	N/A	Straw	Straw	Straw	Straw	Straw	Straw
Top Netting	N/A	Synthetic, Photodegradable	Synthetic, Photodegradable	Jute/Scrim Biodegradable	Synthetic, Photodegradable	Synthetic, Photodegradable	Jute/Scrim Biodegradable
Bottom Netting	N/A	N/A	N/A	N/A	Synthetic, Photodegradable	Synthetic, Photodegradable	Jute/Scrim Biodegradable
Stitching Thread	N/A	Synthetic, Photodegradable	Synthetic, Photodegradable	Biodegradable Cotton	Synthetic, Photodegradable	Synthetic, Photodegradable	Biodegradable Cotton
Stitch Spacing	(in)	2	2	2	2	2	2
Longevity	Months	≤ 12	≤ 3	≤ 12	≤ 12	≤ 3	≤ 12

EXTENDED TERM

EXCEL R-1™ [SINGLE NET EXCELSIOR BLANKET] EXCEL S-1™ [SINGLE NET EXCELSIOR BLANKET]



EXCEL R-2™ [DOUBLE NET EXCELSIOR BLANKET] EXCEL S-2™ [DOUBLE NET EXCELSIOR BLANKET]



Western Excelsior produces a series of Excelsior matrix ECBs. Single net, double net and heavy duty materials are available. Single and double net products are available in Regular weight (R) and Superior weight (S). The matrix construction of Western Excelsior's Excel R-1, R-2, S-1 and S-2 erosion control blankets are comprised entirely of 100% Rocky Mountain Aspen, machine-produced Excelsior. Excelsior fibers produced under Western Excelsior's Manufacturing Quality Plan are greater than 6 inches in length, strong, durable and absorbent. Since the Excelsior fibers are machine-produced with specified dimensions and properties, the resultant blanket matrix is more consistent and yields greater open area for the establishment of vegetation with less tenting, compared to other ECBs. By using only high-altitude aspen, Western Excelsior produces a naturally drier fiber with greater strength, resiliency and absorbency for improved performance. Regular and Superior weight ECBs are available in Regular, Rapid Go and All Natural configurations.



Excelsior ECBs provide extended longevity and performance.

NETTINGS and STITCHING

- Regular** - UV stabilized synthetic, photodegradable
- Rapid Go** - UV accelerated synthetic, photodegradable, rapid degradable
- All Natural** - Leno woven jute/scrim, 100% biodegradable

EXTENDED TERM

EXCEL CS-3™ [DOUBLE NET COCONUT/STRAW BLANKET]



Excel CS-3 is an Extended-Term ECB comprised of a blended matrix of 70% certified weed free agricultural straw and 30% clean coconut. The blended matrix is mechanically (stitch) bound on two inch centers to Regular or All Natural netting. Excel CS-3 offers extended longevity, compared to straw matrix ECBs, thus providing a longer lasting alternative for moderate gradient slopes and channels.

Extended Term ECBs are ideal for projects requiring protection for longer than 12 months.

In the case of a Northern California project, Excel CS-3 All Natural was utilized in the stabilization of a steep slope. Yielding a typical longevity between 12 and 24 months and providing the level of erosion control performance necessary, Excel CS-3 All Natural met the designer's requirements. The All Natural option was included to allow the entire installation to biodegrade and minimize entrapment of wildlife.

NETTINGS and STITCHING

- Regular** - UV stabilized synthetic, photodegradable
- All Natural** - Leno woven jute/scrim, 100% biodegradable



Property	Units	Excel R-1			Excel R-2			Excel S-1		
		Regular	Rapid Go	All Natural	Regular	Rapid Go	All Natural	Regular	Rapid Go	All Natural
Mass per Unit Area	lbs/ yd ²	0.63	0.63	0.63	0.63	0.63	0.63	0.81	0.81	0.81
Matrix	N/A	Excelsior	Excelsior	Excelsior	Excelsior	Excelsior	Excelsior	Excelsior	Excelsior	Excelsior
Top Netting	N/A	Synthetic, Photo-degradable	Synthetic, Photo-degradable	Jute/Scrim Bio-degradable	Synthetic, Photo-degradable	Synthetic, Photo-degradable	Jute/Scrim Bio-degradable	Synthetic, Photo-degradable	Synthetic, Photo-degradable	Jute/Scrim Bio-degradable
Bottom Netting	N/A	N/A	N/A	N/A	Synthetic, Photo-degradable	Synthetic, Photo-degradable	Jute/Scrim Bio-degradable	N/A	N/A	N/A
Stitching Thread	N/A	Synthetic, Photo-degradable	Synthetic, Photo-degradable	Bio-degradable Cotton	Synthetic, Photo-degradable	Synthetic, Photo-degradable	Bio-degradable Cotton	Synthetic, Photo-degradable	Synthetic, Photo-degradable	Bio-degradable Cotton
Stitch Spacing	(in)	2	2	2	2	2	2	2	2	2
Longevity	Months	≤ 15	≤ 3	≤ 15	≤ 15	≤ 3	≤ 15	≤ 18	≤ 3	≤ 18

Property	Units	Excel S-2			Excel CS-3	
		Regular	Rapid Go	All Natural	Regular	All Natural
Mass per Unit Area	lbs/ yd ²	0.81	0.81	0.81	0.62	0.62
Matrix	N/A	Excelsior	Excelsior	Excelsior	Coconut/Straw	Coconut/Straw
Top Netting	N/A	Synthetic, Photo degradable	Synthetic, Photodegradable	Jute/Scrim Biodegradable	Synthetic, Photodegradable	Jute/Scrim Biodegradable
Bottom Netting	N/A	Synthetic, Photo degradable	Synthetic, Photo degradable	Jute/Scrim Biodegradable	Synthetic, Photodegradable	Jute/Scrim Biodegradable
Stitching Thread	N/A	Synthetic, Photodegradable	Synthetic, Photodegradable	Biodegradable Cotton	Synthetic, Photodegradable	Biodegradable Cotton
Stitch Spacing	(in)	2	2	2	2	2
Longevity	Months	≤ 24	≤ 3	≤ 24	≤ 24	≤ 24

LONG TERM

EXCEL CC-4™

[DOUBLE NET COCONUT/ BLANKET]



EXCEL SD-3™

[HEAVY DUTY EXCELSIOR BLANKET]



All of Western Excelsior's Long-Term products are manufactured in a double net configuration and consist of an organic matrix intended to degrade over time. Coconut or Excelsior fibers are utilized as matrix materials, providing erosion protection and mulching for a period greater than 24 and up to 36 months. Heavy duty, UV stabilized netting is exclusively utilized for regular, long-term products. Coconut blankets are also available with All Natural netting.

Excel CC-4 is a Long-Term ECB comprised of a 100% clean coconut matrix mechanically (stitch) bound on two inch centers between two long lasting nets. The properties of the coconut matrix provide long-lasting erosion protection and the highest level of performance protecting slope installations from rainfall and rainsplash.

Excel SD-3 is a Long-Term ECB comprised of a heavy duty matrix of high altitude aspen Excelsior fibers mechanically (stitch) bound on two inch centers between two UV stabilized, synthetic nets. The thick, resilient matrix of Excel SD-3 provides the highest level of performance in resisting the forces of flowing water in channel installations.

Long term ECBs are ideal for arid regions or projects requiring protection for longer than 24 months.

NETTINGS and STITCHING

Regular – UV stabilized synthetic, photodegradable

All Natural – Leno woven jute/scrim, 100% biodegradable

Property	Units	Excel CC-4		Excel SD-3
		Regular	All Natural	Regular
Mass per Unit Area	lbs/ yd ²	0.63	0.63	1.33
Matrix	N/A	Coconut	Coconut	Heavy Duty Excelsior
Top Netting	N/A	Synthetic, UV Stabilized	Synthetic, UV Stabilized	Synthetic, UV Stabilized
Bottom Netting	N/A	Synthetic, UV Stabilized	Synthetic, UV Stabilized	Synthetic, UV Stabilized
Stitching Thread	N/A	Synthetic, UV Stabilized	Biodegradable Cotton	Synthetic, UV Stabilized
Stitch Spacing	(in)	2	2	2
Longevity	Months	≤ 36	≤ 36	≤ 30

PERMANENT

EXCEL PP5-8/10/12™

[DOUBLE NET, STITCH BONDED, FIBER FILLED TRM]



Western Excelsior's permanent turf reinforcement mats are composed of 100% synthetic components. A matrix of green or tan polypropylene fibers is mechanically bound (stitched) between two UV stabilized heavy-duty synthetic nets. Each is a permanent rolled erosion control product that provides short-term erosion protection and long-term turf reinforcement for greater than 36 months.

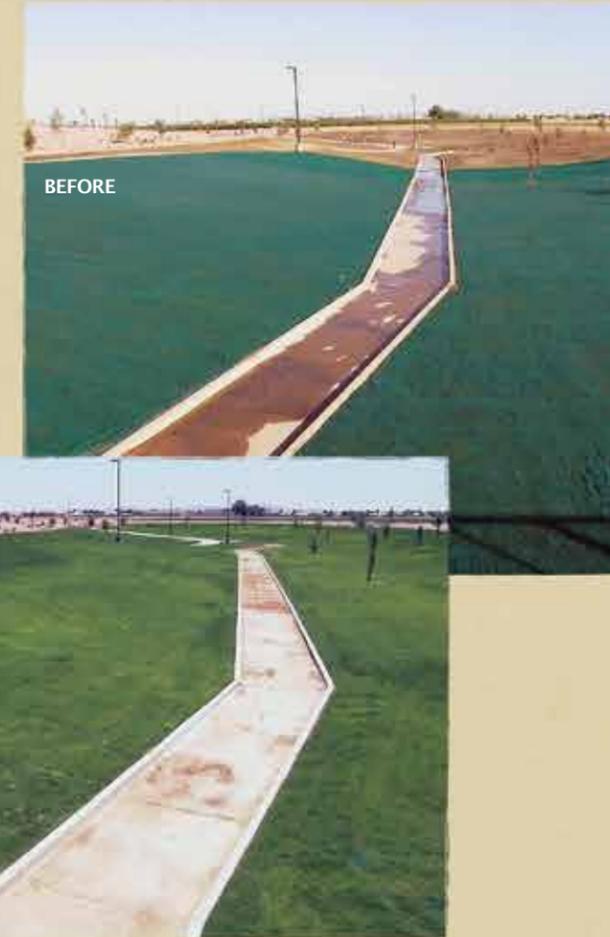
Stitch bonded materials are 1st generation permanent TRM products. The PP5 line of stitch bonded TRMs are capable of providing significant resistance to hydraulic forces and have been tested in full-scale laboratory environments as well as challenging field conditions. PP5-8, PP5-10 and PP5-12 provide increasing levels of unvegetated performance, giving designers options to make economical use of material while satisfying project needs. Once partially and/or fully vegetated, each material provides a high level of performance in resisting the forces of flowing water and rainfall.

Supporting the establishment and reinforcement of vegetation is economical and reliable with PP5 1st generation TRMs.

NETTINGS and STITCHING

Regular – UV stabilized synthetic

Property	Units	Excel PP5-8	Excel PP5-10	Excel PP5-12
		Mass per Unit Area	lbs/ yd ²	0.5
Matrix	N/A	Synthetic, UV Stable	Synthetic, UV Stable	Synthetic, UV Stable
Top Netting	N/A	Synthetic, UV Stable	Synthetic, UV Stable	Synthetic, UV Stable
Bottom Netting	N/A	Synthetic, UV Stable	Synthetic, UV Stable	Synthetic, UV Stable
Stitching Thread	N/A	Synthetic, UV Stable	Synthetic, UV Stable	Synthetic, UV Stable
Stitch Spacing	(in)	2	2	2
Longevity	Months	≥ 36	≥ 36	≥ 36



SECOND GENERATION WOVEN TRMS

ADVANCING TURF REINFORCEMENT TECHNOLOGY

Western Excelsior has revolutionized the landscape of woven turf reinforcement technology. Utilizing a new, advanced production process, Western Excelsior is able to produce woven TRMs and HPTRMs that offer extended capabilities when compared to a competitive product. The PP5 line of woven TRMs have a continuous and homogenous three dimensional structure that truly represents the next generation of TRM technology.

In addition to providing superior resistance to hydraulic stresses and environmental degradation (ideal for long life in any climate), Western Excelsior's next generation materials offer greater strength at low strain, which means mobilizing the TRM/HPTRM strength faster. Typical TRMs stretch significantly more when loaded, reducing performance. Western Excelsior's woven materials have been designed to maintain dimension and stability under the most extreme conditions and loads. This formulation provides the highest level of resistance to hydraulic stresses, wheel loads (due to mowing or construction) or debris/ice and provides the highest factor of safety and durability.

This technology provides a sensible choice for a cost effective, technically proven, permanent, environmentally sensitive, reinforced vegetative solution to traditional hard armor alternatives.



Woven TRMs can be deployed to provide a range of performance and durability options: Medium Loading/Survivability | High Loading/Survivability | Anchor Reinforced Vegetated System

PP5-HEAVY DUTY



PP5-Heavy Duty Woven Turf Reinforcement Mat (WTRM) is a continuously woven, second generation TRM that provides extended performance and durability compared to traditional stitch or melt bonded materials. Capitalizing on Western Excelsior's groundbreaking woven technology, PP5-Heavy Duty (WTRM) provides greater strength, durability and performance. The increased strength of the product, combined with systematically entangling the stem and root structure of the vegetative cover, aids in maintaining the integrity of the vegetated system, yielding increased design life and factor of safety. Additionally, the resistance to degradation by sunlight, chemical agents, biologic agents, foot traffic and light vehicle traffic affords an enhanced design life, significantly longer than traditional TRMs. Classified as a Medium Loading/Survivability material, the stability of the established system affords designers a cost-effective solution to common challenges.

Property	Units	PP5-Heavy Duty	PP5-Xtreme	Xtreme Armor System
Mass per Unit Area	lbs/ yd ²	9.2	9.2	9.2
Material Type	N/A	2nd Generation TRM	High Performance TRM	Anchor Reinforced Vegetated System
Matrix	N/A	Synthetic, UV Stable	Synthetic, UV Stable	Synthetic, UV Stable
Construction	N/A	Woven, Homogeneous	Woven, Homogeneous	Woven, Homogeneous
Typical Fastener	N/A	12 in Pin / Staple	12 in Pin / Staple	Pins and PDAs
Loading/Survivability	N/A	Medium	High	Highest

ANCHOR REINFORCED VEGETATED SYSTEM

THE NEXT GENERATION OF HIGH PERFORMANCE TRM

High Performance TRMs (HPTRMs) provide the highest levels of strength, durability and performance. Utilizing woven technology in construction, the material provides a minimum tensile strength of 3000 lbs/ft of fabric width, in both the machine and cross direction. Unmatched resistance to hydraulic, physical and environmental stresses allow HPTRMs to provide the longest possible design life. When secured with Percussion Driven Anchors (PDAs) and vegetated, HPTRMs form an Anchor Reinforced Vegetated System (ARVS).

PP5-XTREME

Strength. Strength sets PP5-Xtreme (HPTRM) apart from any other material. Real, practical working strength is provided by PP5-Xtreme because the material produces full strength at low strain (the material stretches less when loaded). Further, the initial tangent modulus of PP5-Xtreme (a measure of immediate strength when first loaded) shows an instantaneous and significant resistance to loading. This strength is what enables PP5-Xtreme be more durable when exposed to debris and wheel loading and provide higher performance (hydraulic stresses). The woven matrix is ideal for the reinforcement of vegetation and the composition of PP5-Xtreme offers the greatest possible resistance to chemical, biological and ultra-violet degradation possible. Strength and durability allow PP5-Xtreme to be classified as a High Survivability material, offering a design life up to fifty years.



Quite simply, the next generation of turf reinforcement, durability, and high performance has arrived. PP5-Xtreme.

XTREME ARMOR SYSTEM

Securing an HPTRM with Percussion Driven Anchors (PDAs) imparts the strength of the material to the soil, yielding a durable, stable mechanically connected veneer.

The Xtreme Armor System (XAS) is an ARVS consisting of PP5-Xtreme secured to an embankment surface with PDAs. Utilizing the XAS increases the interaction of the HPTRM and the soil matrix, imparting the strength of the HPTRM to the soil. Once in place, the XAS minimizes the risk of shallow plane failures and allows for the highest loading by way non-hydraulic stresses such as foot or machine traffic and/or debris or ice flow. Once vegetation begins to establish, the XAS provides higher factors of safety, compared to traditionally secured HPTRMs. The XAS provides a high-performance, high durability, vegetated alternative to rock rip-rap or other, traditional hard-armor.



Anchor Type	XA2	XA3	XA4	XA6
Description	Gravity Die Cast Percussion Driven Anchor (PDA)			
Anchor Material	Zinc Aluminum Alloy or Stainless Steel			
Tendon Material	Zinc Coated Aluminum or Stainless Steel			
Tendon Length	3 ft	3 - 6 ft	6 ft	6 ft
Anchor Area	3 in ²	6 in ²	13 in ²	16 in ²
Tendon Size	3 mm	3 - 4 mm	4 - 6 mm	6 - 8 mm
Typical Working Load	250 lbs	1000 lbs	2000 lbs	5000 lbs

Bearing Plate	WEC 100	WEC 300	WEC 400
Description	3.5 in Diameter, Anodized Zinc, Open Construction	4.3 in Diameter, Glass Filled Nylon (UV-inhibited), Solid Construction	6.3 in Diameter, Plastisol and Zinc Coated Steel, Solid Construction
Grip	Integrated, Stainless Steel or Ceramic		



HYDRAULIC MULCHES

100% ASPEN MULCH ASPEN TACK MULCH

WOOD FIBER HYDRO-MULCH



In addition to a full line of RECPs, Western Excelsior manufactures 100% Aspen Mulch, which consists entirely of virgin aspen wood fibers. Packaged in fifty pound bales, 100% Aspen Mulch is an economical and effective mulch that provides a growth medium that is highly absorbent and is designed for clog free application from a hydroseeder. 100% Aspen Mulch is also available with a high quality, organic tackifier as Aspen Tack Mulch. The addition of the tackifier provides added erosion control benefit, yielding even greater protection from rainfall and rainsplash.

ASPEN TURBO MULCH ASPEN TURBO TACK

WOOD/CELLULOSE BLEND MULCH



Aspen Turbo Mulch consists of a blended mulch of wood fibers and recycled cellulose material. The blend of fibers creates a diversity of sizes, yielding a highly effective mulching layer, adept at protecting seed, maintaining integrity and minimizing moisture loss from the soil. Packaged in fifty pound bales, Aspen Turbo Mulch is formulated for clog free application from a hydroseeder.

Aspen Turbo Tack consists of the same fiber blend as Aspen Turbo Mulch, with the addition of a high quality, natural tackifier. The addition of the tackifier provides added erosion control benefit, yielding even greater protection from rainfall and rainsplash.

Western Excelsior mulches provide excellent vegetation establishment while remaining economical and efficient. Over the course of countless field applications, Western Excelsior mulches have been proven to be an excellent choice to blanket nature with nature.

Hydromulch products are ideal for uneven or un-cleared surfaces and low risk projects. Added tackifier improves erosion control benefit.



Property	Units	100% Aspen Mulch	Aspen Tack Mulch	Aspen Turbo Mulch	Aspen Turbo Tack
Bag Weight	lbs	50	50	50	50
Bags per Bundle	34	34	34	34	34
Fiber Type	N/A	100% Wood	100% Wood	Wood/Cellulose Blend	Wood/Cellulose Blend
Fiber Length	% Between 0.5 and 5.0 mm	80	80	80	80
Tackifier	N/A	N/A	Organic Guar	N/A	Organic Guar

SEDIMENT CONTROL PRODUCTS

ASPEN EXCELSIOR LOGS EXCELSIOR BIO LOGS

WOOD FIBER SEDIMENT CONTROL LOGS



Aspen Excelsior Logs consist of a machine-produced high-altitude Rocky Mountain aspen excelsior matrix confined by a synthetic, tubular net to form a log of specific length, mass and diameter. Excel Aspen Excelsior Logs are designed to reduce hydraulic energy and filter sediment-laden flow in channels and on slopes. The logs are flexible, to conform to soil surfaces, and are secured by staking to create a temporary water-permeable structure.

Once in place, the Aspen Excelsior Log provide fast, efficient filtration that offers superior flow interception, filtration and containment properties. They are specifically engineered to be used on slopes to minimize displacement of in-situ sediments, in channels, as small check dams, and to restrict sediment-laden flow from inlets. Aspen Excelsior Logs are also offered in a 100% biodegradable option as Excelsior Bio Logs. All Aspen Excelsior Logs may be ordered in custom lengths.

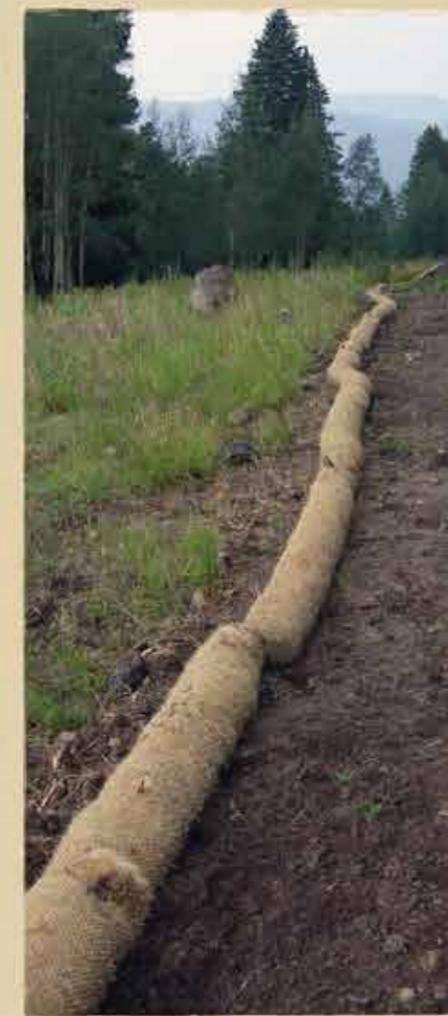
EXCEL STRAW LOGS EXCEL STRAW BIO LOGS

STRAW FIBER SEDIMENT CONTROL LOGS



Excel Straw Logs consist of a 100% certified weed-free straw matrix confined by a tubular, synthetic net. Excel Straw Logs function particularly well as low-flow inlet filters and roadside filters, as they allow minimal flow and sediment to pass through. The logs are flexible, to conform to the soil surface, and are secured by staking.

Available in a variety of standard diameters and lengths, Excel Straw Logs can also be ordered in custom lengths to meet specific job conditions. Excel Straw Logs offer many advantages as an effective and economical alternative to conventional sediment control measures.



Property	Units	Aspen Excelsior Logs	Excelsior Bio Logs	Excel Straw Logs	Excel Straw Bio Logs
Diameters	in	9, 12, 18, 20	9, 12, 18, 20	9, 12, 18, 20	9, 12, 18, 20
Lengths	ft	10 - 25	10 - 25	10 - 25	10 - 25
Matrix	N/A	Excelsior	Excelsior	100% Weed Free Straw	100% Weed Free Straw
Netting	N/A	Synthetic, UV Stabilized	Jute/Scrim Biodegradable	Synthetic, UV Stabilized	Jute/Scrim Biodegradable
Closure	N/A	Tied or Hog Ring			

BASIC RECP INSTALLATION

Installation Introduction

All Western Excelsior RECPs are designed to support, nurture and/or reinforce vegetation. Once the site is constructed to design grade and profile, the ground surface should be prepared by removing rocks, debris and clods of soil. Place seed on-site prior to installation of RECP. Seeding should be conducted in accordance with project plans/specifications.

Application of Western Excelsior RECPs for slope and channel projects requires securing the material to the ground surface, protecting the terminal edge of the installation with anchor trenches and fixing lateral and longitudinal seams by overlapping blankets and stapling or pinning. RECPs must be installed on firm, smooth ground that is geotechnically stable. Installation may start upstream or downstream, however, the seam shingle pattern in the direction of flow must be maintained.

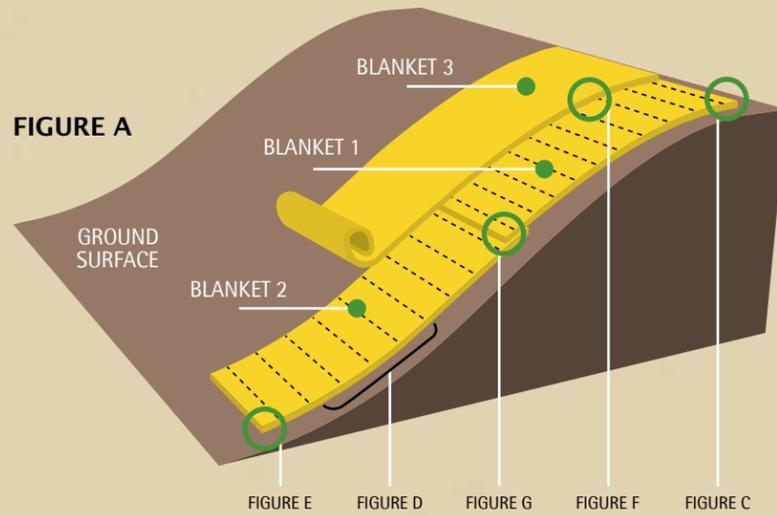


FIGURE A

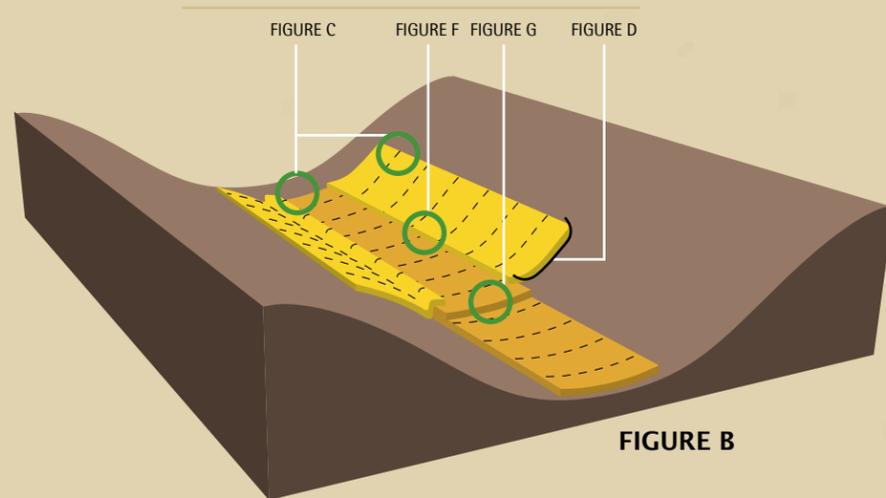


FIGURE B

anchors, Seams / Terminal Edges

Typically, six-inch by one-inch crown, 11 gauge steel staples are used to anchor the RECP. However, longer or larger anchors may be warranted and used, depending on site-specific conditions. Further, biodegradable stakes may be used to create a completely biodegradable installation. Finally, pins with washers and/or PDAs may be used for ARVS applications or HPTRM applications.

Anchor trenches are used to prohibit water from flowing directly underneath the installed blanket along the edges. Construction of an anchor trench is shown in Figure C. Seams are placed to ensure a shingle pattern in the direction of flow. Figures F and G provide schematics of seam installation.

Note: Product installation methods shown herein depict typical situations. Each product utilizes a prescribed stapling pattern/rate. Additional factors must be considered for detailed or atypical field use. Consult Western Excelsior product installation documents for details in placing RECP materials.

FIGURE C – PROFILE VIEW

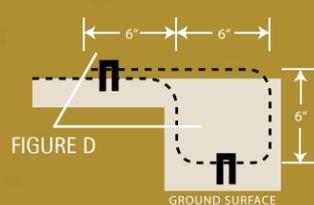


FIGURE D – PLAN VIEW

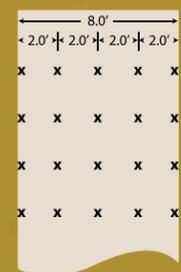


FIGURE E – PLAN VIEW

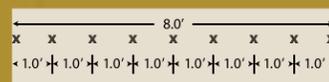


FIGURE F – CROSS SECTION VIEW

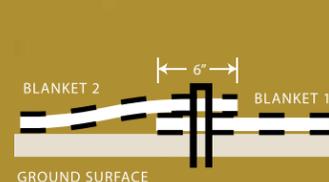
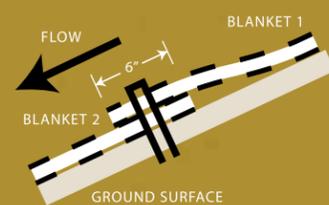


FIGURE G – PROFILE VIEW



BASIC SEDIMENT CONTROL INSTALLATION



PERIMETER SEDIMENT CONTROL

Installed as perimeter control, SRFRs reduce flow concentration and prevent sediment laden flow from crossing the boundary. Installed on a roadside, SRFRs can keep sediment from the road or keep runoff from concentrating and attacking downslope soil. In a roadside channel, SRFRs provide a temporary ditch-check, slowing the velocity of the flow and minimizing the migration of the channel sediments downstream. As vegetation establishes, the SRFRs degrade.



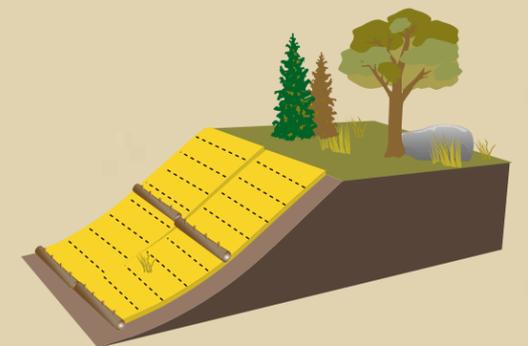
CHANNEL ENERGY DISSIPATION



INLET FILTER

Used as an inlet filter, SRFRs are particularly effective at reducing the sediment and attached pollutants entering the storm sewer, storm storage or conveyance. If flow-through capacity to the drain is not a concern, a dense SRFr can be ideal for inlet filtration, reducing the inflow of pollutants to an absolute minimum. Installation is quick and easy, typically requiring just staking of each unit to form a barrier around the drain. SRFRs can last up to two years in place and are easily repaired or replaced if necessary.

When combined with Erosion Control Blankets (ECBs), SRFRs improve the performance of the integrated system, allowing for satisfactory performance to be achieved in the most challenging applications. Installed on a slope with ECBs, SRFRs reduce flow velocity, dissipate energy and spread the flow. The result is more infiltration and less erosion. In addition to greater erosion control performance, holding more water on the slope can improve vegetation establishment in semi-arid type environments. SRFr/ECB composite systems can be installed with confidence on steeper and longer slopes than SRFrs or ECBs alone.



SLOPE INTERRUPTION

PRODUCT APPLICATION SUMMARY

Each Excel ECB and TRM provides a performance proven solution for specific erosion control and mulching applications. Choosing a Rapid Go option reduces the longevity of the material and the All Natural option provides a 100% Bio-degradable, wildlife friendly solution. Although multiple products may provide adequate service, the following chart provides a summary of typical applications.

UNVEGETATED CHANNEL APPLICATIONS |

Excel SD-3, Excel CC-4 All Natural and Excel PP5-12 provide a variety of options for high flow channels.	≤ 2.8 psf / 9.0 fps	1:1 Slope	Industry leading performance is achieved with Tackmat _x . Excel CC-4 provides longer lasting protection and water shedding.
Excel CC-4 is the longest lasting degradable material. Excel PP5-10 provides a permanent option.	≤ 2.3 psf / 8.0 fps	1.5:1 Slope	Excel R-1 yields excellent slope protection and vegetation establishment. Tackmat _x provides upgraded performance.
Excel R-2 is a highly efficient option and outstanding mulching. Excel S-2 offers greater longevity.	≤ 2.0 psf / 7.0 fps	2:1 Slope	Excel SS-2 yields excellent slope protection. Tackmat _x provides upgraded performance with greater economy.
Excel SS-2 affords greater durability and performance for channel lining projects. Excel R-1 provides a longer lasting option.	≤ 1.8 psf / 6.0 fps	2.5:1 Slope	Tackmat _x provides excellent performance, Excel R-1 and Excel CS-3 provide longer lasting options.
Excel SR-1 provides adequate protection and mulching for low risk projects. Excel R-1 is a cost-effective upgrade.	≤ 1.6 psf / 5.0 fps	3:1 Slope	Excel SR-1 is ideal for low shallow slopes, Excel R-1 and Excel CS-3 provide longer lasting options.

UNVEGETATED SLOPE APPLICATIONS

VEGETATED APPLICATIONS

Applications requiring highest level of resistance to hydraulic forces, physical damage and degradation. Wheel and debris loading are of concern and ground may not be geotechnically stable.



Applications requiring the highest level of resistance to hydraulic forces, debris/wheel loading, and degradation. Ground is geotechnically stable, however, a design life of up to fifty years is appropriate.



Applications requiring higher factors of safety and/or resistance to moderate wheel/debris loading. Ground is geotechnically stable, however, a design life of up to twenty-five years is appropriate.



Basic applications that require a permanent material to enhance the stability of a stand of vegetation but are not subjected to debris loading or wheel loading. Ground is geotechnically stable.



RESOURCES AND DESIGN

PROJECT DESIGN - EXCEL EROSION DESIGN



All Successful Projects Initiate the Same Way, Rooted in Solid Design

All projects benefit from good planning. Understanding product thresholds is a good start, however, erosion control product performance is affected by site-specific conditions. For site-specific product selection, consult Excel Erosion Design (EED), the state-of-the-art design program developed by Western Excelsior. EED utilizes the most proven design methods to optimize the use of the unique properties and advantages of each product. Both slope/rainfall and channel projects may be evaluated. Additionally, vegetated and unvegetated conditions can be considered. EED is easy and free to use, but also complete in execution and output.

Outstanding features of the program include:

- Work in English or Metric Units Seamlessly
- Enter estimates or Exact Values for Design Parameters
- Utilize State of the Practice Design Techniques
- Engineer Preferred Output
- Easy Web Based Interface
- Always Free and Available
- Multiple Product Options with Corresponding Factor of Safety

Log on to www.westernexcelsior.com to access the program.

PROJECT SUPPORT

Western Excelsior professional personnel provide the backbone of an excellent support system for the customer and end user. Knowledgeable, experienced personnel are always available and can help with pre-bid, bid, installation and troubleshooting. Additionally, Western Excelsior maintains an online resource, www.westernexcelsior.com that is always available to provide design support, educational information and product documentation including case studies and certifications. Specifically, standard certifications for LEED compliance, Made in the USA requirements, product delivery and product conformance are available for download. Additionally, standard product properties, performance and installation documents are posted.

Another excellent feature of the website is the regulatory database. This page shows the various approved Western Excelsior products for most state DoTs and even standard specifications.

Visit www.westernexcelsior.com to acquire almost any product related literature.



QUALITY | VALUE | SERVICE

Quality Assurance

Western Excelsior backs its products with one of the most comprehensive guarantees in the industry.

If any Western Excelsior specified and installed product fails, Western Excelsior will replace the failed product and include the cost of seed, fertilizer, topsoil or other amendments lost due to product failure.

All of Western Excelsior's products have been extensively tested, both internally and by independent agencies, in the laboratory and in the field. Tests have proven that Excel erosion control products provide superior erosion control protection.

Excel erosion control products are available through Western Excelsior's extensive network of distributors and are fully supported by our highly trained technical sales and customer service representatives.

You can have the highest level of confidence in the products Western Excelsior provides as you make the choice to blanket nature with nature.

Contact a Western Excelsior distributor or visit our Web site at www.westernexcelsior.com for more information.

Blanketing Nature with Nature



Strategically located on both the East and West Coasts



CORPORATE HEADQUARTERS