



LEED CERTIFICATION WITH TENSAR® GRADE SEPARATION SYSTEMS

APPLICATION BULLETIN



Tensar®

Our Grade Separation Systems Can Help You Earn LEED Certification Credits

SIERRASCAPE® RETAINING WALL SYSTEM

The SierraScape® Wire-Formed Retaining Wall System is among our most cost-effective and dependable wall systems. Known for its design versatility, the SierraScape System features a number of facing options including native vegetation and soil-bioengineering. Each of these options provides erosion protection with natural reinforcement. The system can be backfilled with general embankment fills or on-site soils, which saves on costs for site materials' disposal and imported fill and it is well suited to commercial, industrial, residential and other applications with LEED certification potential.



SIERRA® SLOPE RETENTION SYSTEM

Introduced in 1982, the fully integrated Sierra® Slope Retention System provides structural integrity in a number of challenging applications and load conditions, including building support and earthquake loadings. The Sierra System replaces concrete construction with vegetated slopes that blend naturally with the surrounding environment while enhancing property values. Like the SierraScape System, the Sierra System adapts to extreme conditions, creates smaller developable footprints with increased open spaces and uses available fill to reduce imported material and site disposal costs.



MESA® RETAINING WALL SYSTEMS

With its high capacity face connections and durable soil reinforcement, Mesa® Retaining Wall Systems are effectively used for the construction of detention ponds that maximize stormwater management, minimize land use and manage stormwater runoff. Mesa Systems can also be backfilled with recycled concrete or other on-site materials, saving both imported material and site disposal costs.



TENSAR® UNIAXIAL (UX) GEOGRIDS

All of our grade separation systems are reinforced with patented Tensar® Uniaxial (UX) Geogrids. Manufactured from high-density polyethylene, these structural geogrids are highly resistant to chemical, biological and environmental degradation. With their strength and durability, Tensar UX Geogrids can be used with a number of recycled materials including non-select fill and crushed concrete. In addition, their homogenous structure enables installation in a wide range of environments.



“It is our goal to be an outstanding corporate citizen dedicated to developing earth stabilization solutions that are structurally sound and environmentally responsible.”

Bob Vevoda
Chief Operating Officer
Tensor Corporation



Go Green with Tensor® Grade Separation Systems

Green building is quickly becoming the new industry standard with its own performance criteria: the U.S. Green Building Council's (USGBC) LEED Green Building Rating System™. Launched by the USGBC in 2000, the Leadership in Energy and Environmental Design (LEED) Rating System promotes high-performance, sustainable buildings through a third-party certification program addressing green building design, construction, operation and maintenance. LEED recognizes achievements in six key areas: sustainable site development, water savings, energy efficiency, material and resource selection, indoor environmental quality and design innovation. LEED certification demonstrates that a building is environmentally responsible, profitable and a healthy place to live and work.

As a world leader in technology-driven site solutions, Tensor International Corporation (Tensor) offers several grade separation systems that, when used in accordance with LEED criteria, can help you earn points toward LEED project certification. Our SierraScape® Retaining Wall System, Sierra® Slope Retention System and Mesa® Retaining Wall Systems can help you qualify for credits in eight LEED classifications.

Each Tensor® System can help:

- ▶ Maximize required setbacks
- ▶ Conserve existing natural areas and help restore damaged areas
- ▶ Provide a natural habitat for native plants and ground animals and promote biodiversity
- ▶ Provide a high ratio of open space to a development footprint
- ▶ Maximize stormwater management while minimizing land use through the construction of detention ponds
- ▶ Manage stormwater runoff to minimize disruption and pollution of natural water flows with the construction of detention ponds
- ▶ Divert concrete construction waste from landfill disposal

All four certification levels are eligible: Certified, Silver, Gold and Platinum in both the New Construction/Major Renovations and Existing Buildings project categories.



Potential Primary Credits for LEED Certification

Tensor's grade separation systems qualify for consideration under eight LEED classifications with the potential to earn one point each toward LEED certification. These include four classifications in the Sustainable Sites (SS) category, two classifications in the Water Efficiency (WE) category and two classifications in the Materials Reuse (MR) category.

SS Credit 5.1	Protect or Restore Habitat
Site Development	1 Point

Intent: Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

Potential Strategy: With the construction of steepened slopes, the SierraScape® System and the Sierra® System can each maximize required setbacks to limit site disturbance, resulting in a higher ratio of open space to a development footprint. The two systems' vegetative options (native vegetation, ground cover, soil-bioengineering, hydroseeding, sodding, etc.) provide opportunities for the introduction of native or adapted plant species that require low to no irrigation.

SS Credit 6.1	Quantity Control
Stormwater Design	1 Point

Intent: Limit disruption of natural water hydrology by reducing impervious cover, increasing on-site infiltration, reducing or eliminating pollution from stormwater runoff, and eliminating contaminants.

Potential Strategy: The SierraScape System, Sierra System and Mesa® Systems can each be used to steepen the interior sides of a pond or the external sides of a berm, increasing storage capacity while minimizing land use. Specified for the construction of extended storage ponds, the three systems promote particulate and debris settlement as well. While the Mesa Systems feature superior detention capabilities, a vegetated SierraScape System or Sierra System promotes effective infiltration. Tensor® UX Geogrids resist environmental degradation, including hydrolysis, and their open aperture structure promotes long-term soil drainage characteristics.

SS Credit 5.2	Maximize Open Space
Site Development	1 Point

Intent: Provide a high ratio of open space to the development footprint to promote biodiversity.

Potential Strategy: With slopes that can be built up to 70°, the SierraScape System and the Sierra System can be used to limit site disturbance and reduce the development footprint. The two systems' vegetative options (native vegetation, ground cover, soil-bioengineering, hydroseeding, sodding, etc.) provide opportunities for the introduction of native or adapted plant species that require low to no irrigation.

SS Credit 6.2	Quantity Control
Stormwater Design	1 Point

Intent: Limit disruption and pollution of natural water flows by managing stormwater runoff.

Potential Strategy: The SierraScape System, Sierra System and Mesa Systems can each be used to steepen the interior sides of a pond or the external sides of a berm, increasing storage capacity while minimizing land use. Specified for the construction of extended storage ponds, the three systems promote particulate and debris settlement as well. While the Mesa Systems feature superior detention capabilities, a vegetated SierraScape System or Sierra System promotes effective infiltration. Tensor UX Geogrids resist environmental degradation, including hydrolysis, and their open aperture structure promotes long-term soil drainage characteristics.

Potential Secondary Credits for LEED Certification

WE Credit 1.1/1.2	Reduce by 50% or no potable water use or no irrigation
Water Efficient Landscaping	1 Point*

Intent: Limit or eliminate the use of potable water, or other natural surface or subsurface water resources available on or near the project site, for landscape irrigation.

Potential Strategy: The SierraScape System, Sierra System and Mesa Systems can each be used to construct detention ponds that capture and/or retain rainwater, recycled wastewater, recycled greywater or treated, non-potable water. In addition, the SierraScape System and Sierra System's vegetative options (native vegetation, ground cover, soil-bioengineering, hydroseeding, sodding, etc.) provide opportunities for the introduction of native or adapted plant species that require low to no irrigation.

* 1 point for WE Credit 1.2 in addition to WE Credit 1.1

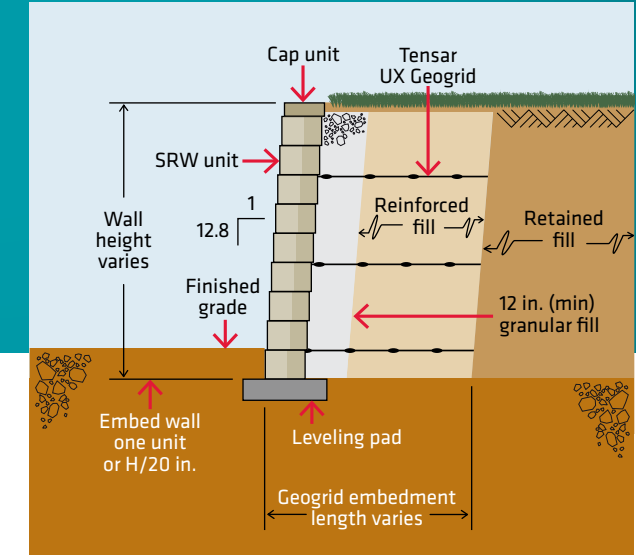
MR Credit 2.1/2.2	Divert 50% to 75% from Disposal
Construction Waste Management	1 Point*

Intent: Divert construction and demolition debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

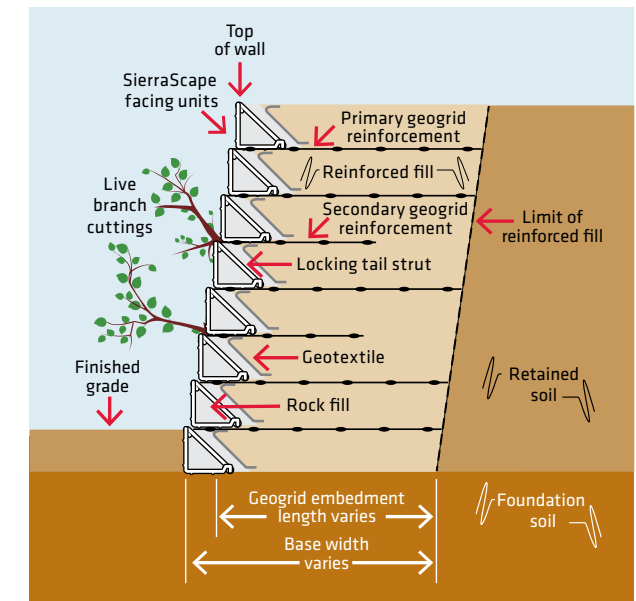
Potential Strategy: The SierraScape System, Sierra System and Mesa Systems can each be backfilled with recycled concrete. These systems are reinforced with Tensor Uniaxial (UX) Geogrids, manufactured from high-density polyethylene and highly resistant to chemical, biological and environmental degradation.

* 1 point for MR Credit 2.2 in addition to MR Credit 2.1

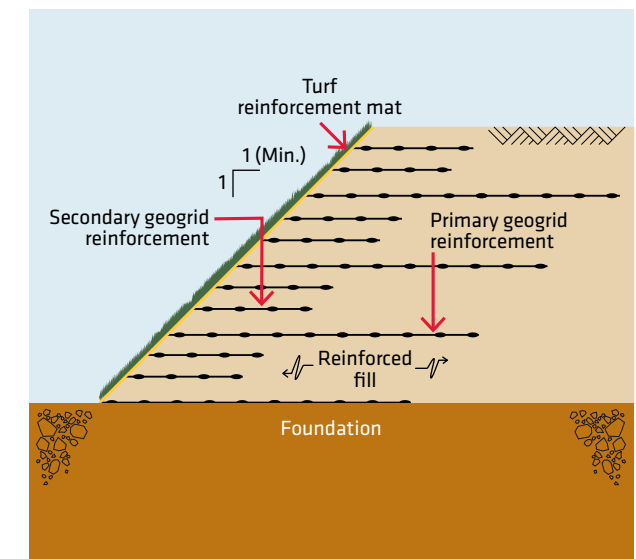
For more information about Tensor's grade separation systems, call **800-TENSAR-1** or visit www.tensarcorp.com. Complete details for the LEED Green Building Rating System and project certification are available at www.usgbc.org.



Segmental Block Retaining Walls – Typical Cross-Section



Bioengineered Wall – Typical Cross-Section



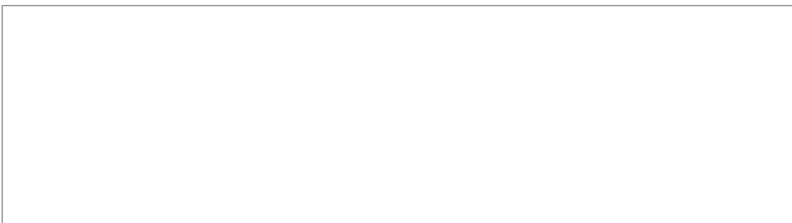
Reinforced Soil Slopes – Typical Cross-Section

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