



SOIL RETENTION

Plantable concrete systems®





Nothing beats VERDURA® for strength, versatility and plantability!

The VERDURA® retaining wall system is the most plantable, versatile, and strongest Segmental Retaining Wall (SRW) on the market today. The name VERDURA® comes from “verde” meaning green and “dura” meaning durable. The VERDURA® wall can be used for a wide range of projects ranging from small homeowner projects to large scale developments. Single tier VERDURA® walls have been constructed up to 50’ and tiered walls have been constructed up to 80’. The system offers a fully plantable face that provides an opportunity to soften the visual impact of large retaining structures. The VERDURA® wall transforms a grade transition into a vegetated “steepened slope” instead of a concrete scar across a hillside. Engineered hillsides can look more like natural hillsides meeting development needs while maintaining the aesthetics of our natural environment.

From big to little and everything in-between!

- Large Commercial Sites
- Hillside Developments
- Residential Construction
- Screen / Sound Walls
- Channel Walls
- Detention Basin Walls
- Bridge Abutments
- Top, Bottom and Mid-Slope Walls
- Tiered Walls
- Backyard Walls
- Raised Planters
- Tree Rings



The Shops at Sycamore Creek **2010 HNA AWARD**
for Commercial Retaining Walls (10 - 50,000 sq. ft.)





VERDURA® offers something for just about everybody. Whether you're a homeowner looking to create a raised planting area or a large developer seeking to economically terrace a master planned community, this specialized, fully plantable, segmental retaining wall system provides the solution to a wide variety of design challenges. It has been used for commercial centers, within park sites, for sports field developments, as bridge abutments, within zoo enclosures, in channels and detention basins, and much more. Because of inherent strength, ease of installation and full plantability, **VERDURA**® has been the wall of choice for nearly 20 years.

“There was nothing else available that had the same look or performed the same way as VERDURA®” –

Executive, The Irvine Company



Grading design for hillside development relies upon walls within the slopes to increase lot size and provide panoramic views, which maximizes lot value. Walls can also be used to balance the cut/fill earthwork for sites to preserve natural canyon areas. Mid-slope walls act to provide a buffer between the residential lots and public right-of-way while not losing the valuable horizontal space a graded slope requires.





MASTER PLANNED COMMUNITIES

Alberhill Ranch, Lake Elsinore, CA
 Coto de Caza, CA
 Crosby Estates, San Diego, CA
 Golden Valley Ranch, Santa Clarita, CA
 Ladera Ranch, CA
 Lake Sherwood, CA
 Lambert Ranch, Irvine, CA
 Newport Coast, CA
 Promontory, Signal Hills, CA
 Talega, San Clemente, CA
 Terramor, Corona, CA
 The Ranch, Rancho Mission Viejo, CA

BUILDERS/ DEVELOPERS

Brookfield Residential
 CalAtlantic Homes
 Comstock Homes
 DR Horton
 Foremost Communities
 Irvine Company
 KB Home
 Lennar
 Pardee Homes
 Rancho Mission Viejo
 Shea Homes
 Taylor Morrison
 The New Home Company
 Toll Brothers
 TRI Point Homes

EDUCATIONAL FACILITIES

Carey High School, Las Vegas, NV
 Coronado K-8, San Marcos, CA
 Dana Middle School, San Diego, CA
 Golden Hill Elementary, San Diego, CA
 Los Angeles Science Center, Los Angeles, CA
 Oak Hill High School, Hesperia, CA
 Riverside Community College, Riverside, CA
 Sage Hill Elementary, Newport Coast, CA
 San Marcos High School, San Marcos, CA
 UCI, Irvine, CA
 UCSD, San Diego, CA

RESIDENTIAL DEVELOPMENTS

Amerige Heights, Fullerton, CA
 Civita, San Diego, CA
 Crosby Estates, San Diego, CA
 Heritage Hills, Irvine, CA
 Marywood Hills, Orange, CA
 Pacific Highlands Ranch, San Diego, CA
 Rosetta Canyon, Lake Elsinore, CA
 The Colony at Calabasas, Calabasas, CA
 University Heights, Fullerton, CA
 Vantage Point, Diamond Bar, CA
 Vila Borba, Chino Hills, CA
 Willow Heights, Diamond Bar, CA



Enhance your commercial development with VERDURA®

COMMERCIAL

Cabazon Center, Cabazon
Colonies Crossroads, Upland
Costco, Inglewood
Costco, Laguna Niguel
Costco, San Marcos
Del Mar Plaza, Del Mar
Home Depot, Apple Valley
Kaiser Permanente, Chula Vista
Kaiser Permanente, Pinole
Pacific Life Corp. Headquarters, Aliso Viejo
Palomar Pomerado Hospital, Escondido
Renaissance Plaza, Wildomar
Shoppes at Westlake Village, Westlake Village
Silver Hawk, Temecula
Sorrento Pointe, San Diego
Sycamore Creek, Corona
Target, Mission Viejo
Target, Vista
Target, San Clemente
Westlake Landmark, Westlake

RESORTS

Green Valley Ranch, Las Vegas
Renaissance, Westlake Village
St. Regis Resort, Dana Point

CASINOS

Sycuan Casino, San Diego
Venetian, Las Vegas

GOLF COURSES

Alta Vista, Placentia
Coto de Caza, Orange County
Los Verdes, Rancho Palos Verdes
Pelican Hills, Newport Beach
Shady Canyon, Irvine
The Crosby, San Diego

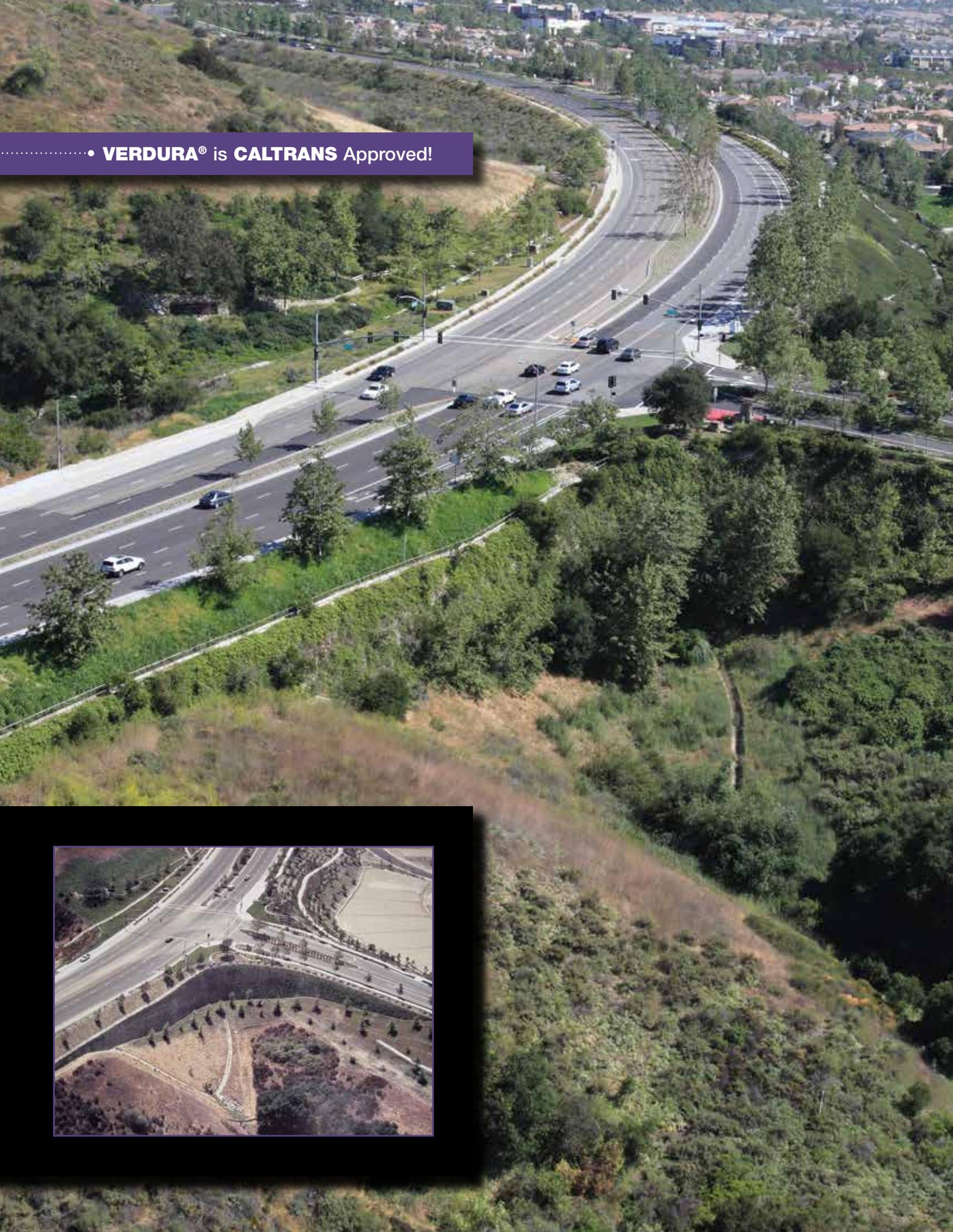
ZOOS AND PARKS

San Diego Zoo, San Diego
Sea World, San Diego
Wild Animal Park, San Diego





.....• **VERDURA®** is **CALTRANS** Approved!



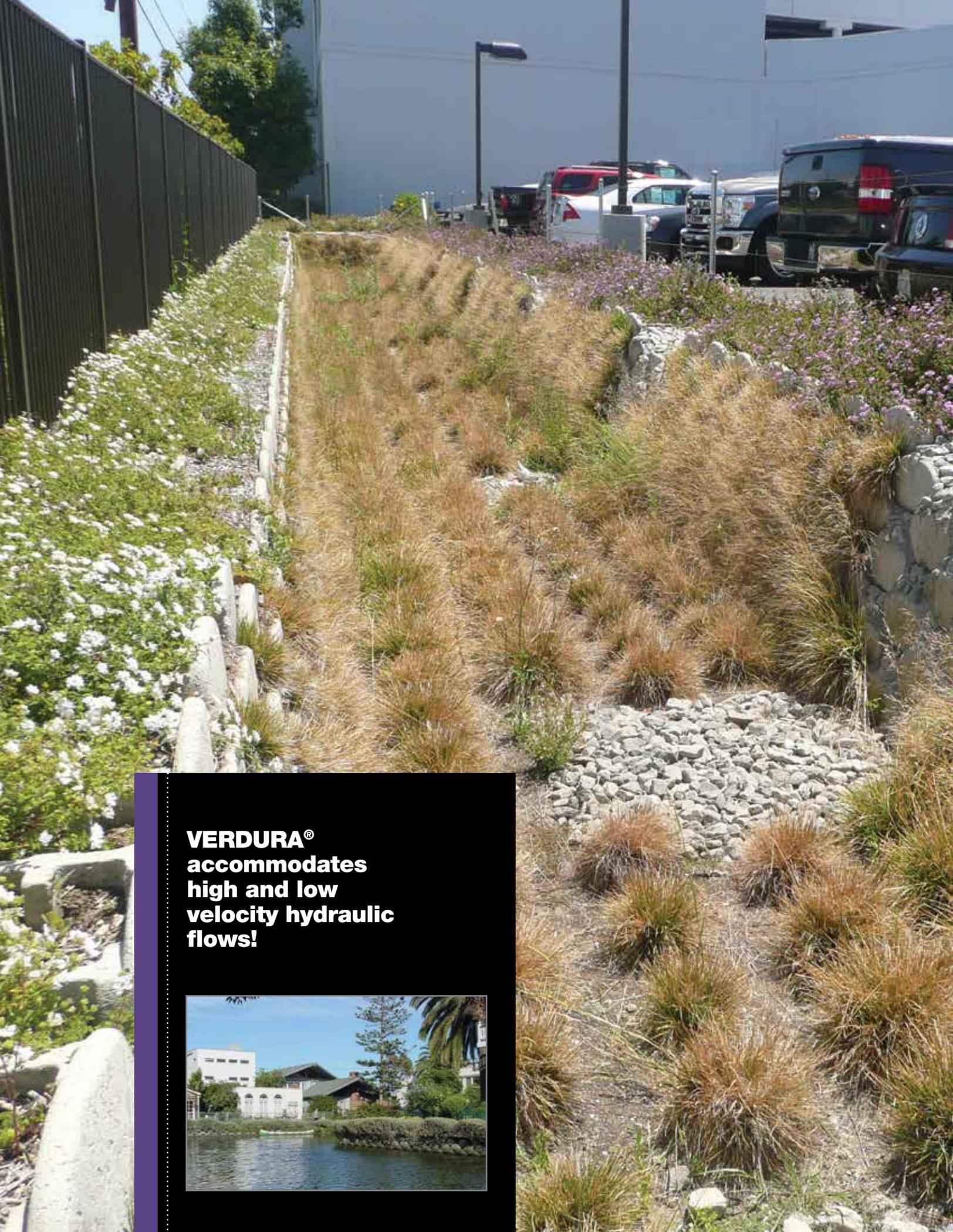


The Robert B. Diemer WTP Emergency Access Road
2013 HNA AWARD for Transportation



Strong enough to hold up roads and bridges.

Transportation projects always have to work. People count on roads and bridges to allow movement in their daily lives. At the same time, commerce depends on the ability to transport goods and services from place to place. With its enduring strength, dependability and rapid rate of installation, **VERDURA®** provides a backbone support for transportation design, offering structural quality and cost effectiveness. When installed, instead of a conventional slope, **VERDURA®** reduces the impact of bridge or roadway development on adjacent space, minimizing environmental mitigation requirements or the taking of additional land.



VERDURA®
accommodates
high and low
velocity hydraulic
flows!





The **VERDURA**® wall system can be utilized in a variety of channel and stream bank stabilization applications. **VERDURA**® retaining walls can be installed in a channel or stream that has flow velocities of up to 25 fps when built in a closed face configuration. The closed face construction is typically done below the high water line in high velocity situations, while up above the high water line the wall can be built with an open face configuration to allow planting. The strength and versatility of the **VERDURA**® retaining wall system make it the ideal choice for vegetated channels. **VERDURA**® walls have been used in the low flow velocity Venice canals to the flash flood plain in Indio, California.

APPLICATIONS

- Bioswales
- Channels and Canals
- Detention Basins
- Stream Bank Protection
- Water Quality Basins

Achieve full plantability with VERDURA®



The fully plantable block face allows for unobstructed root penetration into the backfill soils just like a slope. VERDURA® blocks have an open back and not a small concrete enclosed planter cup. Irrigation is simply done on the face through either drip or spray.

The VERDURA® design allows for the widest plant palette including drought tolerant and CA native plants. Plant selection should be based on climate conditions. For planting options and considerations, please visit our website at www.soilretention.com.



PLANTING



SPRAY IRRIGATION

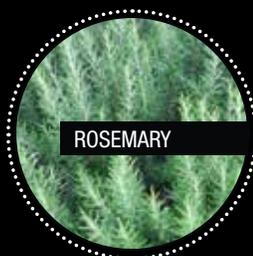


DRIP IRRIGATION

Some popular planting options:



BOUGAINVILLEA



ROSEMARY

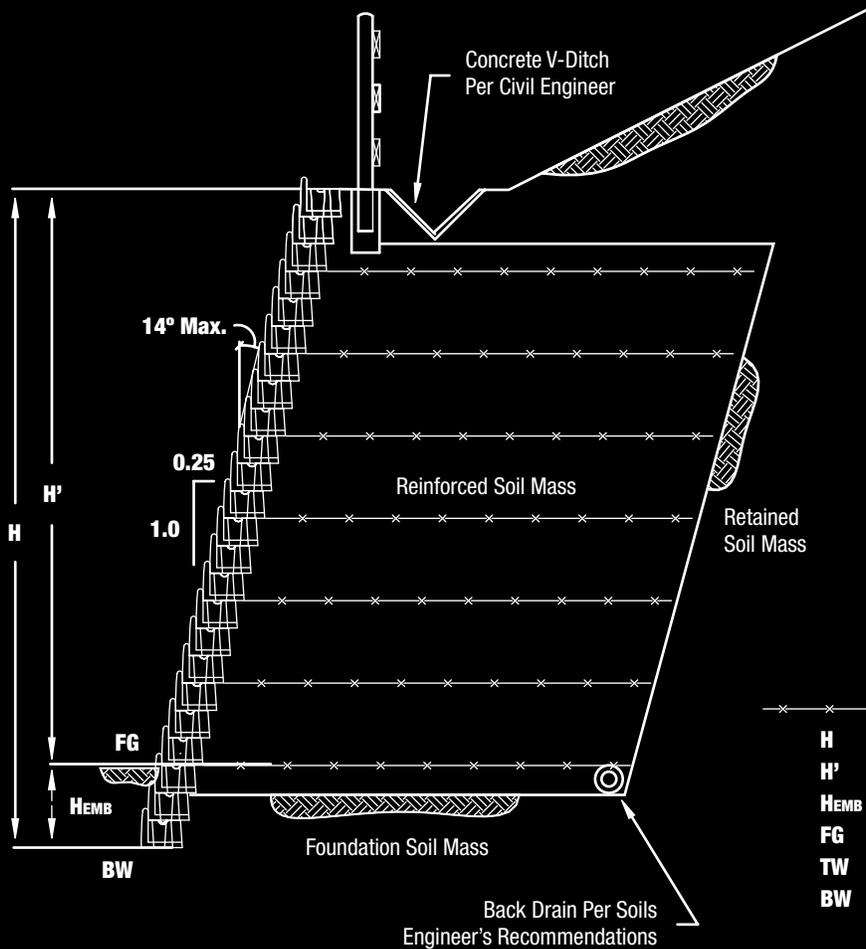


SUCCULENTS



IVY GERANIUM

VERDURA® 40 Cross Section - Segmental Retaining Wall



VERDURA® walls are cost effective alternatives to the traditional reinforced concrete or gravity-type walls.

LEGEND

- x — x — x — Geogrid
- H** Overall Wall Height
- H'** Exposed Wall Height
- HEMB** Wall Embedment
- FG** Finished Grade
- TW** Top of Wall
- BW** Bottom of Wall

The VERDURA® retaining wall system provides value by taking advantage of the following:

BENEFITS	COMPETITIVE ADVANTAGES
<ul style="list-style-type: none"> • Create Steepened Slopes • Gain More Useable Land • No Poured Concrete Footing • No Rebar or Grouting 	<ul style="list-style-type: none"> • Full Plantability • Easy to Curve • Low Impact • No Graffiti • Low Porosity Concrete • Mechanical Connection • High Shear Strength • Backfill With Scrapers • No Sleeving For Fence Posts • High Wall Approvals • Lasts a Lifetime • ICC Approved ESR-3073

The VERDURA® retaining wall system is the most plantable, versatile, and strongest Mechanically Stabilized Earth (MSE) retaining wall on the market today. The name VERDURA® comes from VERdant (green with vegetation) combined with DURAbility. VERDURA® offers the opportunity to create "living walls"; providing the strength and function of a standard retaining wall plus the added ability to sustain live plantings.

The VERDURA® retaining wall system is designed with a "positive mechanical connection" between the block and the geosynthetic reinforcement. This mechanical connection provides a uniform distribution of tensional strength that does not rely solely upon frictional forces generated from a stack-height of the block-units or point load from pins or clips. Combined with the high shear strength from the lip of the block, VERDURA® allows for soil compaction directly behind the block units facilitating the use of heavy construction equipment within close proximity to the wall face. Larger walls are built concurrently with grading and backfill is placed with scrapers.

The series of VERDURA® wall blocks can be used for a wide range of construction projects ranging from small residential projects to large scale developments. The VERDURA® wall transforms a grade transition into a vegetated "steepened slope" instead of a concrete scar across a hillside.

VERDURA® offers something for just about everybody. Whether you're a homeowner looking to create a vertical garden or a large developer seeking to economically terrace a master planned community, this specialized, fully plantable, segmental retaining wall system provides the solution to a wide variety of design challenges. Because of its inherent strength, ease of installation and ability to be completely planted, VERDURA® has been the wall of choice for nearly 25 years. The ESR 3073 (ICC Report) complies with current building codes for easier permitting!



**Build it high!
Build it fast!
Build it right!
Build it VERDURA®**

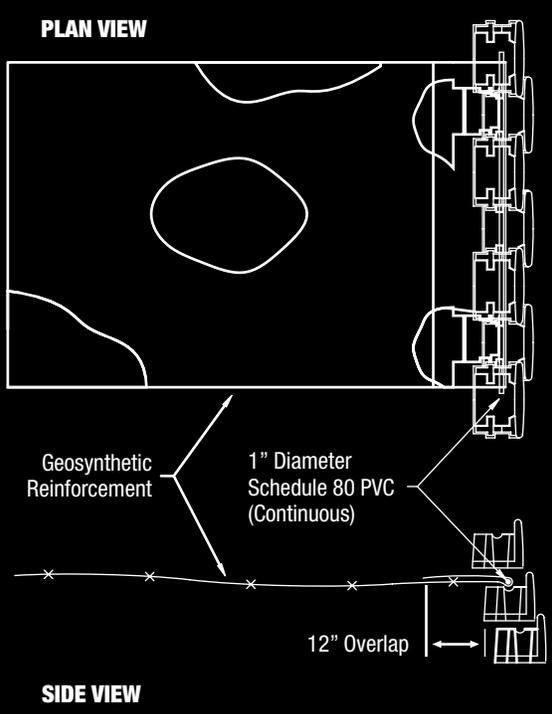
Who says you can't build really high segmental walls using heavy equipment to speed production and expect them to hold up over the long run? With **VERDURA®** it's done all the time! The patented design of **VERDURA®** and specialized installation techniques allow walls up to 50 ft in one tier to be built with the aid of scrapers for backfill, road graders for spreading and heavy duty sheepsfoot equipment for compaction. The result is a wall system that goes in on schedule, on budget and can be counted on to be around for a long, long time. If you want high, fast and right, you want **VERDURA®**.





“The Verdura plantable wall system enabled us to increase our useable land thereby increasing the yield on the number of homes we could build,” Executive at Lennar Homes California.”

Geogrid Connection Detail



VERDURA® block units are designed with a “positive connection” for the geosynthetic reinforcement elements. This mechanical connection provides a uniform distribution of tensile strength that does not rely solely upon frictional forces generated from overburden stress derived from a stack-height of the block-units. Coupled with the high shear strength from the lip of the block, **VERDURA**® allows for soil compaction directly behind the block units facilitating the use of heavy construction equipment within close proximity to the wall face. This is called “form capacity;” the ability of the wall system to resist construction-related lateral loading without creating excessive lateral deformations. The “positive connection” and “form capacity” of **VERDURA**® allows for the maximum heights to be reached and provides the safest and strongest wall system on the market.

LEED Credits and Potential Point Contributions



Section	Intent/Application	Example Use	Credit	Points
Sustainable Sites				
Site Development	Restore/Protect Habitat	Limit development footprint. Plant native vegetation in wall.	5.1	1
Site Development	Maximize Open Space	Gain land to allow for open space. Vegetated wall creates open space.	5.2	1
Storm Water Design	Quantity Control	Steepened Detention Basin	6.1	1
Storm Water Design	Quality Control	Erosion Control	6.2	1
Heat Island Effect	Non-Roof	The VERDURA ® wall will result in a cooler grade transition. Materials can be specified to have high albedo.	7.1	1
Water Efficiency				
Water Efficient Landscaping	Reduce by 50% or No Potable Water Use or Irrigation	Use with drip irrigation for native plant landscaping Create rooted landscaping that doesn't require permanent irrigation	1	2-4
Materials and Resources				
Regional Materials	10% / 20% Extracted Processed and Manufactured Regionally	We currently manufacture in several states. Please contact us for locations.	5	1-2
Innovation & Design Process				
Innovation in Design			1	1-5

Low Impact Development

A concept gaining popularity among land planners and civil engineers is “soft engineering” and Low Impact Development (LID). This evolving design practice integrates the built environment into the natural ecology of the land and/or watershed by using conservation-based techniques. Practical, economical, yet attractive and sustainable are at the core of soft engineering strategies and tactics. **VERDURA**® offers the opportunity to create “living walls”; a wall system that provides the strength and function of a standard retaining wall plus the added ability to sustain live plantings.





VERDURA® 10

Lightweight (23 lb) block available through our distributors. Rails on block are set back to allow for a butted up 3' radius. Applications include: edging, planter beds, and small retaining walls.



VERDURA® 30

Heavier (71 lb) block available through our distributors. Walls up to 6' height using Posi-Dura reinforcement. FREE STANDARD DESIGN ENGINEERING REPORT available for use in permitting!



VERDURA® 40

Commercial (92 lb) block with a wall inclination of .25:1 used for walls up to 60' high, and tested for high velocity streambank use.



VERDURA® 50

Commercial (119 lb) block with a wall inclination of .36:1 used for walls up to 60' high. This block is typically used in combination with the VERDURA® 30 for high walls. As a deeper block, VERDURA® 60 can be inclined at a flatter angle than VERDURA® 40.



VERDURA® 60

Commercial (132 lb) block with a wall inclination of .25:1 used for walls up to 60' high. This block is used in combination with the VERDURA® 40 block for high walls. As a deeper block, VERDURA® 60 can be inclined at a flatter angle than VERDURA® 40.



VERDURA® 60W

Commercial (144 lb) block with a wall inclination of .25:1 used for walls up to 60' high and tested for high velocity streambank use. VERDURA® 60 is intended to be butted up in high velocity flows as rails are set back to allow for a convex curve. The VERDURA® 40 block is typically used in the freeboard where full plantability is required.





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Other Products



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(800) 346-7995

