

# RETAINING FOCUS

Quarterly Publication for the Customers of KEYSTONE Retaining Wall Systems, Inc. • Volume 1.3 • 2004



## KEYSTONE WINS AT INFINEON RACEWAY

When Speedway Motorsports, Inc., bought Infineon Raceway (formerly Sears Point Racetrack) in 1996, they immediately went to the drawing board to see how they could make a good racetrack even better. Keystone played a major role in the \$50 million renovation and expansion. Keystone Standard units were used to create a unique and popular race track feature called The Chute. Keystone Compac units were used in building the terraced seating and will add approximately 60,000 extra spectator seats to this popular race venue - built directly into the foothills of the coastal mountain ranges on either side of the Sonoma Valley.

Infineon Raceway wanted to create an exciting atmosphere and give their fans the ultimate race experience. "Fans sitting in the new terrace seating will have a sweeping view of the race track. Fans can still stake out their favorite territory, but thanks to the Keystone terrace seating, people will be able to see more than one limited area, giving everyone a better sense of the race," said Steve Page, Infineon Raceway General Manager.



*Retaining Excellence*

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## Keystone Retaining Wall Systems, Inc.



After nearly 20 years at the forefront of the industry, Keystone Retaining Wall Systems, Inc. continues to set the standard for excellence and innovation within the segmental retaining wall industry. Keystone represents the global benchmark in soil retention, erosion control and landscape systems. Holding over 50 patents, Keystone symbolizes cutting-edge design, performance and aesthetics.

Keystone partners with the best network of product developers, engineers, sales professionals and manufacturers in the business. Together, we ensure that Keystone offers the best in site solutions for residential, commercial, recreational, industrial and government applications. In 1999, Keystone was acquired by Contech Construction Products, Inc. Contech is a leader in the construction products industry and offers the resources, tools and advantages that accompany their strong brand recognition in the marketplace.

To learn more about the quality and value in Keystone Retaining Wall Systems products and services, please visit us on the web at [www.keystonewalls.com](http://www.keystonewalls.com) or call 800-747-8971.

## Get All the Keystone Information You Need Online.

[www.keystonewalls.com](http://www.keystonewalls.com)

The new Keystone web site provides easy access to everything you need from product specs to installation guides and product literature, 24 hours a day.

Divided into separate, clearly organized portals, [www.keystonewalls.com](http://www.keystonewalls.com) provides focused content to designers, contractors and homeowners respectively.

The designer portal features Keystone's comprehensive engineering and design services. Resources you will find on the site include: CAD details and software, product specifications, design charts, technical notes and more.

The contractor portal features installation instructions, a photo library containing a wide variety of project types and a full listing of Keystone products.

The web site also functions as a powerful marketing tool. Simply direct clients to the homeowner portal for a virtual showroom of Keystone products. Homeowners can also view design ideas and a large photo library of beautiful Keystone walls and completed projects.

Also visit [www.keystonewalls.com](http://www.keystonewalls.com) for new product information, case studies, downloadable product literature and more.


### New Product Focus:

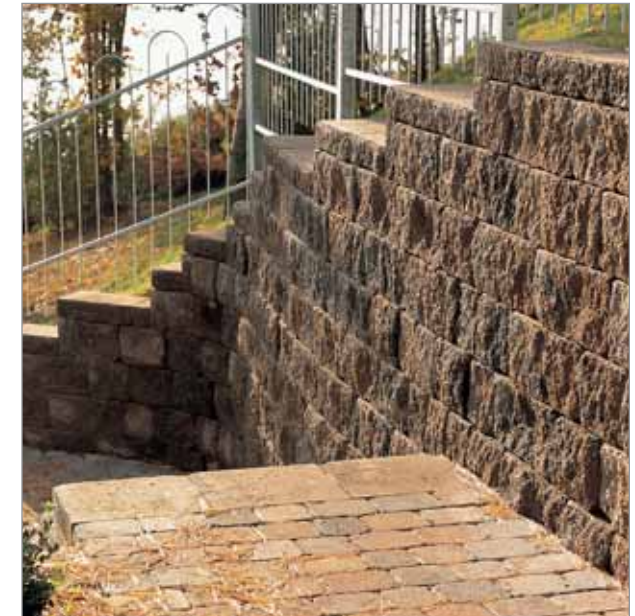
## Keystone Century Wall • Experience Old World Charm on a Grander Scale

Keystone Century Wall offers the look and feel of an old-world, natural stone wall with the structural integrity and performance of a modern concrete segmental retaining wall.

Keystone Century Wall is ideal for large commercial applications, government and DOT jobs, and extensive residential projects. Keystone Century Wall offers the strength and performance of our Keystone Compac with the aesthetic appeal and design freedom of our Keystone Country Manor.

With a charming, hand-made look and superior strength, Keystone Century Wall is functional for walls higher than 40 feet with proper soil reinforcement.

If you would like information on Keystone Century Wall visit us on the web at [www.keystonewalls.com](http://www.keystonewalls.com). To find your local Keystone dealer call 800-747-8971. 



## Keystone Brings its "A" Game to the Desert Southwest

One year after the groundbreaking on the new Arizona Cardinals Football Stadium, a 6,200-ton stadium roof hangs high above a floor supported by a Keystone wall system.

According to project contractor, Frank DeHoff of Slaton Bros., Inc., more than 110,000 square feet of the Keystone Compac II System supports the foundation of the \$370.6 million building. Although invisible to the spectators and competitors above, more than 40 feet below field level, Keystone retaining walls surround the caisson and foundation area. The walls sustain significant load transfer from the stadium's outer walls where the spectator seating begins at ground level.



"We had to get pretty creative with this project," DeHoff said. "Because it was a design/build situation, the versatility of the product was vital. What's more, Keystone Compac was 40 percent less expensive than cast in place walls and could be installed 30 percent faster than any other option."

Slaton Bros., Inc. is a Colorado based company specializing in the design, engineering and construction of segmental retaining wall systems. Working as a team with Terracon and Keystone licensee, Superlite Block, the Keystone Compac II system was installed at a 2800 square foot per day rate.

This critically acclaimed stadium design features both a retractable roof and a retractable, rolling field. The natural grass field will be constructed on a 5500-ton tray resting on 11 railroad tracks— enabling the playing field to be transported to the outside, where it will stay 95 percent of the time. The free space within the stadium will be available for other events such as concerts, motor-cross and auto shows. This stadium is the first of its kind, and how appropriate that Keystone, the nation's foremost segmental retaining wall company, is part of this ambitious undertaking.



The multipurpose stadium will have a seating capacity of over 63,000 and will include 88 luxury suites. Not only will it be the home of the Arizona Cardinals— it will host the Tostitos Fiesta Bowl, Future Super Bowls and NCAA Final Four Championships. The stadium is scheduled to be completed for the 2006 football season. For up-to-date news stories, images, specifications and a live construction web-cam, point your internet browser to <http://www.azcardinals.com/stadium>. 🌐



<b>Project:</b>	Arizona Cardinals Stadium
<b>Location:</b>	Glendale, Arizona
<b>Product Used:</b>	Keystone Compac II System™
<b>Wall Area:</b>	112,000 sq. ft.
<b>Design Engineer:</b>	Terracon
<b>Installation/ Contractor:</b>	Frank DeHoff Slaton Bros., Inc.
<b>Keystone Supplier:</b>	Superlite Block Phoenix, AZ



## Wall 15 at Hacienda Real: The World's Tallest Single-Tier SRW

With land suitable for building at a premium, Puerto Rican developers look for ways to turn hills, slopes, canyons and cliffs into useable land. The solution for the Hacienda Real developers in Carolina, Puerto Rico, was a Keystone retaining wall. Using Keystone, the developers were able to gain valuable land for residential construction at costs far lower than other alternatives. This project also resulted in the world's tallest, single-tier segmental retaining wall.

"During the planning stages several alternatives were considered: an over-steepened reinforced soil slope; a 2H:1V reinforced slope; geosynthetic reinforced Keystone wall; and the KeySystem I steel reinforced wall. The slope options would have lost valuable land to complete the desired home building," said J.L. Morales, P.E., of MSE Designs.

"There was no question that the only product able to reach the height requirements of this project was the Keystone

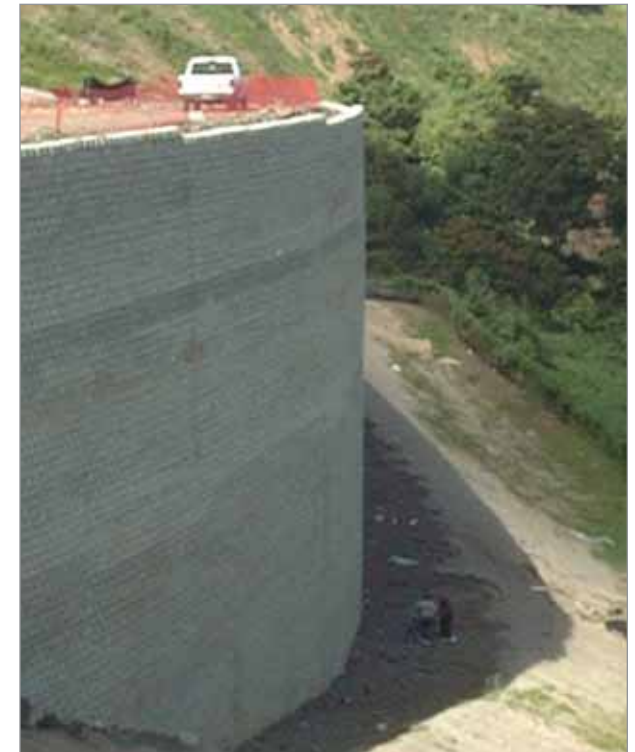
KeySystem I," said Franco Melendez of MSE Construction, Inc., the wall installation contractor. "The Hacienda Real Wall was the tallest retaining wall my crews ever built and the KeySystem I made construction fast and relatively simple. We didn't have to mess around with concrete footings, mortar, reinforcing steel or temporary forms which saved us a lot of time and labor."

The KeySystem I retaining wall is specifically designed for heavy-loading conditions, using patented Keystone modular concrete units coupled with inextensible reinforcement (steel). The result is a retaining wall system that is exceptionally durable while allowing for the maximum flexibility to respond to the seismic conditions of Puerto Rico.

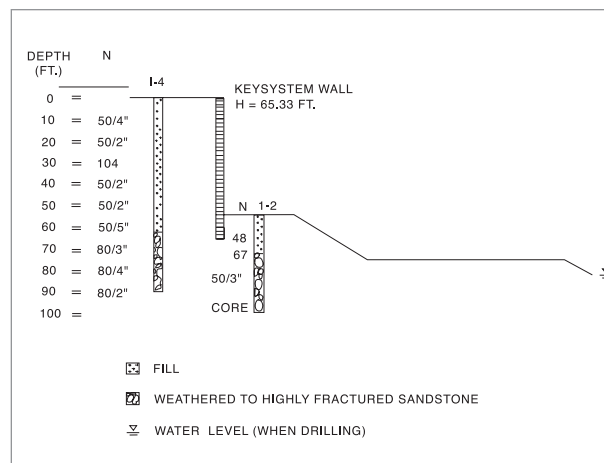
The ease of installation made the KeySystem I wall construction no more challenging than any typical retaining wall structure. The only construction concern at Hacienda Real was building a wall of this magnitude on the existing soil foundations. The structural integrity and flexibility of the KeySystem I wall made it efficient to design for bearing pressures of almost 10,500 psf., making it the perfect structure for area soil conditions.

The KeySystem I works by incorporating a dry-stacked, modular concrete segmental retaining wall system with steel ladder grids that are fabricated to specific lengths and strengths to meet design requirements. The Hacienda Real steel ladder grids were placed every three courses vertically, serving to "tie back," the Keystone units and active soil wedge to form a composite gravity mass. Steel pins provide a mechanical connection to the modular concrete units for a strong, interlocked facing system that can handle the extreme loading conditions from the retaining soil mass and the site construction above.

Once the Hacienda Real wall was complete, it stood over 65 feet (20 meters) high – a world record in single tier segmental retaining walls.




<b>Project:</b>	Wall 15 at Hacienda Real
<b>Location:</b>	Carolina, Puerto Rico
<b>Product Used:</b>	Keystone KeySystem™
<b>Wall Area:</b>	45,159 sq. ft.
<b>Wall Height:</b>	65 ft. 4 in.
<b>Wall Length:</b>	1,422 ft.
<b>Wall Designer:</b>	MSE Designs, Inc.
<b>Installation/ Contractor:</b>	MSE Constructions, Inc.
<b>Supplier:</b>	The Paving Stone Co., A Carmelo Company, Sebana Seca, Puerto Rico





The KeySystem I, manufactured in Puerto Rico by The Paving Stone Co., a Carmelo Company, also offered Hacienda Real a dazzling wall to complement the area's natural beauty. KeySystem allows for a wide range of completed wall appearances without the cost of customization, and at 65 feet, KeySystem was the only wall system to provide the design freedom and installation ease for curves and corners.

KeySystem I is just one of the products offered by Keystone Retaining Wall Systems. Keystone has a wide variety of retaining wall systems to fit any type of heavy duty or lightweight landscape construction. Visit [www.keystonewalls.com](http://www.keystonewalls.com) for more information. 

### Would You Like to Have Your Project Become a Featured Case Study?

If you have a unique Keystone wall project, let us know! Our marketing team will take your project details and observations, and turn them into a great marketing tool – a Keystone Case Study. Contact Becky Felling ([bfelling@keystonewalls.com](mailto:bfelling@keystonewalls.com)) for more information.

## Showcase YOUR Project in the 2005 Keystone Calendar!

Keystone is in search of the best-of-the-best. We're looking for striking Keystone projects that stand out from the crowd and showcase Keystone products at their best.

Your project may end up being a star! In previous years, calendar contest photos have been used in our

national ads, on [www.keystonewalls.com](http://www.keystonewalls.com), in Keystone marketing literature and featured in the annual calendar.

If you would like to enter your project in our calendar contest, please contact Elizabeth Drogseth at [edrogseth@keystonewalls.com](mailto:edrogseth@keystonewalls.com) for details.

## Keystone Seminar Spotlight

*From simple design and installation seminars to AIA and NCMA accredited seminars, Keystone offers a unique variety of seminars to meet the diverse needs of our customers. Our seminars are offered nationwide in a number of different formats – on-site, off-site, Spanish language, homeowner, box-lunch seminars and more.*

### Contractor Seminars

Quality installation practices are essential for continued growth and success of our industry. Training for new and existing contractors on proper installation procedures promotes the quality that Keystone customers have come to expect.

These seminars are also a great opportunity to see new products that are being introduced to the marketplace, and be the first to meet the challenge and demand for the installation of innovative new landscaping applications.

### National Concrete Masonry Association Certification(NCMA) Seminars

In October of 2003, NCMA introduced a new certification program for individuals who primarily install retaining walls. Keystone was one of the first to offer the NCMA Certified Installer Program course. We will continue to offer this full day course across the country, as needed.

### The American Institute of Architecture (AIA) Seminars

Keystone Retaining Wall Systems is an American Institute of Architects (AIA) accredited provider of Continuing Education Credits (CEUs).

Throughout the United States, we offer training seminars that can help architects understand and solve site issues. These seminars are filled with useful information for the engineer and general contractor as well.

### Engineering seminars

Keystone's Structural Wall Specialists have over 60 years of segmental retaining wall and MSE design experience. Educating design professionals in the marketplace is their expertise and specialty. From state highway and government agencies to local consulting and geotechnical firms, our Structural Wall Specialists are sure to give you the needed support to use Keystone structural products.

*To get more information on Keystone seminars call 800-747-8971 or contact your local sales representative.*

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### The Chute Design and Construction

In 1999, John Clarno, Rex Daysh and their team from Earth Retention, Inc., were contracted to help create one of the raceway's more unique racing elements. Keystone Standard units were used to construct The Chute, a section of the



<b>Project:</b>	<i>Infineon Raceway (formerly Sears Point Racetrack)</i>
<b>Location:</b>	<i>Sonoma, California</i>
<b>Owner/Developer:</b>	<i>Speedway Motorsports, Inc.</i>
<b>Keystone Products:</b>	<i>Keystone Classic Standard Compac— Straight-face</i>
<b>Wall Area:</b>	<i>336,000 sq. ft.</i>
<b>Wall Contractor:</b>	<i>John Clarno, Earth Retention, Inc Rex Daysh, California Retaining Walls</i>
<b>Grading Contractor:</b>	<i>Ghilotti Construction Santa Rosa, CA</i>
<b>Structural/Engineers:</b>	<i>C.S.W./Stuber-Stroh Engineering Group, Novato, CA</i>
<b>Geotechnical/ Engineers:</b>	<i>Jerry Giblon &amp; Associates Santa Rosa, CA</i>
<b>Landscape/ Architect/Designer:</b>	<i>Landesign Group Sebastopol, CA</i>
<b>Keystone Supplier:</b>	<i>Basalite Concrete Products San Francisco/Sacramento, CA</i>

Infineon Raceway NASCAR track that was built to create a bank toward Turn 4. Drivers maneuver their cars through The Chute at very high speeds hoping to gain momentum from the banked surface to propel themselves to a passing position.

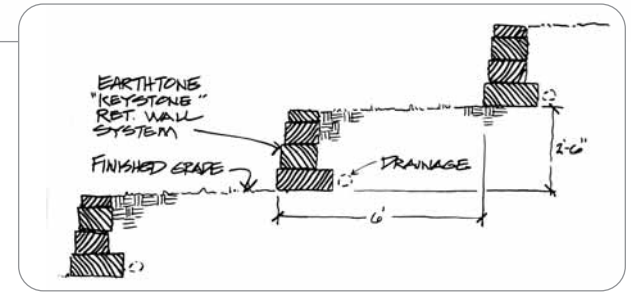
Because of the existing water table and the need to create a path for the torrents of rushing water flowing from the foothills during winter and spring rains, The Chute was built atop a tunnel approximately 80 feet long, with a 20-foot span height. A corrugated steel barrel horizontal-ellipse Contech Super-Span™ was used for the tunnel because it required only minimal subgrade remediation.

The chute was built over Sonoma Creek which has a high volume of water flowing through it during the winter and spring rains. In addition, it had pipe running diagonally through the Keystone structure to handle torrents of rushing water.

The design and location called for a product that would not cause differential settlement. Settlement had to be uniform so that The Chute's track would not become uneven as the completed structure settled into the existing soils. Six separate Keystone Compac walls were erected up to 33 feet in height around the tunnel span, although there only appears to be one continuous wall. The site made use of five different soil types to ensure proper phi angles, and thrust block joints were used between wall sections to create the necessary flexibility for uniform settlement.

### Seating Design and Construction

The original design suggested aluminum bleacher seating, although other products were also considered, such as treated timber. Clarno together with Rex Daysh, proposed visually appealing, structurally durable amphitheater-style seating made with Keystone Compac units. "Rex's proposal was more cost-effective," said Jere Starks, Infineon Raceway VP of Facilities. "When it came right down to the figures, the Keystone Compac amphitheater-style seating was less expensive than the aluminum bench seating and provided a much better look," said Starks.




Another major challenge was the retention of all the earth moved to make room for track expansion and the additional seating. Construction crews were literally moving mountains, or at least mountain foothills, to complete the project in its short, 3-month building timeframe. Over 3-million yards of earth was moved and resettled during this phase of construction.

"The idea in the design and construction of the terraced seating was to make the hillside and the products come together," said Clarno. During the first phase of the seating expansion, 35-40 individual, terraced gravity walls were constructed instead of the more time-consuming, interconnected, reinforced tiered walls.

"Actually, almost everywhere you look, there's a Keystone wall. The Keystone units were so versatile that we used them in numerous applications, from short divider walls to a memorial column built in honor of Dale Earnhardt," said Rex Daysh.

### The Keystone Difference

The Infineon Raceway project called for a product that was highly adaptable to many challenging site situations. Keystone product installation ease and design versatility were put to the test with an extremely tight construction timeframe. Because of Keystone's outstanding product integrity and aesthetics, along with enormous creativity on the part of the Earth Retention, Inc. team, Infineon Raceway is now a showpiece among racetracks in the motor sports industry.

For more information on Keystone Retaining Wall Systems, products and services, please visit: [www.keystonewalls.com](http://www.keystonewalls.com), or call 800-747-8971. 

# Keystone Directory

## Alabama

Superock Block  
205-970-7676

## Alaska

Polar Supply Co.  
907-563-5000

## Arizona

Superlite Block  
800-366-7877

## Arkansas

Keystone Group  
800-545-0754

—  
Nattinger Materials  
800-299-2594

## California

Angelus Block Co.  
909-328-9115

—  
Basalite Concrete Products  
800-350-5866

—  
RCP Block & Brick  
800-732-7425

## Colorado

Best Block Company  
303-791-3334

## Connecticut

Anchor Concrete Products  
800-682-5625

## Delaware

Anchor Concrete Products  
800-682-5625

## Florida

Keystone Group  
800-545-0754

—  
Superock Block  
205-970-7676

## Georgia

Keystone Group  
800-545-0754

## Hawaii

Tileco  
808-682-5737

## Idaho

Amcor Masonry Products  
208-522-6150

—  
Basalite Concrete Products  
208-888-4050

## Illinois

Best Block Company  
800-782-7708

—  
King's Material  
888-290-6950

## Kirchner Block

618-254-7660

## Rockford Cement Products

815-965-0537

## Indiana

Aggregate Industries  
800-841-5466

—

Schuster's Building

Products  
800-424-0190

## Iowa

Concrete Products  
800-352-4644

—  
King's Material  
319-363-0233

## Zeidler Concrete Products

641-357-2176

## Kansas

Capitol Concrete  
785-233-3271

—  
Miller Material  
800-289-2244

## Kentucky

Lee Brick & Block  
800-718-8884

## Louisiana

Premier Concrete  
800-818-1069

## Maine

Gagne & Son  
800-339-3313

## Maryland

Betco Block Company  
800-486-4011

## York Building Products

800-673-2408

## Massachusetts

A.Jandris & Sons  
978-632-0089

—  
Foster's Southeastern  
800-462-2225

## Hiway Concrete

508-295-0834

## Keystone Northeast

888-447-1157

## Michigan

Fendt Builders Supply  
888-706-9975

## Minnesota

Aggregate Industries  
800-338-0016

## Mississippi

Premier Concrete  
800-818-1069

## Missouri

Kirchner Block & Brick  
800-346-9502

## Miller Material

800-289-2244

## Nattinger Materials

800-299-2594

## Montana

Kanta Products  
406-285-3261

## Nebraska

Concrete Products  
712-252-4251

## Nevada

Basalite Concrete Products  
775-358-1200

—  
Superlite Block  
800-366-7877

## New Hampshire

Keystone Northeast  
207-871-1185

## New Jersey

Anchor Concrete Products  
800-682-5625

## New Mexico

Southwest Block  
505-892-5858

## New York

Anchor Concrete Products  
800-682-5625

## Domine Builders Supply

(upstate NY)  
800-444-2103

## North Carolina

Keystone Group  
800-545-5080

## North Dakota

Aggregate Industries  
800-426-8162

## Dakota Block

605-342-6070

## Ohio

Akron Brick & Block  
330-628-2603

—  
Wilson Concrete  
937-885-3711

## Oklahoma

Dolese Bros. Co.  
800-335-9626

## Oregon

Basalite Concrete Products  
800-596-3844

## Pennsylvania

Domine Builders Supply  
800-444-2103

## Lockcrete Bauer Company

724-297-3200

—  
York Building Products  
800-673-2408

## Puerto Rico

Carmelo  
787-251-9474

## Rhode Island

Keystone Northeast  
888-447-1157

## South Carolina

Keystone Group  
800-545-5080

## South Dakota

Aggregate Industries  
800-426-8162

—  
Concrete Products  
800-352-4644

## Dakota Block

605-342-6070

## Tennessee

Keystone Group  
800-545-0754

—  
Superock Block  
800-828-8093

## Texas

Eagle-Cordell Concrete  
Products

713-691-0022

—  
Jewell Concrete Products  
254-772-3440

## Utah

Amcor Masonry Products  
801-936-7628

## Vermont

Keystone Northeast  
888-447-1157

## Virginia

Betco Block & Product  
800-486-4011

## Washington

Basalite Concrete Products  
800-596-3844

## West Virginia

Betco Block & Product  
800-486-4011

—  
Lockcrete Bauer Company  
800-242-1261

## Wisconsin

Best Block Company  
800-782-7708

## Winger Concrete Products

715-356-9429

## Wyoming

Amcor Precast  
208-522-6150

## Best Block Company

303-791-3334

## Dakota Block

605-342-6070

## Canada

Basalite Concrete Products  
800-596-3844

## Permacon

514-355-4666

Note: Keystone also has over 35 international manufacturers.

## Keystone Resource Corner

### On-Line Resources

- Worldwide Distribution Network
- Product Information
- Technical Notes
- Design Charts
- Construction Details
- Specifications
- CAD Details
- Installation
- Literature
- Photo Library
- Much More!

### Engineering & Design Services

- Preliminary Design & Estimating
- Design & Technical Assistance
- Design Software and Support
- Design & Construction Literature
- CAD Details
- Specifications
- Education and Training Courses for Design of Segmental Retaining Walls
- Seminars Available with Continuing Education Credits
- Periodic On-site Representation

### Local Representation

Contact Keystone to have a local representative provide you with an updated Technical CD or product information.

## HOW TO CONTACT US

*Customer Service* ..... 1-800-747-8971  
*International Service* ..... 952-897-1040  
*Facsimile* ..... 952-897-3858  
*Internet* ..... [www.keystonewalls.com](http://www.keystonewalls.com)



*Retaining Excellence*

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