integrated

integrated brickworks sdn. bhd.

KEYSTONE®
RETAINING WALL SYSTEMS
A CONTECH COMPANY

"Where Excellence is the Standard"

In a market filled with choices, KEYSTONE® still sets the standard.

In today's world of imitation products, KEYSTONE® Retaining Wall Systems continues to set the worldwide benchmark for segmental retaining wall performance and aesthetics, from soil retention and erosion control to landscape systems in over 35 countries.

As the industry's leader, KEYSTONE® has set the bar for excellence, innovation and technology within the industry, being a product of the energy, passion and focus of the people dedicated to ensure that KEYSTONE® products and services offer the best site solutions for residential, commercial, recreational, industrial and institutional applications.

KEYSTONE® created the mortar-less segmental retaining wall market with its patented interlocking modular design nearly two decades ago, and still retains that distinct difference of outer beauty and inner strength - the beauty of natural stone, the durability of granite and positive unit connection internally.

The high-strength KEYSTONE® concrete units and patented interlocking pin system ensures a conveniently easy positive connection between KEYSTONE® units, as well as between the KEYSTONE® units and soil reinforcement elements. Additionally, KEYSTONE® patented pins aid in horizontal alogment, while also providing the ability to vary the wall set-back, a feature unique to KEYSTONE®.

PRODUCT ATTRIBUTES

KEYSTONE® Retaining Wall modular units are dry-cast from high strength low absorption concrete for durable long-lasting structures.

All structural units are interconnected using high-strength fiberglass pins for strong shear connection. The connecting pins allow for ease of unit alignment and a secure positive mechanical connection with soil reinforcement.

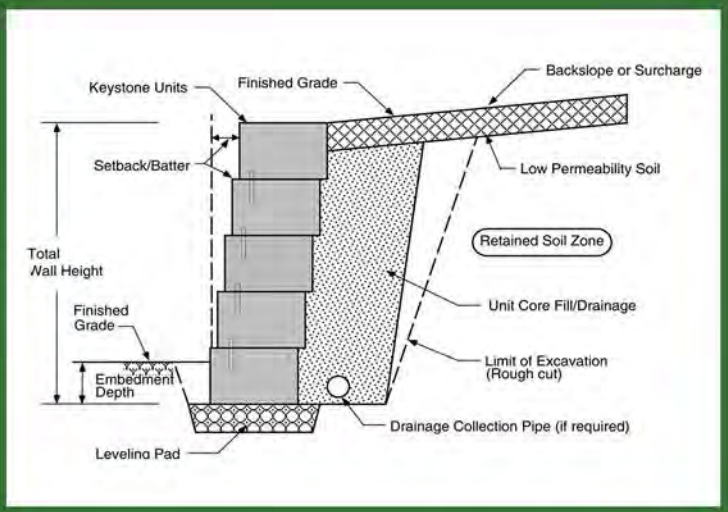
KEYSTONE®'s patented pin system is the critical diffrence providing the safety and security of a structurally sound retaining wall solution.

KEY FEATURES

- High Strength Pin Connection System
- Open Cores
  - Increases vertical drainage through the face units
  - Allows for block interlock across block interfaces
  - Improves connection strength between blocks and geogrid
  - Improves unit-to-unit shear resistance
- Versatility
  - Multiple fascia and texture options
  - "Near" vertical or battered set-back options are built-in
- Shape
  - Tapered sides allow easy curves, corners and circles
  - Units have a "tail" element for easy handling

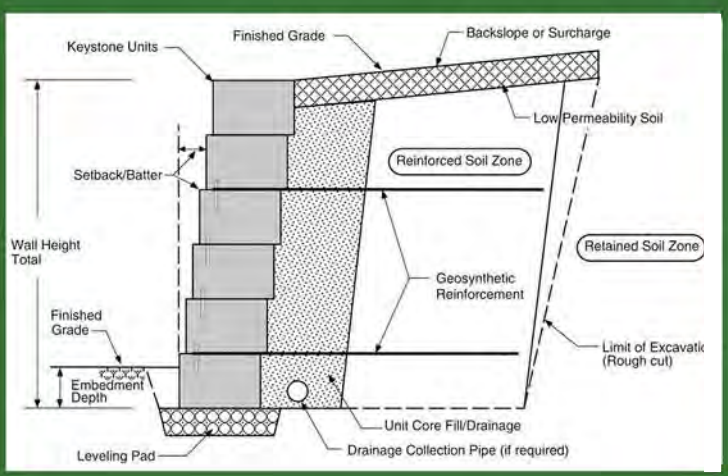
THE "TECHNICAL" SIDE

The two most common retaining wall structures built today are simple gravity walls and larger reinforced soil wall structures. KEYSTONE® offers products and specific design methodology for both structure types.



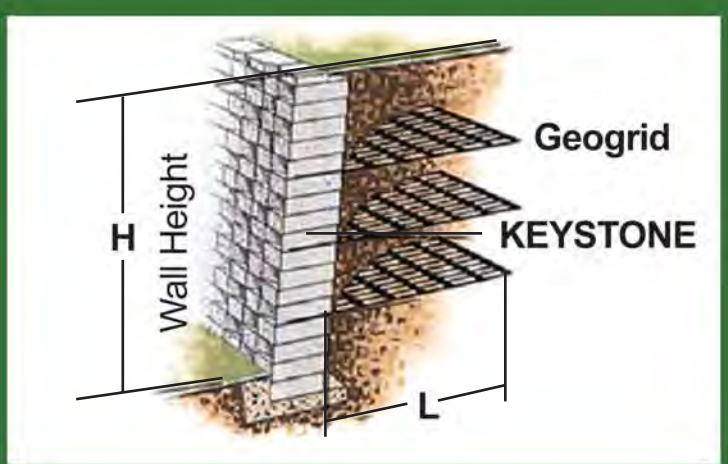
GRAVITY WALLS

One of the most basic types of retaining walls, the gravity wall, relies on its mass and cross-sectional geometry to resist the earth pressure that is exerting force to move the structure in a lateral direction. KEYSTONE® retaining walls are able to resist lateral pressure with their unit weight and deep embedment shape. The mortarless, yet structurally interconnected KEYSTONE® units also promote the freeflow of water drainage to prevent hydrostatic loads. For low, non-critical applications, KEYSTONE® products make highly cost-effective gravity wall structures.



REINFORCED SOIL WALLS

For taller or more critical walls, KEYSTONE® units are combined with soil reinforcement options (such as extensible geogrids, geotextiles, inextensible tie-back anchor or galvanized steel ladder reinforcing) to create large composite structures. With this properly designed combination, the reinforced soil mass can support greater earth pressures and surcharge loads. These composite structures have permitted the construction of retaining wall structures over 18m high.



GEOGRID REINFORCEMENT

Since the early 1980's, geogrids have proven successful in providing durable soil reinforcement for the retaining wall industry. Proper design methodology today incorporates the laboratory testeds connection strength of concrete units and geogrid in all reinforced retaining wall systems. Geogrids are made from high-density polyolefins of high-tenacity woven polyester yams.

THE KEYSTONE® RANGE

RETAINING WALL SYSTEMS
A CONTECH COMPANY

Retaining Excellence™

STANDARD UNIT

Size (HxWxD)	**8" x 18" x 21½"** *(±0.203 x 0.457 x 0.546m)*
Exposed Face Area	**1 ft²/pc : 8" x 18"** *(0.093 m^2/pc)*
Unit Weight	±42.8 kg. *

COMPAC UNIT

Size (HxWxD)	**8" x 18" x 12"** *(±0.203 x 0.457 x 0.305m)*
Exposed Face Area	**1 ft²/pc : 8" x 18"** *(0.093 m^2/pc)*
Unit Weight	±38.5 kg *

MINI & CAP UNIT

Size (HxWxD)	**4" x 18" x 10½"** *(±0.102 x 0.457 x 0.267m)*
Exposed Face Area	**½ ft²/pc : 4" x 18"** (0.046 m^2/pc)
Unit Weight	±20.2 kg. *

** depending on variation of unit type, fascia treatment and soil reinforcement elements*

CONNECTION PIN

Size (HxWxD)	**½" Ø x 5¼"** *(±0.012 Ø x 0.133m)*
Flexural Strength	Min 128,000 psi *(±883 MPa)*
Short Beam Shear Strength	Min 6,400 psi *(±44 MPa)*

Product reference standards : MS 27 : 1996, BS 6073 : 1981, ASTM C 1372-97, ASTM C 90-75, ASTM C 140-75

Additional information, products and services available on request

a. Technical Brochure
b. KeyWall Design Software
c. KeyWall Design Manual and Operating Guide
d. KEYSTONE® Specifications
e. Geogrid Specifications
f. Segmental Retaining Wall (SRW) Specifications
g. Specialist Tools and Handling Equipment
h. Method Statement
i. Preliminary Design Assistance
j. Installation Guidelines
k. Contractors' Installation Training Programme
l. Construction Detail

Sg Kerayong
Kuala Lumur

Blue Lagoon
Port Dickson

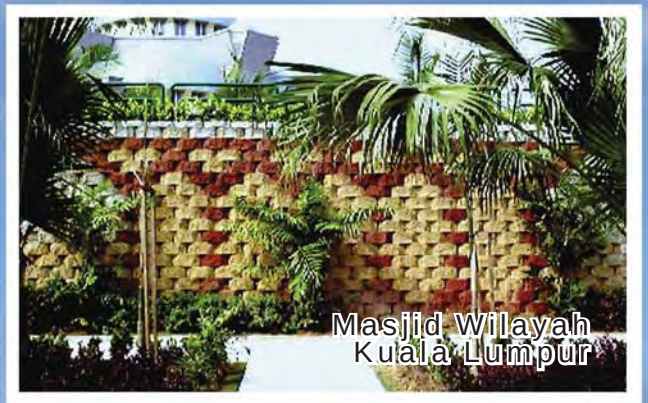
Tmn Tasik Perdana
Kuala Lumpur

Bukit Jelutong

Kinrara Golf Club
Bdr Kinrara


Seksyen 7
Shah Alam


Mahkamah Tinggi
Shah Alam


Masjid Wilayah
Kuala Lumpur


Guthrie Corridor
Expressway


Butterworth
Outer Ring Road


Jalan Tun Razak
Kuala Lumpur


Upland Gyratory
Kuching

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