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LOCK+LOAD PRODUCT GUIDE

ATTRACTIVE AND VERSATILE MODULAR REINFORCED-CONCRETE FOR RETAINING WALL SYSTEMS

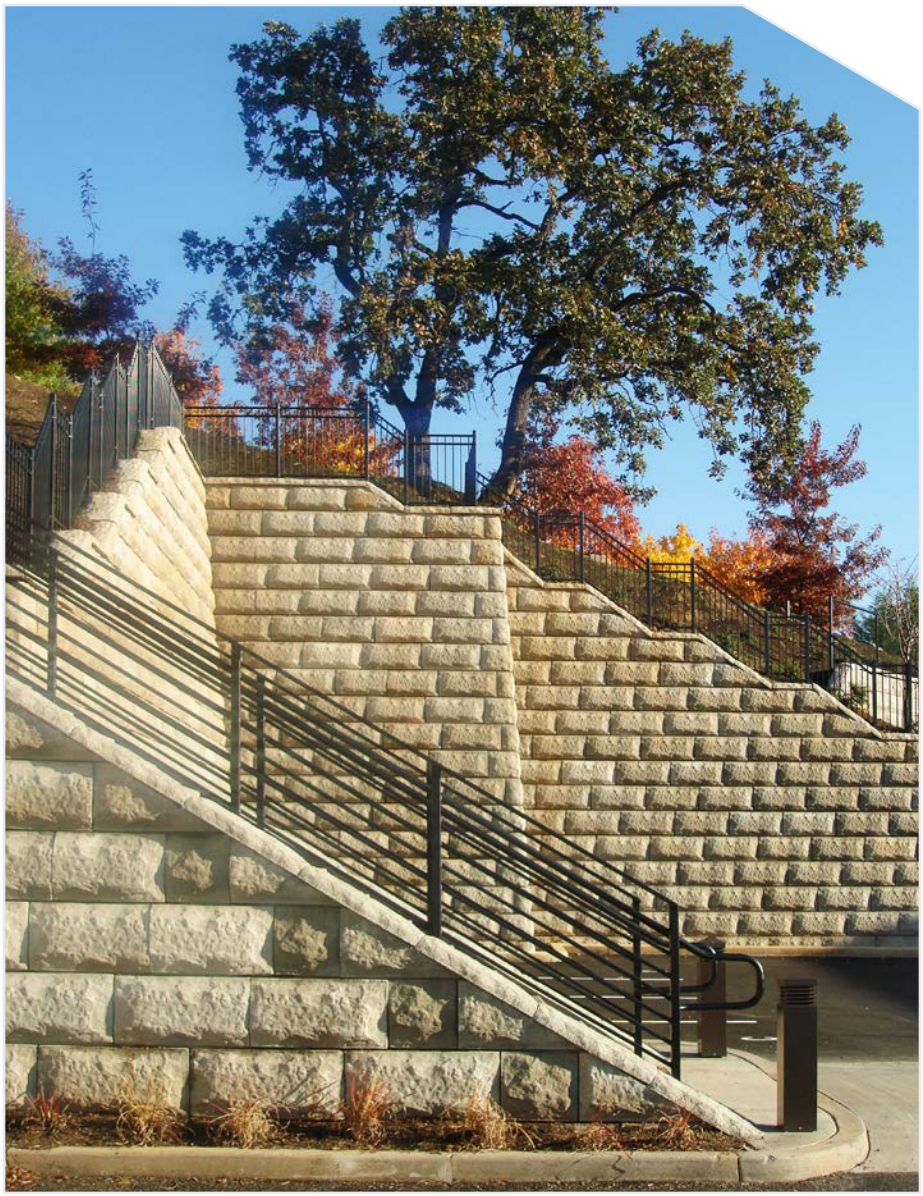
Fast Installation

Strength

Flexibility

Durability

Cost Effective



The LOCK+LOAD system is the largest hand placed retaining wall product available. It is a segmental, reinforced-concrete, reinforced-soil, retaining wall that creates an attractive quarried stone appearance at exceptional value. This highly versatile system can be used for most types of retaining walls, from large scale projects like massive end fills to smaller landscaping projects. It's self-anchoring components allow adequately aggressive compaction of backfill.

Functional

Allows construction of retaining walls and slopes with very steep face angles and curves

Versatile

Suitable for a variety of structural systems including Gravity Walls, MSE, GRS, Soil Nail and Soil Anchor Walls.

Attractive

Has the appearance and heritage feel of a large quarried stone. Corners and caps are available for a clean and finished look.

Cost-effective

Minimal manufactured material relative to other precast retaining wall systems. Additional cost savings in reduced freight volume/weight, and installation time.

Product Features

- Easy to install and move - lightweight panels weigh less than half of competitive fascias
- Maximizes usable space. Cantilevers accept, guardrails, barriers or fences can be installed directly behind the wall
- Superior freeze-thaw performance (air entrained wet cast)
- Can utilize onsite soils as backfill, minimizing the cost of removing excavated material and/or importing new fill material
- Allows full, consistent compaction at wall face, resulting in uniform consolidation

LARGE SCALE BACK FILL LOCK+LOAD PROJECT - CORONA, CA USA

TYPICAL APPLICATIONS

- Land development
- Highway/road structures
- Preload embankments
- Landscape projects
- Shoreline
- Golf courses
- Forestry, mining, and oil and gas applications
- Residential properties

SPECIFICATIONS

- 406.4mm 812.8mm (16" x 32") panels weighing 40lbs per sqft
- High-strength 5,500psi (38MPa) steel/fibre-reinforced concrete

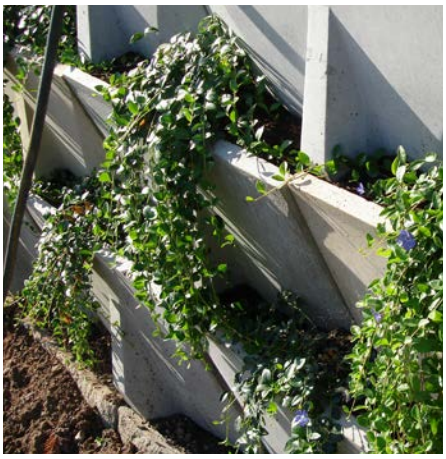
ROADSIDE LOCK+LOAD RETAINING WALL - CORONA, CA USA

NOTE:

- Conforms with U.S. Federal Highway Design and Construction Guidelines

PRIVATE RESIDENTIAL LOCK+LOAD WALL

STABILIZED SOIL BLOCK

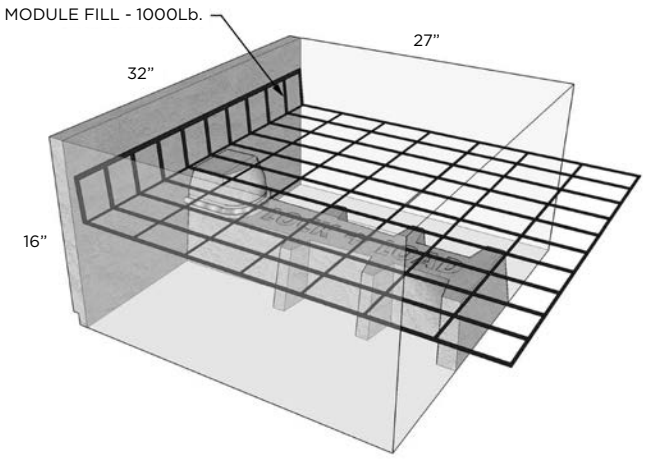


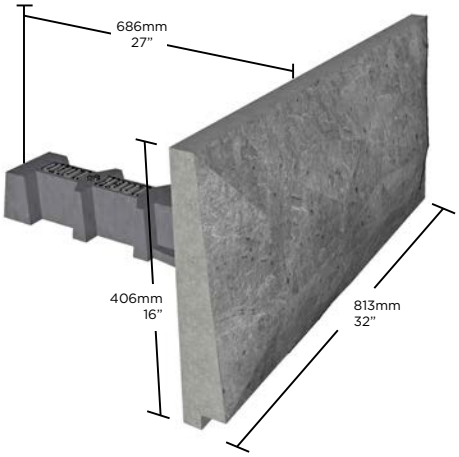
VL - VERTICAL LANDSCAPE

The “VL” (Vertical Landscape) panel provides 25% of the wall face area for horizontal planting realistate.

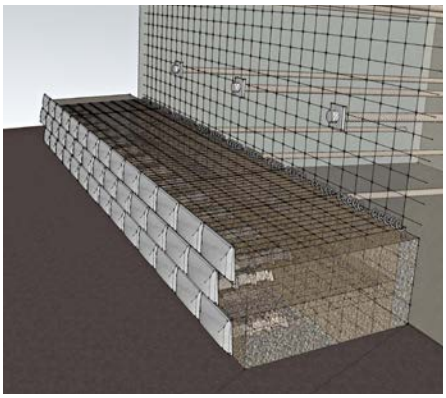
LOCK+LOAD is perfect for low height garden walls as well as tall MSE, GRS, and soil nail/anchor walls.
LOCK+LOAD is used by itself for retaining walls in the five foot high range, For taller retaining walls, it becomes an attractive facing for other reinforcing systems.

DESIGN

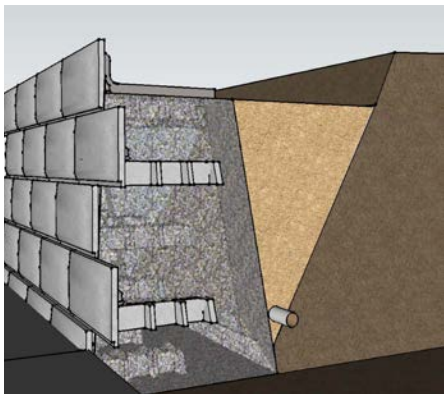




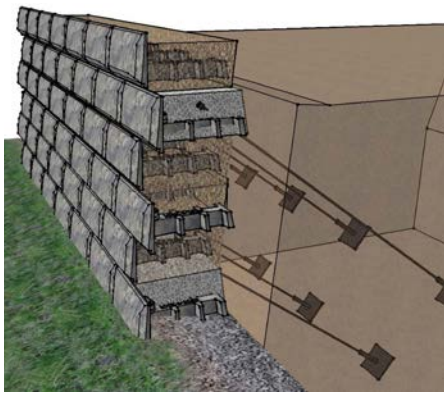
LOCK+LOAD MODULAR CANTILEVER



SOIL NAIL WALL



GRAVITY



SOIL ANCHOR

LOCK+LOAD’S cantilever design and ease of construction result in unsurpassed value and performance. A modular design uses two high-strength, lightweight, fibre-reinforced concrete components assembled into a rigid cantilever unit. This provides extreme design flexibility at a low cost. The system can be erected with hand tools, while having the structural capability of tall, highly loaded walls.

LOCK+LOAD is air entrained high strength concrete. (5,500psi)

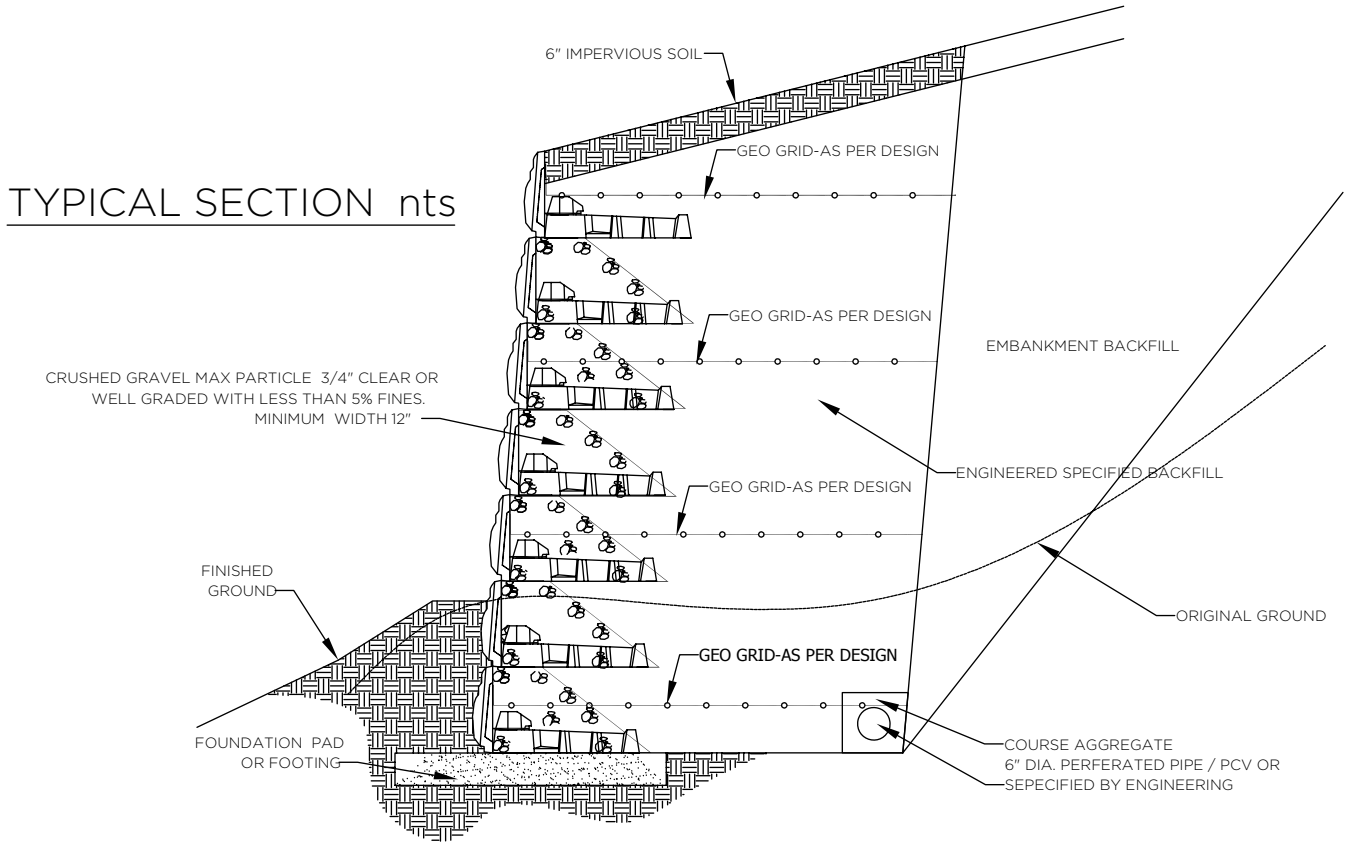
The standard 406.4mm x 812.8mm (16” x 32”) Quarried Stone finish is massive in appearance yet light enough to be placed by hand. LOCK+LOAD allows rapid, effective construction using “modular cantilevers.”

Every panel is supported by its own counterfort allowing any geometry: vertical walls, walls on grade, tiered walls, as well as vertical landscaped walls. These versatile panels can be easily trimmed in the field to allow unprecedented design and construction flexibility.

LANDSCAPED PRIVATE PROPERTY
LOCK+LOAD RETAINING WALL

CONDO BUILDING RETAINING WALL

COMMERCIAL TERRACED LOCK+LOAD
RETAINING WALL



STRENGTH & DURABILITY

Panel Strength

The loops pull out of the concrete panel at a value of ~6,000 lbs (2,727kg) and provide a 75 - 100 year design life, using AASHTO corrosion criteria.

Counterfort Strength & Durability

Tests show that the counterfort pullout resistance develops over six times faster than the driving forces thus ensuring a large safety factor for counterfort connection to the soil mass. These tests are available upon request.

Primary Soil Reinforcement Strength

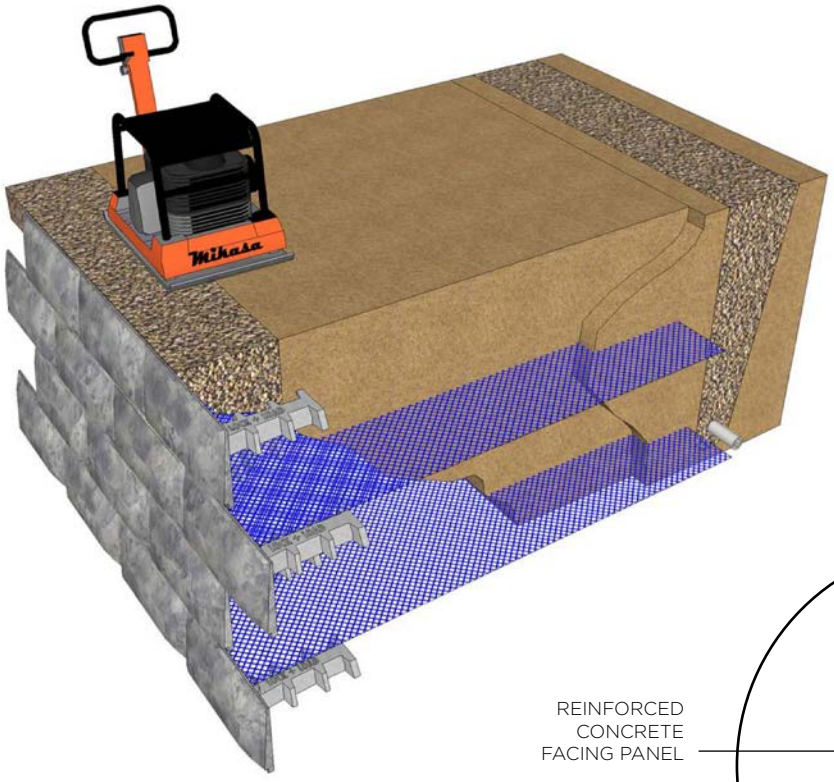
LOCK+LOAD has test data from several combinations of primary soil reinforcement types and manufacturers. In all cases the tested capacities exceed the calculated values.

Artmec's services include engineered shop drawings for the LOCK+LOAD retaining wall system

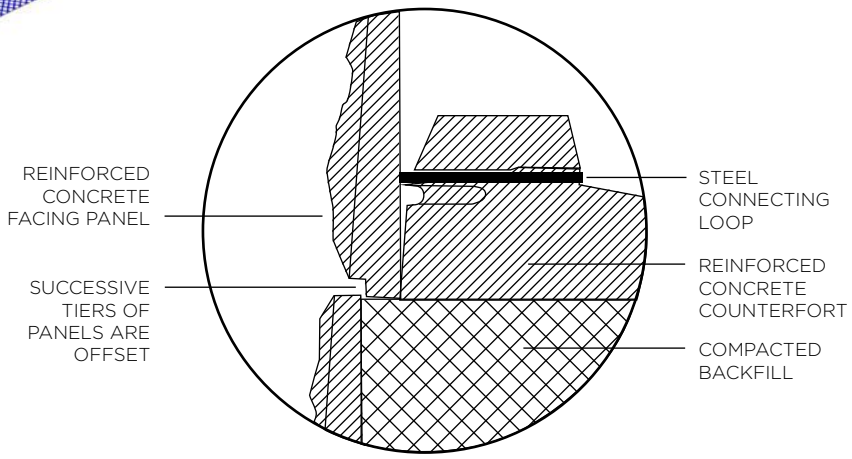
ABOVE & LEFT: THE COMPACTING OF BACKFILL

NOTE:

- Counterforts accomodate consolidation without causing stress buildup
- Counterforts allows compaction at the wall face creating a mass that has uniform density
- Ideal for projects that need a consistant homogenous structure
- Stones are not “stacked,” but independently anchored to the soil with the couterfort
- Location of stones will determine the bond or pattern of wall - for full split bond, position each stone so the edge is over the center of the next



ABOVE: MECHANICALLY STABILIZED EARTH (MSE) WALL



INSTALLATION INSTRUCTIONS

The following instructions are for 1.3m (4ft) or less in height only. Walls higher than this must be engineered with proper design parameters. Most municipal, state or provincial governments have height limits over which requires the design to be performed by a professional engineer, familiar with retaining walls and licensed to practice in the jurisdiction.

1. Prepare a leveling pad over the entire length of the base course using “A’ Gravel material.*
2. Fully compact the leveling pad by making several passes with a 1,000lb vibratory plate tamper.
3. Place the panel face down close to its final location in the wall at one end of the wall.
4. Place and “Lock” the Counterfort into place.
5. Rotate the “Assembled Stone” back on the Counterfort.
6. Position the “Assembled Stone” in it’s approximate final location.
7. Set the stone by bringing the back face of the panel into vertical position by raising or lowering the tail of the Counterfort. Make sure that the underside of the Counterfort is fully supported with the granular material.
8. Place the second panel face down at either the other end of the wall or at a distance of 6m (20ft) and repeat steps 4, 5, 6 & 7.
9. Place the rest of the units, panel face down and next to the panel already positioned in the wall.
10. Run a string line between the two panels above and in line with the back face of the panels. The string line should be parallel with the back face of the panel and at an equal distance above the panel.
11. Repeat steps 4, 5, 6, & 7.
12. Repeat steps 10 & 11 until all the row of panels have been positioned, placed and set.
13. Place a 100mm (4”) cloth wrapped ‘Big O’ style drain pipe at the rear of the Counterforts. Terminate the drain to allow flow to redirect away from the base of the wall.*
14. Back fill behind the panels to approximately 25mm (1”) above the highest point of the Counterfort, with a free draining granular material such as ‘B’ gravel or sand, and rake level.
15. On completion of placing the back fill material fully compact it by making several passes with a 1000lb vibratory plate tamper. Run the compactor over the rear end of the counterfort FIRST and then gradually move toward the back of the panel.
16. Complete the back filling process by placing the granular material to the top of the back of the panels and rake level.
17. Repeat step 15 until the compacted back fill material is level with the top of the panels, if not add or remove granular and re-compact until it is level.
18. Each subsequent row of stones should be positioned to produce a 40mm (1-9/16”) set back from the row of stones below. This set back is achieved by placing the upper stone on the compacted back fill behind the lower stone. Repeat steps 3-17 until the wall is complete.

LOCK+LOAD INSTALLATION

LOCK+LOAD INSTALLATION

NOTE:

- Granular “A” is 20mm well graded crushed gravel with less than 5% passing #200 sieve (fines)
- Drainage supplied by others

OGDEN, UT USA

This 85,000 sqft railroad abutment exemplifies the strong yet flexible charachteristics of the LOCK+LOAD system. The large, light weight components were quickly and easily installed to allow for rapid placement and compaction of the massive approach. This structure was built on top of soft foundation soils of the Great Salt Lake region, requiring the fascia to be capable of consolidating wihtout distress, a unique advantage of the LOCK+LOAD system.

HIGHLAND VALLEY, B.C. CANADA

Wing walls for a haul road overpass designed for CAT 797B truck surcharge (650tons), 9M (29.53ft) in height and ~ 50sqM (5381.96sqft) in area. GRS (Geosynthetic Reinforced Soil) with low cost woven geotextile. Winter construction on a 24 / 7 schedule to avoid frozen backfill Temperatures as low as -25C. Lock + Load was ideal for “wrapping around” the curved Bridge-Plate arch, as it could be field cut.

GOLDEN VALLEY ROAD, SANTA CLARITA, CA USA

This large LOCK+LOAD wall is built on grade to simplify the construction of the barrier, coping and walkway that top the wall structure. LOCK+LOAD’S flexible nature was utilized to accommodate the 100mm x 150mm (4” - 6”) consolidation of the foundation soils that was predicted. The LOCK+LOAD system used local soils with geogrid reinforcement resulting in significant cost savings on the project.

CORONA, CA USA

Colored concrete used for a fourteen foot high wall with three plantable terraces for a total of 2000sqft in the George Tillery Residence.

REDMOND, WASHINGTON USA

This project had a very short time window for construction and the immediate availability of LOCK+LOAD allowed for quick delivery and promp begining of construction. Project was visited and reviewed by multiple agencies.

CAESAR’S PALACE, LAS VEGAS, NV USA

LOCK+LOAD’s quarried stone appearance was chosen for the entrance to Caesar’s “Forum.” Price, appearance and speed were the deciding factors of this now landscaped project.

LOCK+LOAD™

Armtec has been a licensed supplier of the LOCK+LOAD retaining wall system since 1995.

Drawings and product details are for information and/or illustrative purposes only and may vary. Please contact your Armtec representative for the most current product information.

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Armtec is a leading Canadian infrastructure and construction materials company combining creative engineered solutions, relevant advice, dedicated people, proven products and a national presence with a local focus on exceptional customer service.

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