

StoneWall® Segmental Retaining Wall Units

PART 1: GENERAL

E1 Description

A. Work includes furnishing and installing segmental block retaining wall units to the lines and grades designated on the construction drawings and as specified herein or as directed by the Architect/Engineer.

E2 Applicable sections of related work

A. Section 02265 — Geogrid Reinforcement.

E3 Reference Standards

A. ASTM C1372 — Load Bearing Concrete Masonry Units.
B. ASTM C140 — Sampling and Testing Concrete Masonry Units.
C. ASTM D698 — Moisture Density Relationship for Soils, Standard Method.
D. ASTM C1372.99a — Specifications for Segmental Retaining Wall Units.

E4 Delivery, Storage and Handling

A. Contractor shall check the materials upon delivery to assure that specified type, grade, color and texture of SRW unit has been received.
B. Contractor shall prevent excessive mud, wet concrete, spalls, and like materials which may affix themselves from coming in contact with the materials.
C. Contractor shall protect the materials from damage. Damaged material shall not be incorporated into the SRW.

PART 2: RETAINING WALL

2.1 Materials

A. Concrete Units

1. Concrete used to manufacture SRW units shall have a minimum 28 day compressive strength of 2,000 psi (or lesser value strength, 2,000 min. to 6,000 max. psi in accordance with ASTM C1272). The concrete shall have adequate formwork protection for the project circumstances, with a minimum moisture absorption rate, by weight, of: 7% for mass masonry, 10% max. to 10% min. for SRW units.
2. SRW units shall provide a minimum of 120 sq ft of wall face area. Fill which is contained within the dimensions of the units may be considered as 40% effective weight.
3. SRW units shall have angled ribs and be capable of loads and outside curves with a minimum of a 7 radius.
4. SRW units shall be interlocking with friction lock pins creating a minimum setback of 1/2" per vertical course.

B. Friction Lock Pins

1. "Super Trough Nylon Pins" alignment pins.

C. Base Material

1. Material for leveling pad shall consist of compacted sand, gravel or a concrete leveling pad. A minimum of 8" of compacted base is required for segment walls.

D. Unit Fill

1. Fill units with a well graded, 3/4" to 2 inch gravel. Gradation of fill shall be approved by the engineer.
2. A minimum of 12" of drainage fill extend behind the wall.

E. Backfill

1. Backfill shall be water resistant unless otherwise specified in the drawings. Unavailable units for backfill shall not be used within the retrofitted soil mass when using geogrid for setbacks.
2. Where additional fill is required, contractor shall submit sample and specifications to the engineer for approval if acceptable.

2.2 Retaining Wall Installation

A. Excavation

1. Contractor shall excavate to the lines and grades shown on the project grading plans and SRW plan and profile drawing. Contractor shall take precautions to maintain over-excavation. Over-excavation shall be filled with compacted light material, or as directed by the Architect/Engineer, at the Contractor's expense.

B. Foundation Soil Preparation

1. Foundation soil shall be excavated as required for footing dimensions shown on the construction drawings, or as directed by the engineer.
2. Foundation soil shall be examined by the engineer or tester that the correct foundation soil strength meets or exceeds assumed design strength. Soil not meeting the required strength shall be removed and replaced with compacted backfill material.

C. Leveling Pad

1. Leveling pad soil shall be excavated as required for footing dimensions shown on the construction drawings, or as directed by the engineer.
2. Leveling pad materials shall be installed upon undisturbed native soil.
3. Material shall be compacted as on or provide a level, hard surface on which to place the first course of units. Compaction will be with mechanical plate compaction to 95% of standard.
4. Leveling pad shall be prepared to create complete contact of retaining wall unit with base. Gaps shall not be allowed.
5. Leveling pad materials shall be to the depth and width shown. Contractor may opt for using reduced depth of sand and gravel in conjunction with a concrete topping. Any topping concrete shall be unadorned and a minimum of 1" thick.

D. Unit Installation

1. First course of SRW units shall be placed directly on the leveling pad. All units should be checked for level in two directions, parallel and perpendicular to wall face and horizontal alignment to center.
2. Ensure that base course SRW units are in full contact with the leveling pad.
3. SRW units are to be placed side-by-side for full length of retaining wall alignment. Alignment may be done by means of a string line or offset from base line to a solid finished face of the SRW unit. After unit spacing for correct returns according to manufacturer's recommendations.

4. Clean all excess Unit Fill from top of SRW Units and install base course. Ensure each course is completely filled prior to proceeding to next course.

5. Lay up each course so that the pins penetrate into the retaining strength 2'-0". Ten pins are required per unit. The units must then be pulled forward so that the pins and trough are in full contact and a 1/2" setback is created. Repeat for each vertical course of units.

E. Geogrid

1. If geogrid is to be installed as indicated, follow the additional requirements of section Geogrid Wall Reinforcement.

GEOGRID WALL REINFORCEMENT

PART 1: GENERAL

E1 Scope

A. Work includes furnishing and installing geogrid reinforcement, wall fill and backfill to the lines and grades designated on the construction drawings. Also included is the furnishing and installing of all appurtenant materials required for construction of the geogrid reinforced soil retaining wall, as shown on the construction drawings.

E2 Applicable sections of related work

A. StoneWall Segmental Retaining Wall Units.

E3 Reference Standards

A. See applicable standards for reference geogrid manufacturer.

E4 Delivery, Storage and Handling

A. Contractor shall check the geogrid upon delivery to assure that the proper material has been received.
B. Geogrid shall be stored above -20 degrees F.
C. Rolled geogrid material may be laid flat or stored on end for storage.

PART 2: MATERIALS

2.1 Definitions

A. Geogrid is formed of high density polyethylene (HDPE) or polyester and is specifically fabricated for use in soil reinforcement.
B. Concrete retaining wall units are as detailed on the drawings and are specified under section StoneWall Segmental Retaining Wall Units.
C. Wall fill is a free draining granular material used within the concrete units, and behind the concrete units as per engineer's design.
D. Backfill is the soil which is used to fill for the reinforced soil mass.
E. Foundation soil is the native soil.

2.2 Products

A. Geogrid shall be the type and length as shown on the drawings.

2.3 Acceptable Manufacturer

A. A manufacturer's product shall be approved by the engineer prior to bid opening.

PART 3: EXECUTION

3.1 Foundation Soil Preparation

A. Foundation soil shall be excavated to the lines and grades as shown on the construction drawings or as directed by the engineer.

1. Foundation soil shall be examined by the engineer to ensure that the correct foundation soil strength meets or exceeds assumed design strength. Soil not meeting the required strength shall be removed and replaced with compacted backfill material.

2. Over-excavation shall be filled with compacted light material.

3. Foundation soil shall be prepared prior to fill and geogrid placement.

3.2 Wall Erection

A. Wall erection shall be as specified under section StoneWall Segmental Retaining Wall Units.

3.3 Wall Fill Placement

A. Wall fill shall be completed after each 8" lift. Fill shall be compacted to 95% of standard.
B. Backfill shall be placed, spread and compacted in such a manner that minimizes the development of wrinkles in and/or movement of the geogrid.
C. Only hand operated compaction equipment shall be allowed within three feet of the wall face.
D. Backfill shall be placed from the wall outward, to insure that the geogrid remains taut.
E. Tracked construction equipment shall not be operated directly on the geogrid. Minimum backfill thickness of 6" is required prior to operation of tracked vehicles over the geogrid. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
F. Rubber tired equipment may pass over the geogrid reinforcement at slow speeds less than 10mph. Sudden braking and sharp turning shall be avoided.

PART 4: MEASUREMENT

A. Measurement of geogrid is on a square yard basis as computed on the total area of geogrid shown on the construction drawings.

STONEWALL



EASY ON THE EYES.
THE BACK. AND THE BUDGET.

Smart product design delivers style, substance and a reputation for quality.

A StoneWall retaining wall system turns ordinary landscapes into creative expressions of timeless sophistication. Reflecting the grandeur of fine living, a wall built with StoneWall blocks blends seamlessly with the surrounding environment. Its rough-hewn stone face suggests the structure has always been. While its unique commercial-grade construction ensures it will always be.

- Natural stone appearance enhances hardscape applications.
- Residential scale stone delivers a commercial-grade structural performance.
- 50lb. unit minimizes labor fatigue.
- Core filled unit augments long-term connection to geogrid reinforcement.
- Pin and trough alignment system simplifies installation for all skill levels.



StoneWall® MSE identification number 97-24-60

WestBlock Systems
P.O. Box 64655
Tacoma, Washington 98465
1.800.332.6489
www.westblocksystems.com
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Ideal Concrete Block
45 Power Road
Westford, MA 01586
1.800.444.7287

www.IdealConcreteBlock.com



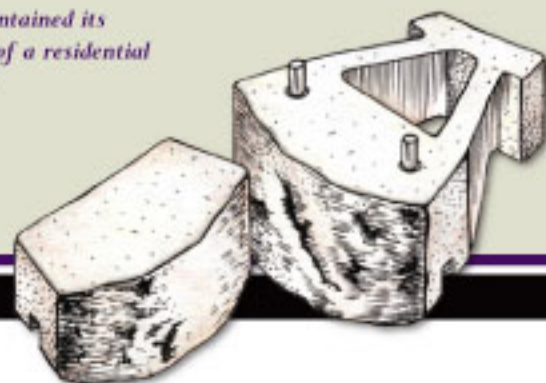
WESTBLOCK SYSTEMS

A Design Series Product from WestBlock Systems



"During the past 3 decades, StoneWall has maintained its reputation for providing the best combination of a residential scale stone and an engineered M.S.E. system."

- Jim Hammer, Owner, WestBlock Systems



50 Pounds
8" H: Height
12" W: Width
12" D: Depth

MAIN BLOCK

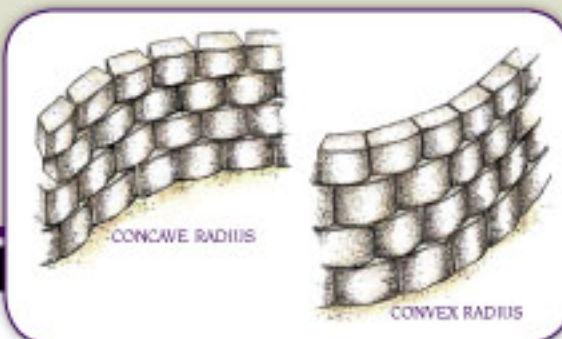
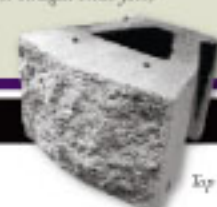
(Hollow core with rounded or straight stone face)



20 Pounds
4" H: Height
12" W: Width
8" D: Depth

CAP BLOCK

(Beveled and straight sided options)



Product meets ASTM C-1172
Strength: 3,000 p.s.i.

Panel Size: 12" x 2 3/4"
Composite Fiberglass reinforced nylon

WHY STONEWALL?



With utilization of hillside lots on the rise, segmental retaining walls have become the mainstay of attractive and economical earth retention efforts. That said, it's no wonder homeowners, contractors, engineers and designers prefer StoneWall retaining wall systems. Delivering both style and substance, StoneWall provides a reliable and cost-effective performance — block after block.

Artfully Designed. Available in a variety of colors, StoneWall complements a wide range of hardscape designs. StoneWall offers a robust, human scale ratio that's attractive and functional. From its rounded stone face and rough-hewn texture to the subtle shading that dances along its surface, StoneWall blends seamlessly with the surrounding environment, reflecting a natural, time-worn look and feel.

Easily installed. Ideal for landscape walls and hardscape applications, StoneWall provides commercial-grade structural performance, making it a favorite of designers and contractors alike. Weighing a mere 50lbs., its lightweight design and simple construction process help assure installer satisfaction. Stonewall's unique pin and trough alignment system automatically creates a 3/4" batter per vertical foot, making installation quick, easy and virtually foolproof. A notched channel molded into each block and cap fit over rugged nylon pins, guiding the block effortlessly into place. Located at the 1/4 point along the length of the unit, the pin system is positioned perfectly to minimize the challenges of building serpentine walls. The result of this smart product design is a beautifully aligned wall with gentle shadows, rather than heavy and unsightly ledges.

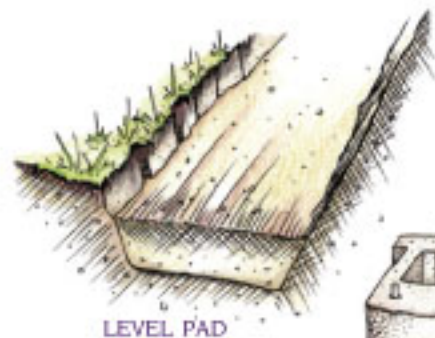
Ruggedly Reliable. A StoneWall retaining wall will last for decades, retaining its natural beauty and ensuring a consistent performance. The block's hollow core design, filled with aggregate, creates a "rock lock", which assures top performance between units and in connection with geogrid reinforcement. StoneWall blocks even neutralize threats posed by water drainage issues by allowing greater use of free draining aggregate within the structural portion of the wall.

Economically Sound. StoneWall's man-made nature and innovative design make it a cost-effective and low maintenance solution. Mortarless installation reduces labor costs. The lightweight design makes it easier to lift, place and set block in the wall, which goes a long way toward increasing productivity and reducing fatigue! Plus, the ability to incorporate aggregate into the wall units protects against the negative effects of water and assures the wall will hold tight throughout its life. Add it all up and you have a affordable, high quality product that's easy on the eyes, the back and the budget.

To learn more about the StoneWall retaining wall system and how it can help you create smart landscape and hardscape solutions, visit westblocksystems.com or call 800.332.6489.



INSTALLATION



LEVEL PAD



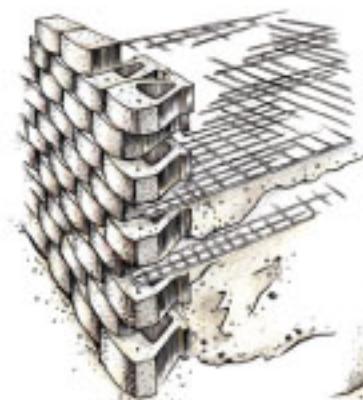
LEVELING FIRST COURSE



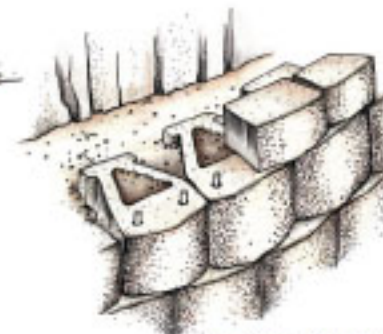
INSTALL ALIGNMENT PINS



BACKFILL AS YOU GO



PLACE GEOGRID
(if needed)



CAPPING THE WALL

As with any wall, the first course is most important.

1. Start block placement at the lowest elevation of the base course. Level the block side-to-side and front to back as you build.
2. Backfill and compact with granular well-draining 3/4" minus aggregate after each 8" course. Place the aggregate into the cores, into the voids between the block, and 12" behind each unit. Do not fill block with pea gravel, clay, or organic topsoil.
3. Install alignment pins into holes. If necessary, clear debris from the holes with a spike.
4. Place geogrid between layers of block as specified by engineer.
5. Begin next course by straddling two lower units and staggering the vertical joints. Position trough downward and straddle the upward facing pins. Pull the unit forward and against the pins, establishing the setback. Note: Setback is 1/2" per course and 3/4" per vertical foot.
6. Compact all loose soil behind wall with a hand tamper, or plate compactor.
7. Finish off by adding cap units and landscaping surrounding area.

General Guidelines

1. Walls less than 3 ft. high, without excessive loads, generally require no geogrid reinforcement. Walls over 3 ft. high generally require terracing or an engineered design utilizing reinforcement.
2. Walls under 4 ft. require 4" of base. Walls over 4 ft. require 6" of base. Allow 18" minimum base depth. (Under ideal conditions)
3. Bury 1 unit below grade for every 6 ft. of wall height. Walls 3 ft. high and under, bury 1/2 of a unit.
4. The face area of each block is 2/3 sq. ft. To estimate the number of blocks needed, multiply the actual square footage of the wall by 1.5.

Special Considerations

1. Soil conditions, land slope and water table will affect final design.
2. Walls over 4 ft. routinely require an engineered design that is based on site conditions.
3. Drainage systems should be considered for all wall designs.
4. Tiered wall design can create greater stresses on the wall than equal height single tier designs. The tiered wall design must be carefully considered.
5. These procedures are not to be construed as construction detail. Soil and application variations effect engineering detail of the wall. Consult local engineer for details.