



PRODUCT
RESOURCE *and*
INSTALLATION

BORGERT IS BUILT ON HONESTY & INTEGRITY

Our Products Come With a Pedigree

Family owned and operated, Borgert Concrete Products, Inc. was established in 1923 by Lawrence A. Borgert in East St. Cloud, MN. In 1953, Lawrence's son, Kenneth J. Borgert, took over the business and relocated it to its current location in St. Joseph. As sole owner of Borgert Products, since 2006, I am proud to uphold the same values and traditions of quality products and service unmatched in the industry just as my Grandfather and Father did. In 100 years, we have survived some challenging times which has made us a strong leader in our industry today. We started out manufacturing block and precast and have evolved into Interlocking Concrete Paving Stones, Retaining Walls and Slabs, with 2023 marking the 46 year anniversary of manufacturing paving stones. Thanks to the creativity of our people and our engineering, we continue to design new and improved products, providing our customers better selections to build their dream landscapes.



“

Love using Borgert products, great quality and styles. And if you need anything, they are there for you in a snap!

- BEN F.

”

Ultimately, our Company's success is due to the hardworking team of people at Borgert Products. We are fortunate to have skilled and knowledgeable people who work hard to produce quality products, with impeccable service and commitment to our customers. In the 100 years that Borgert has been in business, many changes have occurred and I know that the founders of our Company would be as proud as I am for where we are today.

Ausan M Borgert

CEO

family owned
MADE IN MN

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THE BEST PAVER SYSTEM

BY BORGERT

Durability

The industry standards for Interlocking Concrete Pavers are 8,000 psi and no more than 5% absorption. Borgert pavers exceed these standards giving them an excellent wearing course. The combination of high psi, low absorption and the addition of color throughout means **QUALITY** pavers that will last for years to come.

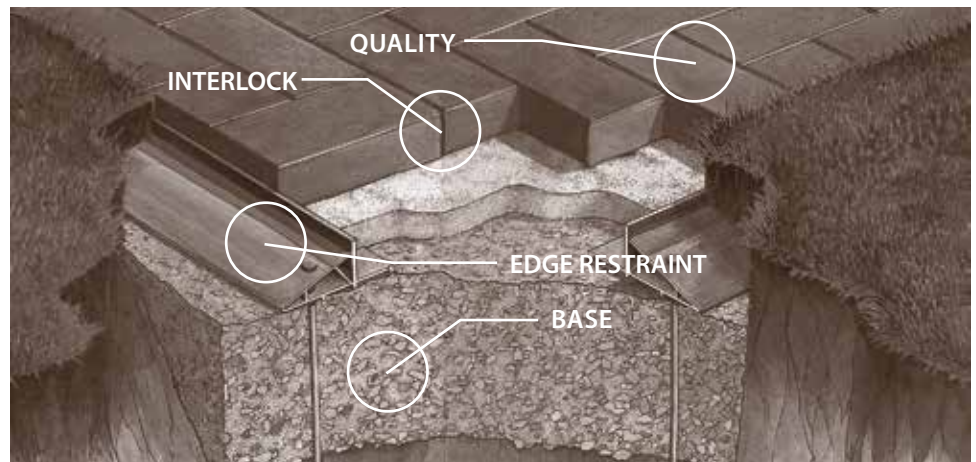
Flexible System

Bedding sand worked up between the pavers when they are compacted creates the “**INTERLOCK**”, thus a flexible pavement that is resistant to heaving in freeze/thaw conditions. If there is settling in the pavement it can be easily repaired by taking up the pavers reworking the base and putting the same pavers back in place – no unsightly patchwork.

Key to Successful Installation

As with any pavement, a proper **BASE** is critical to the performance of the pavement. With Interlocking Concrete Pavement, the difference is there needs to be an **EDGE RESTRAINT**.

Permeable Interlocking Concrete Pavement is the same principal with the exception of the type of paver, the base is open graded aggregates and edge restraint details.



ONGOING EDUCATION

We care about our customers if it be introducing new products to refreshing installation techniques. This is also a time to get to know each other better and hear directly from our end users their opinions on our products and services. Most importantly we will have ample time for round table discussions which will provide insight for all of us, all in the spirit of improving relationships and communication.

From the end of January through the first part of March Borgert Products will offer these informational opportunities. Contact your sales rep or the Borgert dispatch office for more details.

INTERLOCKING PAVEMENT & RETAINING WALLS

WHAT YOU SHOULD KNOW

Maintain

Borgert pavers provide a durable yet decorative pavement — two big pluses. Like anything that is for outdoor use, they require a little care and maintenance. Clean pavement with a mild soap in the fall and spring or use cleaners specifically made for concrete pavers or walls. Check with Borgert Products or your hardscape supplier for what products they recommend. Consider sealing driveways for more protection from street deicing chemicals.

Efflorescence

A white haze known as efflorescence is a natural occurring process in concrete. Technically known as calcium hydroxide, it can come from a number of sources and appears as a white film when carried to the surface by moisture. It may appear randomly or in certain areas and is more pronounced on darker colors. The good news is efflorescence does not affect longevity or structural integrity of the pavers or walls. Although unsightly, in many cases it is scoured off during installation when compacting the pavers. It can also be removed using specialty cleaners, made for interlocking concrete paving stones or retaining walls. Otherwise, it will typically lessen or dissipate over time with rain, snow and wear. Because efflorescence can be a natural by-product of cement hydration, its presence is not indicative of a flawed or defective product. Efflorescence cannot be prevented, so as with all other manufacturers, this condition is not a warranty issue.

Polymeric Haze *(does not apply to retaining walls)*

Interlocking concrete pavement (ICP) does not require a jointing material other than sand. Poly haze can happen if it is not used properly and should not be confused with efflorescence. Since the use of poly sand is not an installation requirement, Borgert Products accepts no responsibility in the event of hazing. We suggest you contact your contractor or the manufacturer of the polymeric sand for their suggestions concerning their products.

Snow, Ice and Deicers

Our pavers and walls are more than beautiful. They have the durability to withstand the harsh winters of the Midwest and, when properly installed, snow removal is no problem...either by shovel, snow blower or plow. For walls that are installed by sidewalks, driveways or streets we recommend that they be hosed off in spring for any residual deicing chemicals that may have splashed up on them.

Our pavers have a surface that is slip and skid resistant even when wet. Ice, on the other hand, can be slippery and common sense should be used to prevent slips and falls. We recommend sand for traction, as it can be applied liberally and as needed. Clean, untreated sand has no corrosive effect on concrete pavers or walls and it can be swept into the paver joints or removed by conventional sweeping or vacuuming.

Concrete pavers are robust in resisting the effects of deicing chemicals. We have manufactured pavers that have been exposed to salt for over 40 years! Nevertheless, deicing chemicals can be harmful to the pavers. If using a deicer, the ICPI recommends a NaCl sodium chloride. We recommend against the use of other types, including products that contain a blend of chemicals. Pavers exposed to any deicing chemicals must be properly cleaned and maintained. We recommend cleaners designed for concrete paving stones. Check with Borgert Products or your hardscape supplier for what product they recommend.

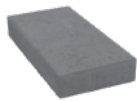
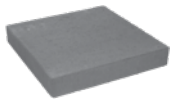
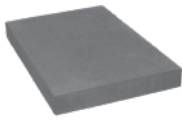


*Not all products
are stocked in
Colorado.*

*For industry information concerning maintenance,
efflorescence, deicing chemicals
and installation guidelines visit www.icpi.org
and for walls www.ncma.org.*

SLABS

KASTLE FLATS

STYLE		CODE	DIMENSIONS	BANDS	CUBES
Kastle Flats Rectangle - Textured 8" x 16"		4KA	200mm x 400mm x 60mm Approximate 7¾" x 15⅝" x 2⅜"	N/A	92.94 SF 2602# (108 stones)
Kastle Flats Rectangle - Smooth		4KAS			
Kastle Flats Square - Textured 16" x 16"		4KB	400mm x 400mm x 60mm Approximate 15⅝" x 15⅝" x 2⅜"	N/A	81.84 SF 2292# (48 stones)
Kastle Flats Square - Smooth		4KBS			
Kastle Flats Lg. Rec. - Textured 16" x 24"		4KC	400mm x 600mm x 60mm Approximate 15⅝" x 23½" x 2⅜"	N/A	81.84 SF 2292# (32 stones)
Kastle Flats Lg. Rec. - Smooth		4KCS			

Use protective plate during compaction. All sizes are provided on separate pallets. See slab installation guide on page 8.

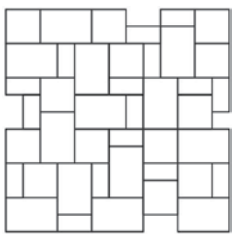
Kastle Flats Stock Colors

For best blend results, always select from multiple cubes.

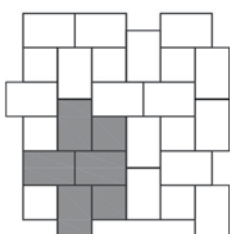
STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
Classic Bronze <i>(Minimal Stock)</i>	47	Sterling Gray	05	Lannon	07

Kastle Flats Patterns

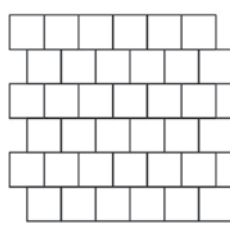
Slabs are NOT unit pavers and precautions are necessary when installing these products.



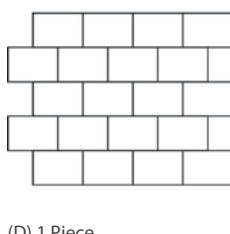
(A) 3 Piece Random
8x16 - 16%
16x16 - 34%
16x24 - 50%
Laying Ratio: 1:1:1



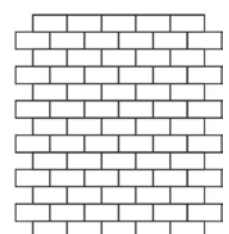
(B) 2 Piece
16x16 - 30%
16x24 - 70%
Laying Ratio: 2:4



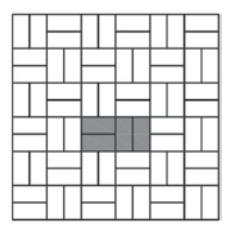
(C) 1 Piece
16x16 - 100%



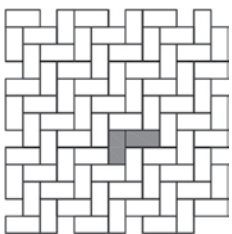
(D) 1 Piece
16x24 - 100%



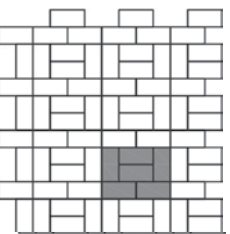
(E) 1 Piece
8x16 - 100%



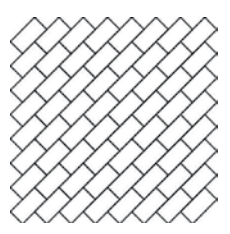
(F) 1 Piece
8x16 - 100%



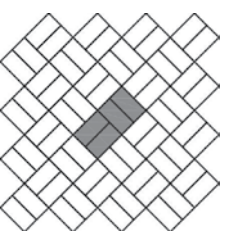
(G) 1 Piece
8x16 - 100%



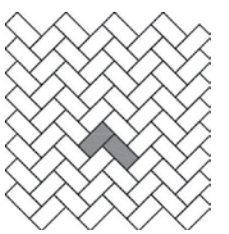
(H) 1 Piece
8x16 - 100%



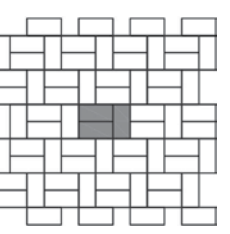
(I) 1 Piece
8x16 - 100%



(J) 1 Piece
8x16 - 100%




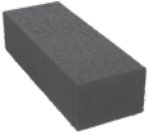
(K) 1 Piece
8x16 - 100%



(L) 1 Piece
8x16 - 100%



BULOVAR®

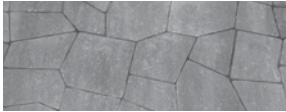
STYLE		CODE	DIMENSIONS	CUBES
Bulovar® 100mm Thickness		4BW	75mm x 400mm x 100mm Approximate 27/8" x 153/4" x 4" (PSF = 3.1 stones @ 45#) <i>- NOT SOLD BY THE BAND</i>	67.7 SF 3046# (210 pcs)
Bulovar® Max* 100mm Thickness		4BM	150mm x 400mm x 100mm Approximate 67/8" x 153/4" x 4" (PSF = 1.55 stones @ 45#) <i>- NOT SOLD BY THE BAND</i>	62 SF 2790# (96 pcs)

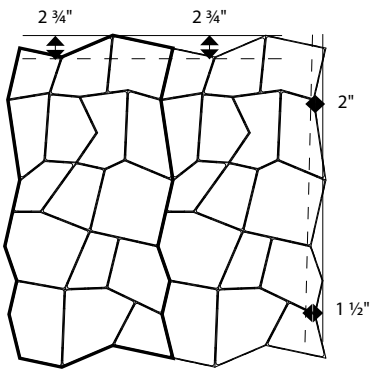
**Bulovar® Max is suitable for light traffic such as driveways. Lay product perpendicular to the traffic flow.
All sizes are provided on separate pallets. See slab installation guide below.*

Bulovar® Stock Colors

STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
Adobe	87	Graphite	26	Pewter	20
Slate	32	<i>For best results, always select from multiple cubes. Available in custom colors. Inquire with your sales representative.</i>			

BRÜKSTONE®

STYLE		CODE	DIMENSIONS	CUBES
BrükStone® 80mm Thickness		4BU	16 Various Sizes <i>- Returns of full cubes only</i> <i>- NOT SOLD BY THE BAND</i>	76.08 SF 2690#



Dimensions for straight edge points are indicated by - - - -

*There are 6 layers per cube at 12.68 SF per layer. Layer dimension is 443/4" x 413/4".
All borders that are cut in may require additional product.*

Suggested soldier course products Vavel II and Bavaria II.

All spacer bars must line up with each other. Use a protective plate during compaction.

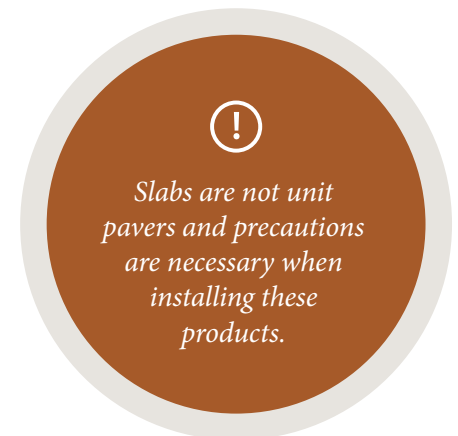
Must be installed as it comes off the pallet.

BrükStone® Stock Colors*

STOCK COLORS	CODE	STOCK COLORS	CODE
Minnesota River	18	North Shore	40

For best blend results, always select from multiple cubes.

**BrükStone® is a minimal stock item. See slab installation guide on page 8.*



INSTALLATION GUIDE FOR SLABS

KASTLE FLATS, BULOVAR® & BRÜKSTONE®



*Slabs are **NOT** unit pavers and precautions are necessary when installing these products. Due to the size of the slab, some breakage is normal.*

IMPORTANT: Prior to screeding the bedding sand, the recommended base surface tolerance must not exceed $\pm\frac{1}{4}$ in. (± 6 mm) over a 10 ft. (3 m) straight edge. The reason for the tighter base surface tolerance for slabs is to provide a more uniform support and help prevent vertical movement due to lack of interlock among the paving units.

Keep heavy steer and forklift equipment off newly laid slabs that have not received initial compaction and joint sand.

IMPORTANT NOTE: Any Slab being brought to the laying face should be bridged with plywood to spread the loads applied from machine access.

If you don't have a roller compactor use a low-amplitude plate compactor with no more than 2,500 lbf (11 kN) at a frequency of 50 to 65 Hz with a **protective plate** to vibrate the slabs into the sand. Remove any cracked or damaged slabs and replace with new units. Sweep sand onto the surface and continue compacting and sanding until joints are full.



Slabs are not unit pavers and precautions are necessary when installing these products.



TRADITIONAL PAVING STONES

LALOSA

STYLE		CODE	DIMENSIONS	BANDS	CUBES
LaLosa Square 6" x 6"		4LLA	160mm x 160mm x 60mm 6¼" x 6¼" x 2¾" (PSF = 3.69 stones @ 28#)	12.2 SF 342# (45 stones)	85.4 SF 2395# (7 bands)
LaLosa Rectangle 6" x 9"		4LLB	160mm x 240mm x 60mm 6¼" x 9¾" x 2¾" (PSF = 2.46 stones @ 28#)	18.28 SF 512# (45 stones)	91.4 SF 2559# (5 bands)
LaLosa Large Square 9" x 9"		4LLD	240mm x 240mm x 60mm 9¾" x 9¾" x 2¾" (PSF = 1.64 stones @ 28#)	16.5 SF 462# (27 stones)	82.5 SF 2310# (5 bands)
LaLosa Large Rectangle 9" x 12"		4LLC	240mm x 320mm x 60mm 9¾" x 12½" x 2¾" (PSF = 1.22 stones @ 28#)	29.5 SF 835.2# (36 stones)	88.5 SF 2506# (3 bands)

Use protective plate during compaction. All sizes are provided on separate pallets.

LaLosa Stock Colors

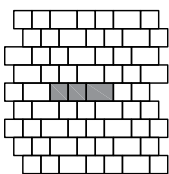
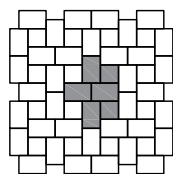
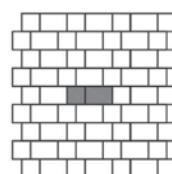
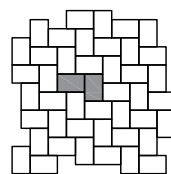
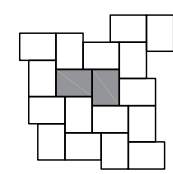
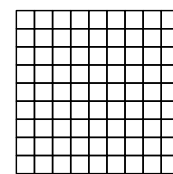
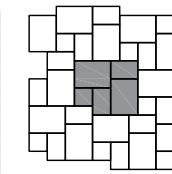
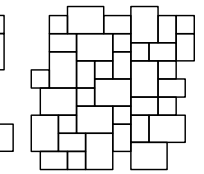
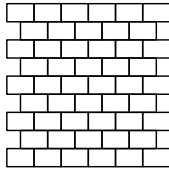
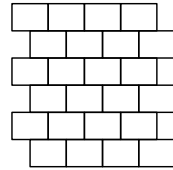
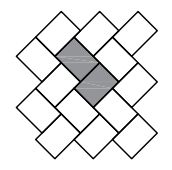
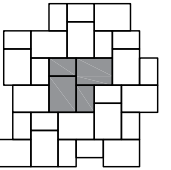

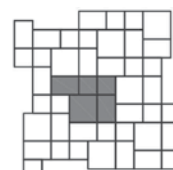

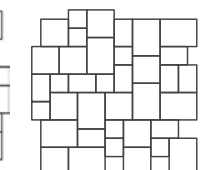
STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
Iron Range	45	Lannon	07	Minnesota River	18
Sterling Gray	05				

For best blend results, always select from multiple cubes.

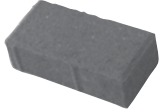
LaLosa Accent Solid Colors

ACCENT SOLID COLORS	CODE	ACCENT SOLID COLORS	CODE
Graphite (6"x9" Stone only)	26	Saddleback (6"x9" Stone only)	09

LaLosa Patterns

							
(A) Running Bond 6x6 - 66% 6x9 - 34% Laying Ratio: 2:1	(B) Basket Weave 90° 6x6 - 30% 6x9 - 70% Laying Ratio: 2:4	(C) Running Bond 6x6 - 40% 6x9 - 60% Laying Ratio: 1:1	(D) 1 Piece 6x9 - 100%	(E) 1 Piece 9x12 - 100%	(F) 1 Piece 6x6 - 100%	(G) 3 Piece 6x6 - 10% 6x9 - 30% 9x12 - 60% Laying Ratio: 1:2:2	(H) 3 Piece Random 6x6 - 18% 6x9 - 28% 9x12 - 54% Laying Ratio: 1:1:1
							
(I) 1 Piece 6x9 - 100%	(J) 1 Piece 9x12 - 100%	(K) 1 Piece 9x12 - 100%	(L) 2 Piece 6x9 - 33% 9x12 - 67% Laying Ratio: 1:1	(M) 3 Piece 6x9 - 27% 9x9 - 20% 9x12 - 53% Laying Ratio: 2:1:2	(N) 3 Piece 6x6 - 28% 6x9 - 41% 9x9 - 31% Laying Ratio: 2:2:1	(O) 2 Piece 6x6 - 30% 9x9 - 70% Laying Ratio: 1:1	(P) 4 Piece Random 6x6 - 13% 6x9 - 19% 9x9 - 29% 9x12 - 39% Laying Ratio: 1:1:1:1

HOLLAND STONE™

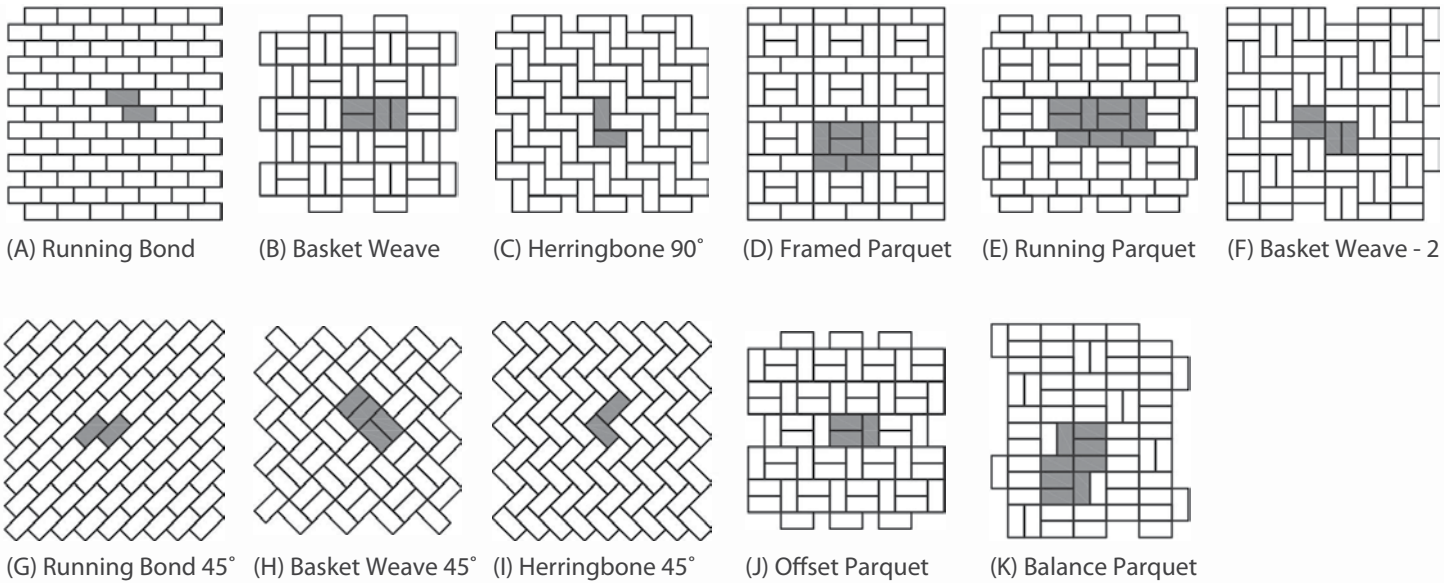
STYLE		CODE	DIMENSIONS	BANDS	CUBES
Holland Stone™ 4" x 8"		4HS	100mm x 200mm x 60mm 3 7/8" x 7 7/8" x 2 3/8" (PSF = 4.5 stones @ 28#)	15.7 SF 440# (72 stones)	94 SF 2640# (6 bands)

Holland Stone™ Stock Colors









For best blend results, always select from multiple cubes.

STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
Autumn Blend	02	Iron Range	45	Minnesota River	18
Charcoal	08	Sterling Gray	05	Saddleback	09
North Shore	40	Chamois	06		

Holland Stone™ Patterns



COBBLE™

STYLE		CODE	DIMENSIONS	BANDS	CUBES
Cobble™ Half Square 3" x 6"		4MC	80mm x 160mm x 60mm 3 1/8" x 6 1/4" x 2 3/8" (PSF = 7.4 stones @ 28#)	8.1 SF 226# (60 stones)	56.8 SF 1590# (7 bands)
Cobble™ Square 6" x 6"		4TC	160mm x 160mm x 60mm 6 1/4" x 6 1/4" x 2 3/8" (PSF = 3.69 stones @ 28#) <i>*Available in 80mm - See Non-stock Products section.</i>	12.2 SF 342# (45 stones)	85.4 SF 2395# (7 bands)
Cobble™ Rectangle 6" x 9"		4PC	160mm x 240mm x 60mm 6 1/4" x 9 3/8" x 2 3/8" (PSF = 2.46 stones @ 28#) <i>*Available in 80mm - See Non-stock Products section.</i>	18.28 SF 512# (45 stones)	91.4 SF 2559# (5 bands)
Cobble™ Large Square 9" x 9"		4NC	240mm x 240mm x 60mm 9 3/8" x 9 3/8" x 2 3/8" (PSF = 1.64 stones @ 28#)	16.5 SF 462# (27 stones)	82.5 SF 2310# (5 bands)
Cobble™ Large Rectangle 9" x 12"		4RC	240mm x 320mm x 60mm 9 3/8" x 12 5/8" x 2 3/8" (PSF = 1.22 stones @ 28#)	29.5 SF 835.2# (36 stones)	88.5 SF 2506# (3 bands)
Cobble™ Three Quarter 4" x 6"		4QC	120mm x 160mm x 60mm 4 3/4" x 6 1/4" x 2 3/8" (PSF = 4.84 stones)	11.57 SF 324# (56 stones)	81 SF 2268# (7 bands)
Cobble™ Large Circle		4LC	(PSF = 4.92 stones)	6 SF 168# (30 stones)	54 SF 1512# (9 bands)
Cobble™ Circle Center Pack		4CC	Pieces needed per Circle Center: <i>1 Center stone</i> <i>16 Small circle stones</i> <i>8 Three quarter stones</i> <i>3 Half squares (for rings 6 & 8)</i> 6 CTR Packs Per Pallet	5.6 SF 160#	960#

All sizes are provided on separate pallets.

Cobble™ Stock Colors

For best blend results, always select from multiple cubes.

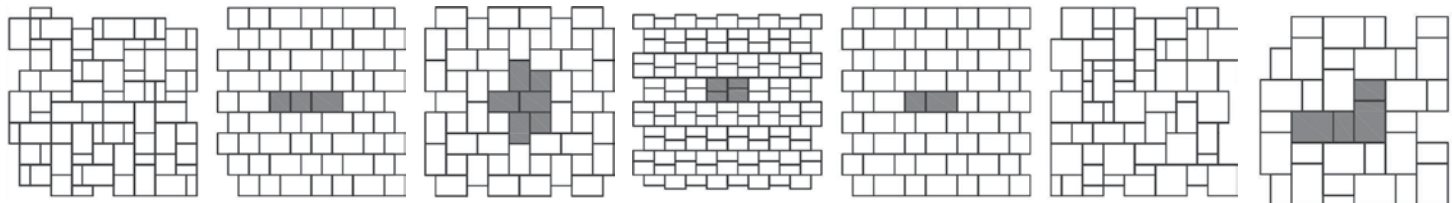
STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
Autumn Blend	02	Bronze Granite	27	Iron Range	45
Minnesota River	18	North Shore	40	Sterling Gray	05

Cobble™ Accent Solid Colors

Offered in 6" x 9" and 4" x 6" only.

ACCENT SOLID COLORS	CODE	ACCENT SOLID COLORS	CODE	ACCENT SOLID COLORS	CODE
Chamois	06	Charcoal	08	Graphite	26
Saddleback	09				

Cobble™ Patterns



(A) 3 Piece Random
3x6 - 16%
6x6 - 34%
6x9 - 50%
Laying Ratio: 1:1:1

(B) Running Bond
6x6 - 66%
6x9 - 34%
Laying Ratio: 2:1

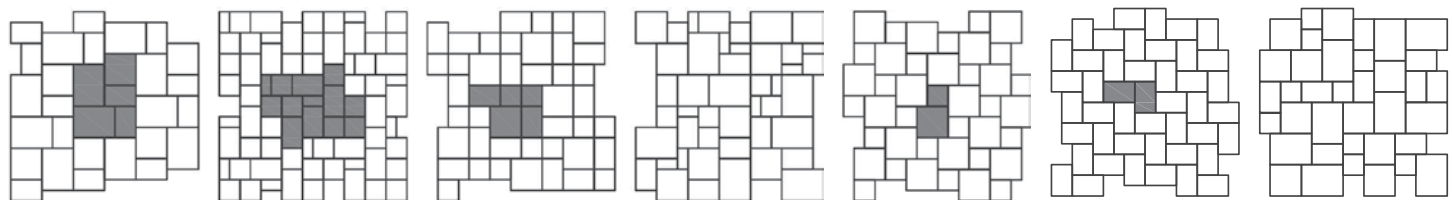
(C) Basket Weave 90°
6x6 - 30%
6x9 - 70%
Laying Ratio: 2:4

(D) Mixed Runner
4x6 - 60%
3x6 - 40%
Laying Ratio: 1:1

(E) Running Bond
6x6 - 40%
6x9 - 60%
Laying Ratio: 1:1

(F) 4 Piece Random
3x6 - 10%
6x6 - 21%
6x9 - 27%
9x9 - 42%
Laying Ratio: 1:1:1:1

(G) 2 Piece
6x9 - 33%
9x12 - 67%
Laying Ratio: 2:2



(H) 3 Piece
6x9 - 27%
9x9 - 20%
9x12 - 53%
Laying Ratio: 2:1:2

(I) 3 Piece
3x6 - 7%
6x6 - 50%
6x9 - 43%
Laying Ratio: 2:7:4

(J) 3 Piece
6x6 - 28%
6x9 - 41%
9x9 - 31%
Laying Ratio: 2:2:1

(K) 5 Piece Random
3x6 - 6%
6x6 - 11%
6x9 - 18%
9x9 - 27%
9x12 - 38%
Laying Ratio: 1:1:1:1:1

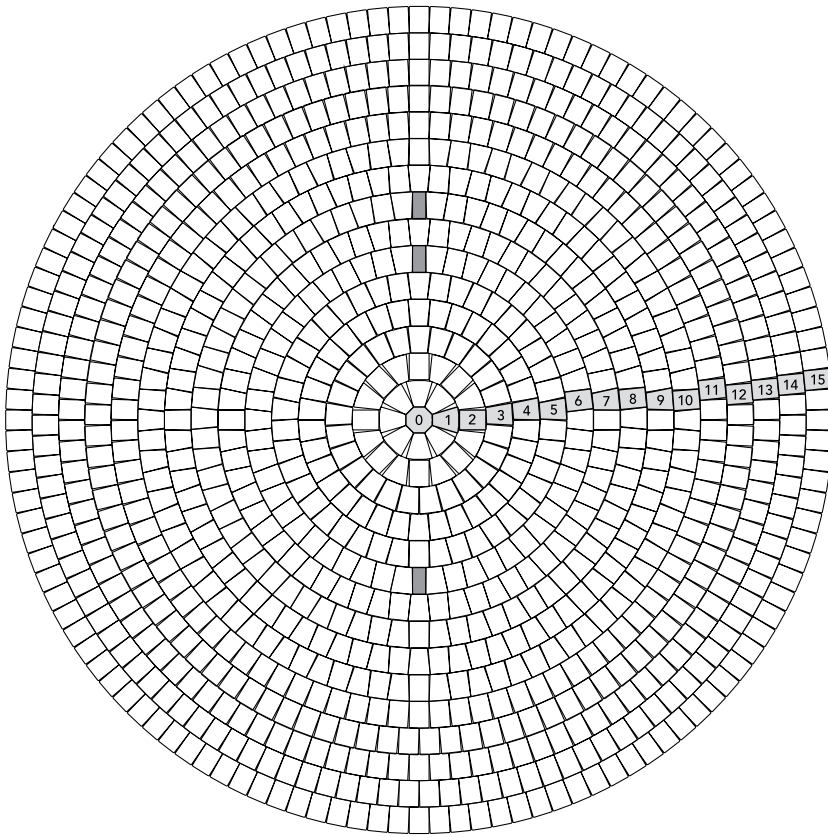
(L) 2 Piece
6x6 - 30%
9x9 - 70%
Laying Ratio: 1:1

(M) 1 Piece
6x9 - 100%

(N) 4 Piece Random
6x6 - 13%
6x9 - 19%
9x9 - 29%
9x12 - 39%
Laying Ratio: 1:1:1:1

Circle Guide

You can begin your circle with your choice of diameter! The packaging of the Cobble Circle makes it easy to order just what you need. The chart above shows the total number of stones per ring. (i.e. Ring 7=96.5 inch diameter which requires 30 pieces of the Large Circle Stone and 30 pieces of the Three Quarter Stone.)



 = 3x6's Included in Center Pack

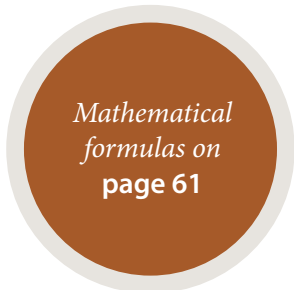
PIECES PER RING TO GET STARTED							
RING	CIRCLE DIA. (CM)	CIRCLE DIA. (INCH)	CENTER CIRCLE - IN CTR PAK	SMALL CIRCLE - IN CTR PAK	LARGE CIRCLE	3x6 - IN CTR PAK	¾ STONE/QT.
0	16	6.3	1	---	---	---	---
1	49	19.3	---	8	---	---	---
2	81	31.8	---	8	---	---	8
3	113	44.6	---	---	26	---	---
4	145	57.4	---	---	34	---	---
5	178	70.1	---	---	21	---	21
6	210	82.9	---	---	26	2	24
7	243	96.5	---	---	30	---	30
8	275	108.4	---	---	34	1	33
9	307	120.7	---	---	38	---	38
10	339	133.5	---	---	42	---	42
11	371	146.2	---	---	---	---	90
12	404	159.0	---	---	---	---	97
13	436	171.7	---	---	---	---	106
14	455	184.4	---	---	---	---	115
15	501	197.1	---	---	---	---	124

Full Circle Configuration

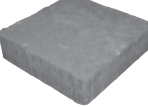
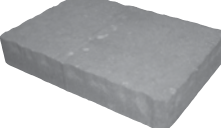
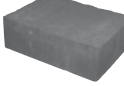
See page 61 for mathematical formulas.

This page lists the quantities and square footage of your chosen diameter. (i.e. a 14.31 foot diameter circle requires 1 center pak, 1 cube of Large Circle Stone, and 1 cube plus 2 bands of Three Quarter Stone – giving you a finished area of 163.76 square feet.)

PAVER QTY. TO THE NEAREST BAND						
RING	DIA / FT	SQ FT	CIRCLE CTR	LARGE CIRCLE	¾ STONE 81 SQ FT	TOTAL SQ FT
0-2	2.65	5.6	1 Pak	---	---	5.6
3	3.72	10.87	1 Pak	1 Band	---	11.6
4	4.78	17.95	1 Pak	2 Bands	---	17.6
5	5.84	26.79	1 Pak	3 Bands	1 Band	35.18
6	6.91	37.5	1 Pak	4 Bands	1 Band	41.18
7	8.05	50.9	1 Pak	5 Bands	2 Bands	58.76
8	9.03	64.04	1 Pak	6 Bands	2 Bands	64.76
9	10.06	79.46	1 Pak	7 Bands	3 Bands	82.34
10	11.13	97.29	1 Pak	8 Bands	4 Bands	99.88
11	12.18	116.52	1 Pak	1 Cube	5 Bands	117.45
12	13.25	137.89	1 Pak	1 Cube	1 Cube	140.6
13	14.31	160.83	1 Pak	1 Cube	1 Cube 2 Bands	163.73
14	15.37	185.54	1 Pak	1 Cube	1 Cube 4 Bands	186.87
15	16.43	212.01	1 Pak	1 Cube	2 Cubes	221.58
16	17.49	240.25	1 Pak	1 Cube	2 Cubes 2 Bands	244.72
17	18.55	270.26	1 Pak	1 Cube	2 Cubes 5 Bands	279.43
18	19.61	302.03	1 Pak	1 Cube	3 Cubes	302.57
19	20.67	335.56	1 Pak	1 Cube	3 Cubes 3 Bands	337.28
20	21.73	371	1 Pak	1 Cube	3 Cubes 6 Bands	372
21	22.79	408	1 Pak	1 Cube	4 Cubes 3 Bands	418
22	23.85	447	1 Pak	1 Cube	4 Cubes 6 Bands	453
23	24.91	487	1 Pak	1 Cube	5 Cubes 2 Bands	488
24	25.97	530	1 Pak	1 Cube	5 Cubes 6 Bands	534
25	27.03	574	1 Pak	1 Cube	6 Cubes 3 Bands	580
26	28.09	620	1 Pak	1 Cube	7 Cubes	627
27	29.15	667	1 Pak	1 Cube	7 Cubes 4 Bands	673
28	30.21	717	1 Pak	1 Cube	8 Cubes 1 Band	719
29	31.27	768	1 Pak	1 Cube	8 Cubes 6 Bands	777



BAVARIA II™ (NON-TUMBLLED)

STYLE		CODE	DIMENSIONS	BANDS	CUBES
Bavaria II™ Small Square 5" x 5"		4UBQ	140mm x 140mm x 70mm 5½" x 5½" x 2¾" (PSF = 4.8 stones @ 31.5#)	9.98 SF 324# (48 stones)	79.8 SF 2595# (8 bands)
Bavaria II™ Small Rectangle 5" x 11"		4UBH	140mm x 280mm x 70mm 5½" x 11" x 2¾" (PSF = 2.4 stones @ 31.5#)	20.25 SF 659# (48 stones)	81 SF 2635# (4 bands)
Bavaria II™ Large Square 11" x 11"		4UBS	280mm x 280mm x 70mm 11" x 11" x 2¾" (PSF = 1.2 stones @ 31.5#)	20.25 SF 658# (24 stones)	81 SF 2632# (4 bands)
Bavaria II™ Large Rectangle 11" x 16"		4UBR	280mm x 420mm x 70mm 11" x 16½" x 2¾" (PSF = .80 stones @ 31.5#)	30 SF 975# (24 stones)	90 SF 2925# (3 bands)
Bavaria II™ Accent 6" x 9"		4UBTQ	168mm x 225mm x 70mm 6½" x 9" x 2¾" (PSF = 2.4 stones @ 31.5#)	15 SF 488# (36 stones)	75 SF 2440# (5 bands)

Use protective plate during compaction. All sizes are provided on separate pallets.

Bavaria II™ (Non-Tumbled) Stock Colors

For best blend results, always select from multiple cubes.

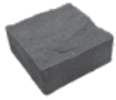
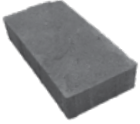
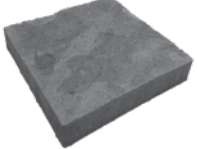
STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
Iron Range	45	Minnesota River	18	North Shore	40
Sterling Gray	05				

Bavaria II™ Accent Solid Colors

ACCENT SOLID COLORS	CODE	ACCENT SOLID COLORS	CODE
Charcoal (5"x5" & 6"x9" Stone only)	08	Graphite (6"x9" Stone only)	26



VAVEL II™ (NON-TUMBLLED)

STYLE		CODE	DIMENSIONS	BANDS	CUBES
Vavel II™ Small Square 7" x 7"		4UVA	178mm x 178mm x 70mm 7" x 7" x 2¾" (PSF = 2.94 stones @ 31.5#)	12.24 SF 398# (36 stones)	85.68 SF 2785# (7 bands)
Vavel II™ Rectangle 7" x 14"		4UVB	178mm x 356mm x 70mm 7" x 14" x 2¾" (PSF = 1.47 stones @ 31.5#)	24.48 SF 796# (36 stones)	73.44 SF 2387# (3 bands)
Vavel II™ Large Square 14" x 14"		4UVC	356mm x 356mm x 70mm 14" x 14" x 2¾" (PSF = .74 stones @ 31.5#)	21.76 SF 708# (16 stones)	65.28 SF 2122# (3 bands)

Use protective plate during compaction. All sizes are provided on separate pallets.

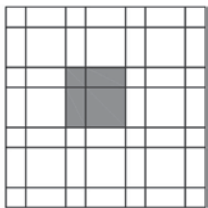
Vavel II™ (Non-Tumbled) Stock Colors*

For best blend results, always select from multiple cubes.

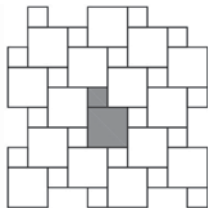
STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
Iron Range	45	Minnesota River	18	North Shore	40
Sterling Gray	05				

**Vavel II is a minimal stock product.*

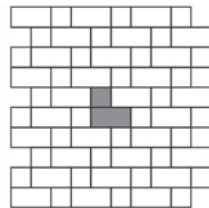
Vavel II™ Patterns



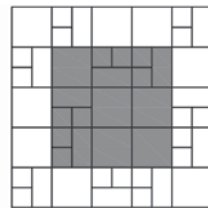
(A) 3 Piece
7x7 - 10%
7x14 - 45%
14x14 - 45%
Laying Ratio: 1:2:1



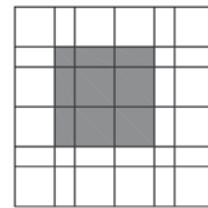
(B) 2 Piece
7x7 - 20%
14x14 - 80%
Laying Ratio: 1:1



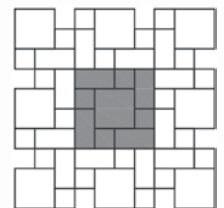
(C) 2 Piece
7x7 - 34%
7x14 - 66%
Laying Ratio: 1:1



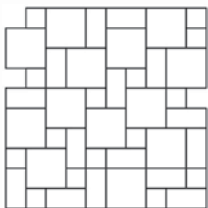
(D) 3 Piece
7x7 - 22%
7x14 - 22%
14x14 - 56%
Laying Ratio: 8:4:5



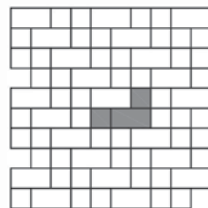
(E) 3 Piece
7x7 - 3%
7x14 - 32%
14x14 - 64%
Laying Ratio: 1:4:4



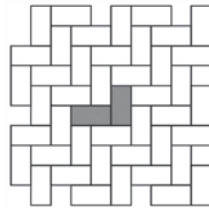
(F) 3 Piece
7x7 - 25%
7x14 - 50%
14x14 - 25%
Laying Ratio: 4:4:1



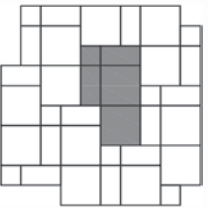
(G) 3 Piece Random
7x7 - 14%
7x14 - 29%
14x14 - 57%
Laying Ratio: 1:1:1



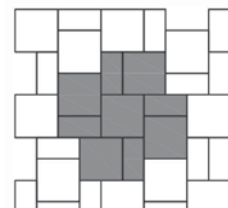
(H) 2 Piece
7x7 - 50%
7x14 - 50%
Laying Ratio: 2:1



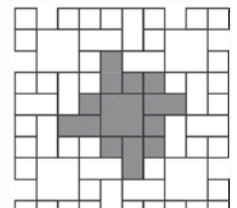
(I) 1 Piece
7x14 - 100%



(J) 3 Piece
7x7 - 8%
7x14 - 31%
14x14 - 61%
Laying Ratio: 1:2:2



(K) 2 Piece
7x14 - 29%
14x14 - 71%
Laying Ratio: 4:5




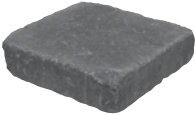
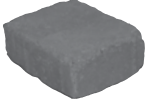




(L) 3 Piece
7x7 - 33%
7x14 - 45%
14x14 - 22%
Laying Ratio: 6:4:1



STRASSEN® TUMBLED PAVING STONES

STRASSEN® CRACOVIA (TUMBLED)*

STYLE		CODE	DIMENSIONS	BANDS	CUBES
Cracovia Half Square 3" x 6"		4TTM	80mm x 160mm x 60mm 3 $\frac{1}{8}$ " x 6 $\frac{1}{4}$ " x 2 $\frac{3}{8}$ " (PSF = 7.4 stones @ 28#)	8.1 SF 226# (60 stones)	56.8 SF 1590# (7 bands)
Cracovia Square 6" x 6"		4TTQ	160mm x 160mm x 60mm 6 $\frac{1}{4}$ " x 6 $\frac{1}{4}$ " x 2 $\frac{3}{8}$ " (PSF = 3.69 stones @ 28#)	12.2 SF 342# (45 stones)	85.4 SF 2395# (7 bands)
Cracovia Rectangle 6" x 9"		4TTP	160mm x 240mm x 60mm 6 $\frac{1}{4}$ " x 9 $\frac{3}{8}$ " x 2 $\frac{3}{8}$ " (PSF = 2.46 stones @ 28#)	18.28 SF 512# (45 stones)	91.4 SF 2559# (5 bands)
Cracovia Large Square 9" x 9"		4TTN	240mm x 240mm x 60mm 9 $\frac{3}{8}$ " x 9 $\frac{3}{8}$ " x 2 $\frac{3}{8}$ " (PSF = 1.64 stones @ 28#)	16.5 SF 462# (27 stones)	82.5 SF 2310# (5 bands)
Cracovia Three Quarter 4" x 6"		4TQC	120mm x 160mm x 60mm 4 $\frac{3}{4}$ " x 6 $\frac{1}{4}$ " x 2 $\frac{3}{8}$ " (PSF = 4.84 stones)	11.57 SF 324# (56 stones)	81 SF 2268# (7 bands)
Cracovia Large Circle		4TLC	(PSF = 4.92 stones) <i>Same length as the three qtr. Cracovia, for radius see circle diagram.</i>	6 SF 168# (30 stones)	54 SF 1512# (9 bands)
Cracovia Circle Center Pack		4TCC	Pieces needed per Circle Center: 1 Center stone 16 Small circle stones 8 Three quarter stones 3 Half squares (for rings 6 & 8) 6 CTR Packs Per Pallet		5.6 SF 160# 960#

**Cracovia is packaged the way it is to be laid. DO NOT flip pavers, spacer bars must offset during install.
All sizes are provided on separate pallets.*

For circles see
Cobble/Cracovia
Circle on
page 13



Need help figuring your project? Visit BorgertProducts.com to use our Stone Calculator.

STRASSEN® CRACOVIA (TUMBLLED)*

Strassen® Cracovia (Tumbled) Stock Colors

For best blend results, always select from multiple cubes.

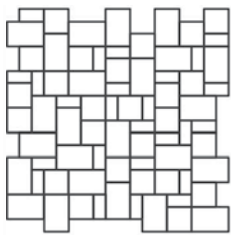
STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
Grand Canyon	44	Iron Range	45	Minnesota River	18
North Shore	40	Sterling Gray	05		

Strassen® Cracovia Accent Solid Colors

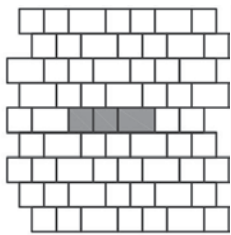
*Offered in 4"x 6" only.
For best blend results, always select from multiple cubes.*

ACCENT SOLID COLORS	CODE
Charcoal	08

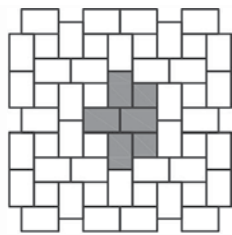
Strassen® Cracovia (Tumbled) Patterns



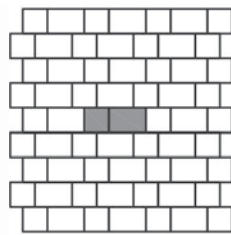
(A) 3 Piece Random
3x6 - 16%
6x6 - 34%
6x9 - 50%
Laying Ratio: 1:1:1



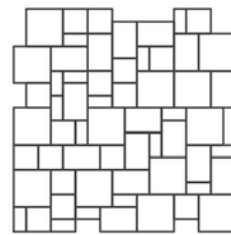
(B) Running Bond
6x6 - 66%
6x9 - 34%
Laying Ratio: 2:1



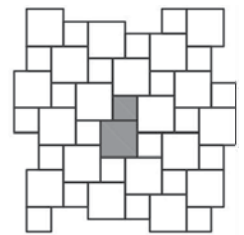
(C) Basket Weave 90°
6x6 - 30%
6x9 - 70%
Laying Ratio: 2:4



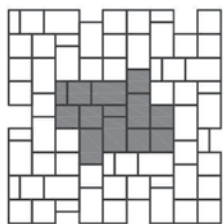
(D) Running Bond
6x6 - 40%
6x9 - 60%
Laying Ratio: 1:1



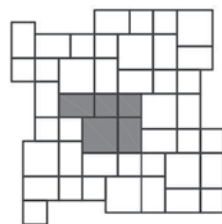
(E) 4 Piece Random
3x6 - 10%
6x6 - 21%
6x9 - 27%
9x9 - 42%
Laying Ratio: 1:1:1:1



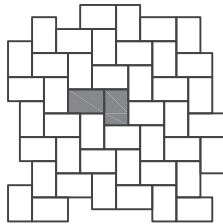
(F) 2 Piece
6x6 - 30%
9x9 - 70%
Laying Ratio: 1:1



(I) 3 Piece
3x6 - 7%
6x6 - 50%
6x9 - 43%
Laying Ratio: 2:7:4


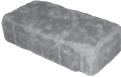
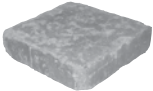
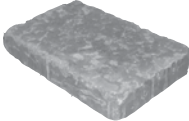
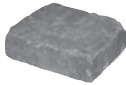


(J) 3 Piece
6x6 - 28%
6x9 - 41%
9x9 - 31%
Laying Ratio: 2:2:1



(M) 1 Piece
6x9 - 100%

STRASSEN® BAVARIA (TUMBLLED)

STYLE		CODE	DIMENSIONS	BANDS	CUBES
Bavaria Small Square 5" x 5"		4BQ	140mm x 140mm x 70mm 5½" x 5½" x 2¾" (PSF = 4.8 stones @ 31.5#)	6.25 SF 203# (30 stones)	50.0 SF 1625# (8 bands)
Bavaria Small Rectangle 5" x 11"		4BH	140mm x 280mm x 70mm 5½" x 11" x 2¾" (PSF = 2.4 stones @ 31.5#)	7.56 SF 246# (18 stones)	60.48 SF 1965# (8 bands)
Bavaria Large Square 11" x 11"		4BS	280mm x 280mm x 70mm 11" x 11" x 2¾" (PSF = 1.2 stones @ 31.5#)	15.12 SF 491# (18 stones)	60.48 SF 1965# (4 bands)
Bavaria Large Rectangle 11" x 16"		4BR	280mm x 420mm x 70mm 11" x 16½" x 2¾" (PSF = .80 stones @ 31.5#)	22.5 SF 731# (18 stones)	67.5 SF 2195# (3 bands)
Bavaria Accent 6" x 9"		4BTQ	168mm x 225mm x 70mm 6½" x 8¾" x 2¾" (PSF = 2.4 stones @ 31.5#)	7.5 SF 244# (18 stones)	52.5 SF 1706# (7 bands)

All sizes are provided on separate pallets.

Strassen® Bavaria Stock Colors

For best blend results, always select from multiple cubes.

STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
Iron Range	45	Minnesota River	18	North Shore	40
Sterling Gray	05				

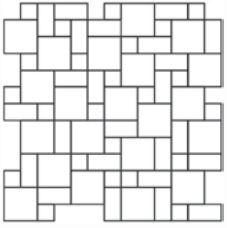
Strassen® Bavaria Accent Solid Colors

ACCENT SOLID COLORS	CODE	ACCENT SOLID COLORS	CODE
Charcoal (5"x5" & 6"x9" Stone only)	08	Graphite (6"x9" Stone only)	26

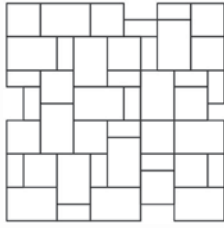


STRASSEN® BAVARIA (TUMBLLED)

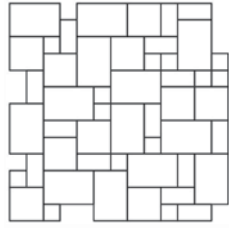
Strassen® Bavaria and Bavaria II Patterns



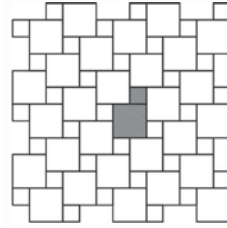
(A) 3 Piece Random
5x5 - 16%
5x11 - 34%
11x11 - 50%
Laying Ratio: 1:1:1



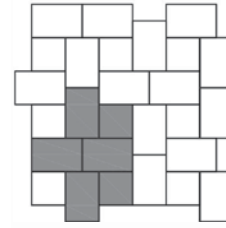
(B) 3 Piece Random
5x11 - 16%
11x11 - 34%
11x16 - 50%
Laying Ratio: 1:1:1



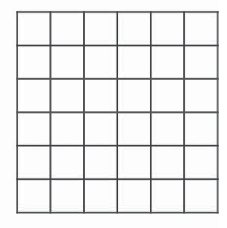
(C) 4 Piece Random
5x5 - 7%
5x11 - 15%
11x11 - 31%
11x16 - 47%
Laying Ratio: 1:1:1:1



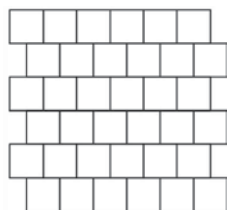
(D) 2 Piece
5x5 - 20%
11x11 - 80%
Laying Ratio: 1:1



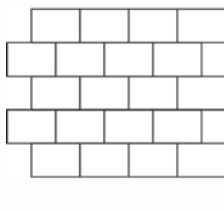
(E) 2 Piece
11x11 - 30%
11x16 - 70%
Laying Ratio: 2:4



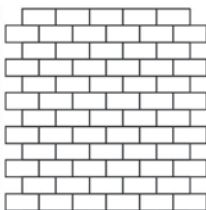
(F) 1 Piece
11x11 - 100%



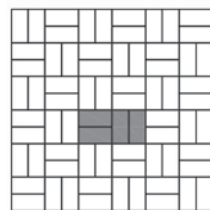
(G) 1 Piece
11x11 - 100%



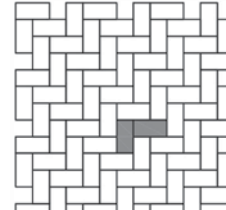
(H) 1 Piece
11x16 - 100%



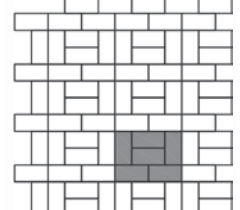
(I) 1 Piece
5x11 - 100%



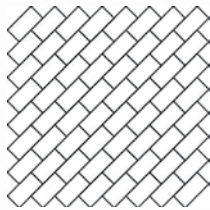
(J) 1 Piece
5x11 - 100%



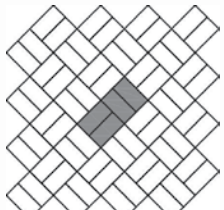
(K) 1 Piece
5x11 - 100%



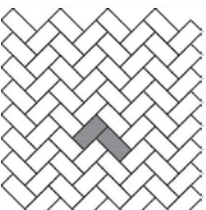
(L) 1 Piece
5x11 - 100%



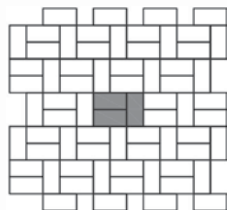
(M) 1 Piece
5x11 - 100%



(N) 1 Piece
5x11 - 100%



(O) 1 Piece
5x11 - 100%



(P) 1 Piece
5x11 - 100%

INSTALLATION GUIDES FOR ICP

INSTALLATION GUIDE FOR TRADITIONAL INTERLOCKING CONCRETE PAVEMENTS

Tools Needed

- Wooden stakes
- Wide blade masons chisel
- Masons string (twine)
- Stiff bristle street broom
- 3lb. - 5lb. rubber hammer
- Hard tooth garden rake
- Chalk line
- 25' ft. measure tape
- 1" diameter sand screed guides (pipe, wood, etc.)
- 6' - 8' ft. 2" x 4" or 2" x 6"
- Small pry bar
- 4 ft. Level
- Wheelbarrow
- Flat shovel

Equipment

- 3hp to 5hp plate compactor (not a jumping jack)
- Mason diamond saw
- Block/Paver splitter

Installation

First measure area you intend to pave. Determine square footage by multiplying (length x width = square footage) add 5% for breakage and cutting. Measure lineal feet of open edges, those not up against a permanent structure such as a house, etc. This will indicate lineal footage of edge restraint required. Draw a plan on a piece of paper showing all important dimensions. Take this plan to your supplier so that they can help you determine the proper amount of materials needed to complete your project.

Using the 3-4-5 triangle method to determine a perpendicular line, measure parallel lines from the perpendicular line to establish a boundary. Place stakes every 4 feet to 6 feet and at corners. These stakes should be 8" outside of the planned edge of the pavers.

You can check to make sure an area is square by making sure both sets of cross corners measure the exact same distance.

Excavation

Before any digging call your local utility companies to locate any underground lines.

Using a flat shovel cut evenly to remove sod/dirt to a depth of at least 7" (18cm) to allow room for 2 $\frac{3}{8}$ " (6cm) paver, compacted sand, minimum of 4" (10cm) compacted crushed stone base (more if soil is very soft). If the house is of new construction there might be potential for settling next to the foundation. We suggest you increase base thickness to 6" (15cm) or a total excavation of 9" (23cm) within 2 feet (1 meter) of new foundation. Excavation should be 6" (15cm) wider on sides where edge restraint is to be used.

Base Preparation

This is very important. The more time and effort you put into the preparation of the base, the better the project and the longer it will last. Use either $\frac{3}{4}$ " (19mm) or $\frac{1}{2}$ " (13mm) graded base material that includes sizes down to fine dust. This material is easier to compact and will give a tight, close-knit surface of compaction.

Method of Compaction

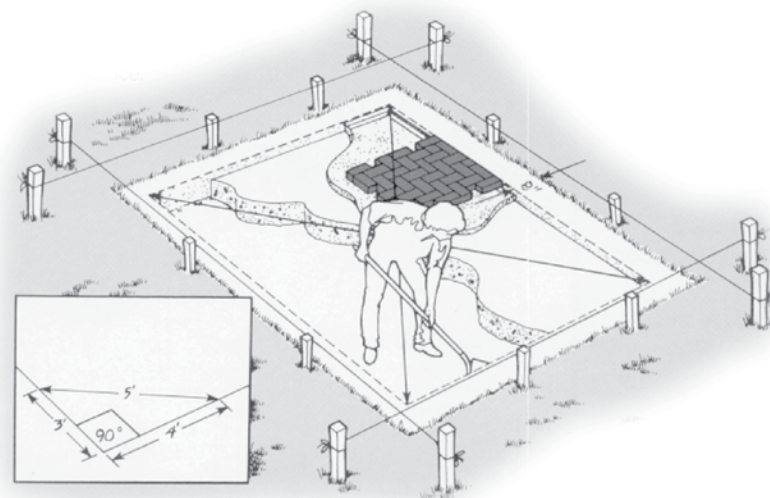
First, run your plate compactor over the excavated soil. (Make sure no soil gets stuck to the bottom of the plate compactor). Each pass should overlap the previous one by about 4". Now spread your gravel base material out evenly in about 2" layers.

If material is dry and dusty use a garden hose to thoroughly wet it down, this helps make the gravel faster to compact and easier to rake. Start around the outer perimeter with the plate compactor and again overlap each pass about 4" working towards the center. You should make at least two complete passes for each layer. Use the hard tooth garden rake to smooth out any unevenness.

When finished with the base it should be very smooth and flat. If you were to put a straight edge flat on the surface there should be no more than a $\frac{3}{8}$ " (10mm) maximum gap anywhere along the straight edge and the base.

Slope and Grade

Slope and Grade are important to ensure proper run-off. It is best to plan a $\frac{1}{4}$ " (6mm) per foot drop, but try not to exceed $\frac{1}{2}$ " (12mm) per foot.



INSTALLATION GUIDE FOR TRADITIONAL INTERLOCKING CONCRETE PAVEMENTS

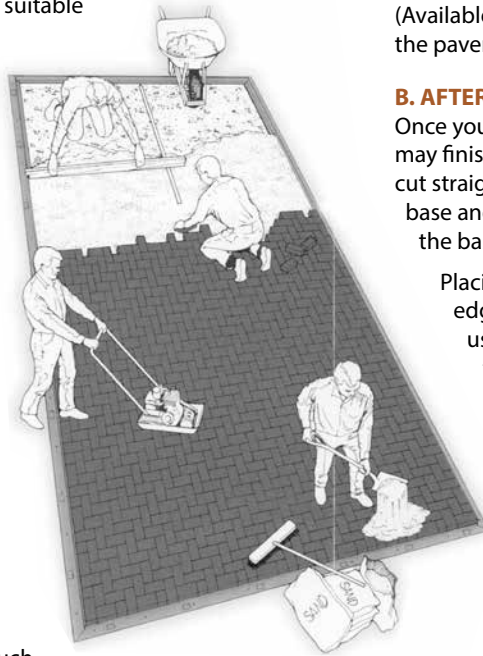
Sand Setting Bed - ATSM C33

It is important to keep your sand dry and covered in case of rain.

Do not attempt to level any area or surface irregularities with the sand. This will result in an uneven surface and unwanted settling.

Lay your screed guides (1" (25mm) electrical conduit, 1" strips of wood or other suitable rigid 1" guide) 4' ft. to 6' ft. apart and parallel. Work from side to side with your screed guides, screed a 10' section of sand. You will use the 6' ft. to 8' ft. 2" x 6" to loosely spread the sand and to strike off any excess.

DO NOT walk on or work from your screeded sand. Do not worry about voids that screed guides have left after you have removed them. You will lightly fill them with sand and trowel them smooth as you are laying the pavers.



Laying the Pavers

(Instructions for small areas only)

Starting from a permanent edge such as a house, driveway, or even a piece of edge restraint, lay your first paver starting from either side. (As you start laying pavers, work from right to left, then left to right and so on, one row of pavers at a time.) Set the pavers lightly onto the sand, never press them or hammer them in. Be sure to allow 6" (15cm) to edge restraint on the open sides later. If you are starting with pavers as a starting point (see edge installation below), run a string line across the front of the laying edge about every 4' ft.

If there are some pavers lagging behind, go about three rows of pavers back and using a small pry bar, wedge between the pavers and pry the pavers forward until they are in line again.

Do not worry too much about gaps at this point, they will even out during tamping later. Many different laying patterns are possible, but herringbone provides the best surface interlock.

Set the pavers hand tight, but **DO NOT** use a hammer to adjust the pavers or set them. If you are doing the project over a couple of days, cover the entire area with plastic overnight if rain is expected. Do not lay pavers over the 6" (15cm) extended base area where edge restraint is to be set later.

Cutting the Pavers

You will need to cut pavers if you have to go around a post or come up against an existing structure or where a radius is desired.

You do not need to cut (except maybe 1/2" stones) on sides where edge restraint is installed. Mark any stones to be cut with a crayon or chalk and allow for up to a 1/4" (6mm) gap between the stone and the edge. This will be filled with sand later. You should use either a diamond blade mason saw or a paver splitter.

Pave Edge Installation

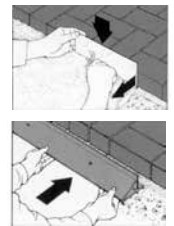
A. BEFORE SAND SCREEDING

Snap chalkline on base material before you screed sand if you are going to start laying your pavers from a edge restraint line first. Spike edging so that the chalk line remains visible. Spike every two feet with 10" (25cm) x 3/8" (9mm) diameter steel landscape spike. (Available through your paver supplier.) Edge restraint not only holds the pavers, but the sand as well.

B. AFTER PAVERS HAVE BEEN LAID

Once you have completed the laying of pavers on the sand you may finish placing the edge restraint spikes. First, using a trowel, cut straight down the side of the pavers into the sand down to the base and pull back the sand. Be careful not to scrape up the base material.

Placing the edging flat onto the base, push edge restraint frost heave lip under the sand, using a hammer to tap against the back of the edge restraint until the edging is tight to the pavers. Now, spike the edging approximately every two feet. Pound the spikes in until the head of the spike is touching the edging.



C. USE PAVE EDGE RIGID FOR STRAIGHT AREAS

D. USE PAVE EDGE FLEXIBLE FOR CURVED AREAS THE FINAL STEP

Assuming that you have now laid all your pavers, placed and spiked all your edge restraint, you are ready for the last step.

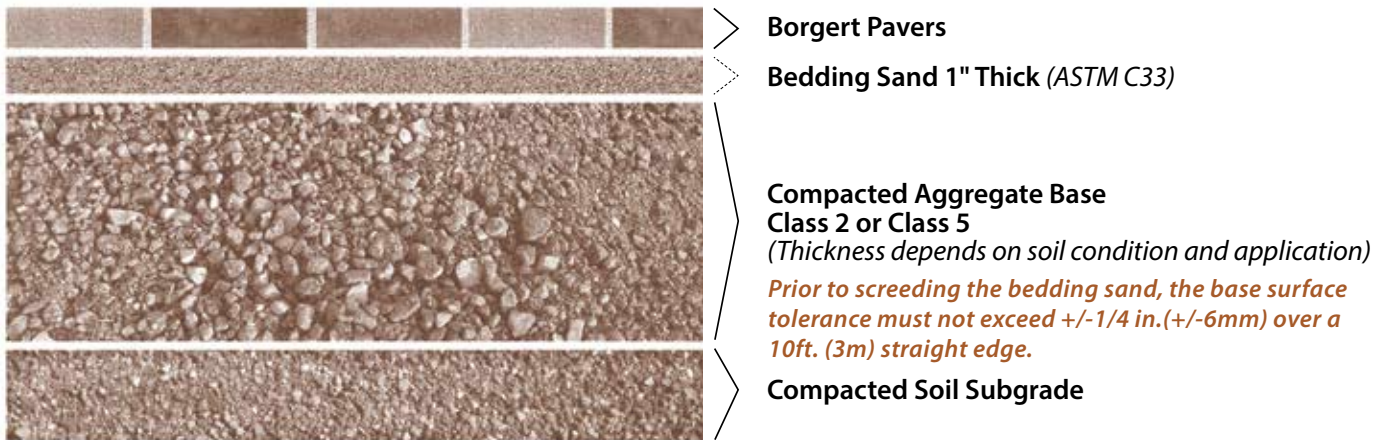
NOTE: During this step the pavers will settle in about 1/4" lower during compaction (only if 1" loose screeded sand has been used). This should be their final height.

1. Sweep any debris or loose sand off of the pavers.
2. Using a vibratory plate compactor, 3 HP to 5 HP, you should make at least two passes over the pavers. Starting around the perimeter and working inward, overlap each pass 2" to 4" inches. Make the second pass at a 45° degree angle to your first. The first pass of the compactor will accomplish the following:
 - will level the pavers
 - compact the sand bedding
 - force sand up into the joint
3. Repeat Step 2 if pavers are not yet level and flat.
4. Using a **DRY** medium or coarse washed sand for the joints, spread a thin layer of the jointing sand over the surface. Use a stiff bristle street broom and sweep back and forth over the entire pavement until sand has stopped filling into joints.
5. Now, alternating between compacting and sweeping, continue to work the material into the joint. If when you make a pass with the plate compactor and no more joints open up, you are then finished.
6. Sweep off all excess sand and backfill edges with top soil and sod or seed. (Be sure to water freshly seeded or sodded areas regularly.)

Congratulations!

You have now installed a high quality pavement for your patio or walkway. Yours to enjoy for a long time to come. See icpi.org for maintenance.

TYPICAL CROSS SECTION OF TRADITIONAL INTERLOCKING CONCRETE PAVEMENTS (ICP)



A proper base is required and is essential no matter what type of pavement you are building. The only thing different with interlocking concrete paving stones is that you need an edge restraint and one-inch setting bed to place the pavers on, then you compact the pavers into the sand, which creates the initial "lock" of the system.

After initial compaction inspect for any broken pavers, replace and put sand on top of the pavers and continue compacting and sweeping until the sand is worked into the joints.

BASE/SAND GUIDE

ITEM	CODE
Class 2 Granite Base	5MB00
Granite Sand	5MC10
Washed Sand - C33	5MC00

How to Figure Sand & Base Needed

1. Convert all measurements to feet.

1" = .0833' 2" = .1666' 3" = .25' 4" = .3333' 5" = .4166' 6" = .50'
 7" = .5833' 8" = .6666' 9" = .75' 10" = .8333' 11" = .9166' 12" = 1'

2. Length x Width x Depth = Cubic Feet

3. Cubic feet divided by 27 = Cubic Yards needed for project.

EXAMPLE Base and sand for a 20' x 20' area with a 6" base and 1" of sand cushion is as follows:


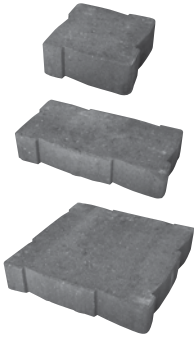
6" Base: 20 x 20 x .50 = 200 cubic feet / 200 divided by 27 = 7.40 yards base material needed.

1" Sand: 20 x 20 x .0833 = 33.33 cubic feet / 33.33 divided by 27 = 1.23 yards of sand needed.

PERMEABLE PAVEMENT SYSTEMS



DRENA™ PERMEABLE PAVEMENTS

STYLE		CODE	DIMENSIONS	CUBES
DrenaPave™ 80mm Thickness		4FP	125mm x 250mm x 80mm Approximate 5" x 10" x 3 1/8" (PSF = 2.96 stones @ 35.5#) (MINIMUM STOCK Item - LEAD TIME REQUIRED) <i>- AVAILABLE FOR MACHINE LAY</i> <i>- NOT SOLD BY THE BAND</i>	81 SF 2876# (240 pcs)
DrenaMontage™ 60mm Thickness 6" x 6" - 48 pcs 6" x 12" - 96 pcs 12" x 12" - 36 pcs		4FPM	Package includes: 3 sizes mixed: Small Square - 150mm x 150mm x 60mm Approximate 5 7/8" x 5 7/8" x 2 3/8" Large Rectangle - 150mm x 300mm x 60mm Approximate 5 7/8" x 11 7/8" x 2 3/8" Large Square - 300mm x 300mm x 60mm Approximate 11 7/8" x 11 7/8" x 2 3/8" <i>- NOT SOLD BY THE BAND</i>	92.04 SF 2557# (15.34 SF per layer)

Permeable pavement is a stormwater management system that requires engineering. See page 25 for the cross section drawing. For additional permeable options, see Non-Stock Permeable Products on page 55.

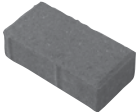
Drena™ Stock Colors

For best blend results, always select from multiple cubes.

STOCK COLORS	CODE	STOCK COLORS	CODE
Minnesota River	18	Sterling Gray	05



BORDER CHOICE FOR 8CM PRODUCTS

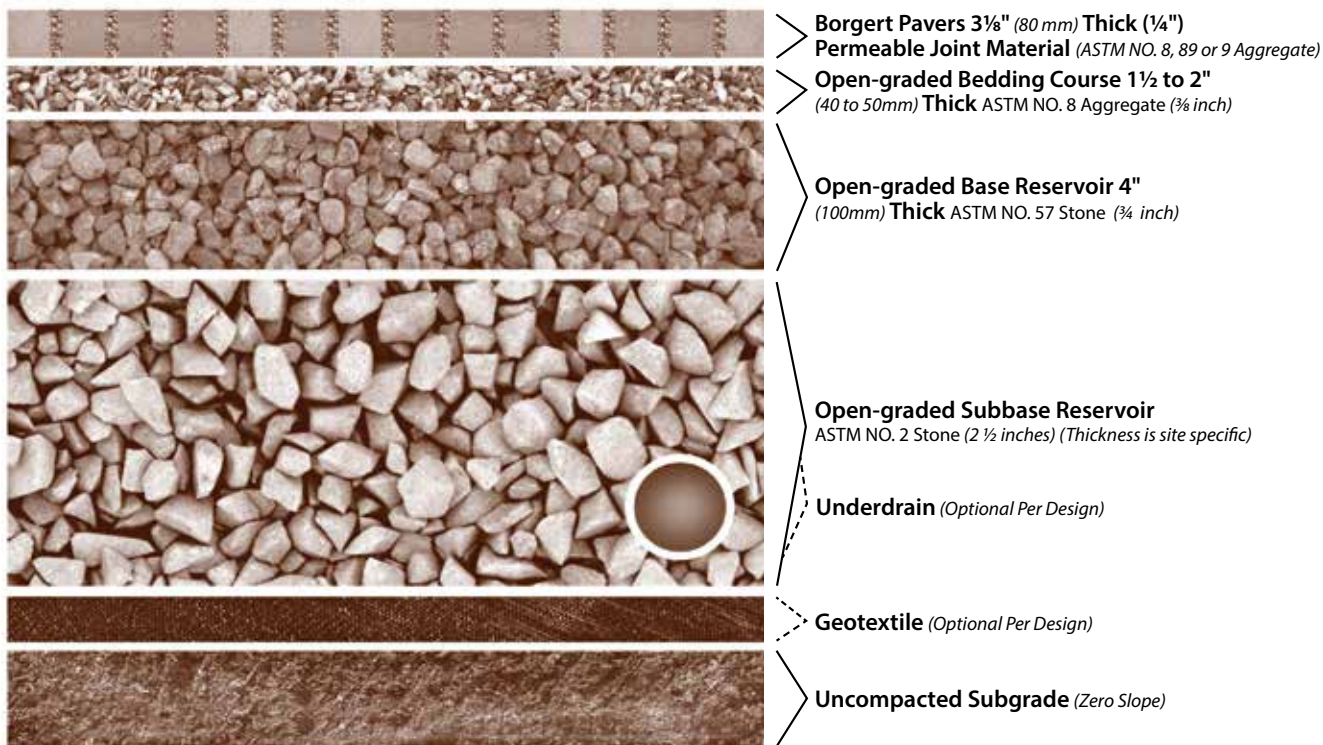
STYLE		CODE	DIMENSIONS	CUBES
Holland Stone™ 80mm		4HE	100mm x 200mm x 80mm Approximate 3 7/8" x 7 7/8" x 3 1/8" (PSF = 4.5 stones @ 35.5#) For bordering with permeable DrenaPave™ (MINIMUM STOCK Item - LEAD TIME REQUIRED) <i>- NOT SOLD BY THE BAND</i>	64 SF 2272# (288 pcs)

Holland Stone™ Stock Colors

STOCK COLORS	CODE
Charcoal	08



PERMEABLE CROSS SECTION (PICP)



To be designed by a Professional Engineer according to state DOT specifications

PICP IS SITE SPECIFIC - CONSULT AN ENGINEER

Borgert PICP Maintenance Recommendations

- Borgert’s Permeable Interlocking Concrete Pavement (PICP) System is a stormwater management technique to prevent harmful runoff from entering waterways. The system is considered 100% permeable and can be designed to capture a certain design storm’s precipitation and infiltrate the water back into the ground or exfiltrate out through a pipe.
- The system traps a high amount of pollutants and debris in the joints, preventing it from entering waterways or drinking water supplies. This does lead to the need to maintain the system.
- This document provides an overview of maintenance techniques and guidelines depending on the type of project.
- Lack of maintenance will cause product failure and voids any warranties.

Considerations

Tolerance: A conservative initial infiltration rate of the system is 300 inches/hour. Slight clogging of the system can still allow infiltration rates to accommodate the design storm.

Contributing Areas: If there is a high ratio of run-on to surface area of the system, greater and more frequent maintenance will be required.

Slope: If the system itself is sloped, the area must be large enough to capture the design storm on the system without running off. Current estimates from research indicate a slope less than 10% will not impact the infiltration rate.

Ice: If the goal is to eliminate the formation of ice, the snow needs to be removed promptly and the systems must remain unclogged.

Preventative Maintenance

Joint Material: Keep the joints filled with the proper material, check and refill every 6 months. The fill should reach the top of the chamfer.

Proper Installation: Use techniques and materials according to Borgert's specifications; keep the site clean and unclogged during installation.

Surrounding Vegetation and Planting: Ensure that the adjacent landscaping is strong, prevents erosion of soils onto the pavers, and does not contribute to clogging from falling leaves or fruits. Promptly remove grass clippings.

Awareness: Ensure anyone working near the site is aware of the system and does not place landscaping materials on the system or close enough to cause future runoff and no snow is piled throughout the winter. Do not allow sanding during the winter.

Lack of maintenance will cause the system to clog, defeating the purpose of using permeable pavement. Clogging will also cause deterioration of the paver as it will sit in a constant state of saturation.

Winter Maintenance

Snow Removal: Shovel or plow as immediately as possible following a snowfall. Do not pile on permeable surface.

Salt/Deicing Chemicals: Do not use sand. The best option is to use the joint material for grit.

Salt: When the system is clean and snow is removed promptly, far less salt/deicing chemicals should be used. Use proper judgement to gauge the amount of ice. There will most likely be little ice accumulation on the surface.

Evidence Of Clogging

- Standing water during or directly following a minor storm event
- Visible debris in the joints
- Water running off or pooling in large areas
- Weed growth

Tools

Preventative

- Leaf blower
- Hard bristle broom

Small Scale

- Shop vacuum
- Small scale street vacuum

Large Scale

- Regenerative Air Vacuum: Will remove the top ½" of debris and joint material, new joint material must be swept back into the joints. This is a restorative technique that will return the system to near its initial infiltration capacity.
- Street Sweeper: Will remove loose debris on the pavers or on the top layer of the joints. This will not remove embedded debris and should be performed more frequently to avoid the need for more restorative tactics.

Maintenance Plan

- Inspect the area directly following a rain event to check for standing water (after a major event & at least 3 times a year)
- Use small-scale techniques to address small areas of clogging
- Maintain the correct level of joint material
- General preventative maintenance to reduce the need for major restorative techniques
- Regenerative Air Vacuum: when major clogging occurs. Recommended 1 - 2 times a year for commercial applications and once every 1-5 years for residential applications, vacuuming frequency depends on usage.

WALLS

STRASSEN® WALL – TUMBLLED

STYLE		CODE	DIMENSIONS	BANDS	CUBES
Strassen® Wall Pallet "A" 4"H x 12"L x 8"D		8SW	200mm x 300mm x 100mm 4" x 11¾" x 7⅞" To figure quantity: Sq.Ft. of wall ÷ .33 = number of units needed.	N/A	2825# (96 pcs)
Strassen® Wall Pallet "B"* 4"H x 8"L x 8"D		8SWB	100mm x 200mm x 200mm 4" x 7⅞" x 7⅞" To figure quantity: Sq.Ft. of wall ÷ .22 = number of units needed.	N/A	1800# (96 pcs)
Strassen® Wall Pallet "C"* 4"H x 4"L x 8"D		8SWC	100mm x 100mm x 200mm 4" x 4" x 7⅞" To figure quantity: Sq.Ft. of wall ÷ .11 = number of units needed.	N/A	1342# (144 pcs)
Strassen® Wall Trapezoid 4"H x 8"D		8ST	Wide end = 7.75" Narrow end = 5.5"	N/A	1010# (63 pcs)
Strassen® Wall Precast Cap 2½"H x 30"L x 11"W		5SPC	SEE PAGE 53	N/A	1785# (21 pcs)
Strassen® Precast Fire Kit Cap		5SPF	SEE PAGE 53 (4 units per trapezoid fire ring)	N/A	640# (8 pcs)

All sizes are provided on separate pallets. *Strassen Wall B & C are minimal stock items.

Strassen® Wall Stock Colors

For best blend results, always select from multiple cubes.

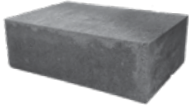
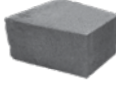
STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
Charcoal (Pallet A & trapezoid only)	08	Iron Range	45	Minnesota River	18
North Shore	40	Sterling Gray	05		

For Strassen
Wall design
details see
page 29



See page 53 for precast cap options.

STRASSEN® WALL II - NON-TUMBLLED

STYLE		CODE	DIMENSIONS	BANDS	CUBES
Strassen® Wall II Pallet "A" 4"H x 12"L x 8"D		8USW	200mm x 300mm x 100mm Approximate 4" x 11¾" x 7⅞" To figure quantity: Sq.Ft. of wall ÷ .33 = number of units needed.	N/A	2589# (88 pcs)
Strassen® Wall II Trapezoid 4"H x 8"D		8UST	Wide end = 7.75" Narrow end = 5.5"	N/A	945# (63 pcs)

All sizes are provided on separate pallets.

Strassen® Wall II Stock Colors

For best blend results, always select from multiple cubes.

STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
Charcoal	08	Minnesota River	18	Sterling Gray	05

*For precast
cap options, see
page 53*

WALL DETAILS - STRASSEN® WALL & STRASSEN® WALL II

NUMBER OF STRASSEN WALL NEEDED – USING 8" SIDE

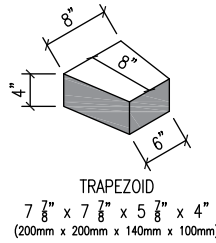
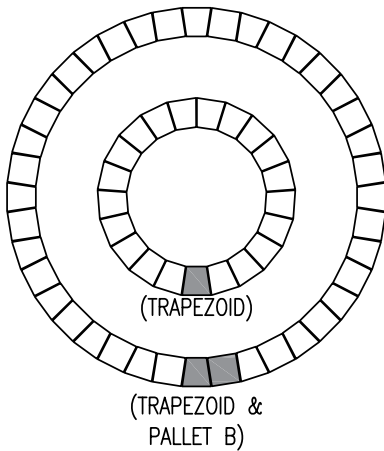
WALL HEIGHT	NO. OF COURSES	WALL LENGTH MEASURED IN FEET					
		5 ft.	10 ft.	20 ft.	30 ft.	40 ft.	50 ft.
4 in.	1	7.5 pcs.	15 pcs.	30 pcs.	45 pcs.	60 pcs.	75 pcs.
8 in.	2	15 pcs.	30 pcs.	60 pcs.	90 pcs.	120 pcs.	150 pcs.
12 in.	3	22.5 pcs.	45 pcs.	90 pcs.	135 pcs.	180 pcs.	225 pcs.
16 in.	4	30 pcs.	60 pcs.	120 pcs.	180 pcs.	240 pcs.	300 pcs.

NUMBER OF STRASSEN WALL NEEDED – USING 12" SIDE

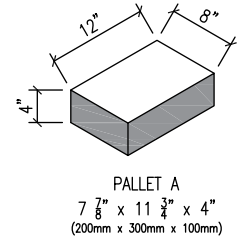
WALL HEIGHT	NO. OF COURSES	WALL LENGTH MEASURED IN FEET					
		5 ft.	10 ft.	20 ft.	30 ft.	40 ft.	50 ft.
4 in.	1	5 pcs.	10 pcs.	20 pcs.	30 pcs.	40 pcs.	50 pcs.
8 in.	2	10 pcs.	20 pcs.	40 pcs.	60 pcs.	80 pcs.	100 pcs.
12 in.	3	15 pcs.	30 pcs.	60 pcs.	90 pcs.	120 pcs.	150 pcs.
16 in.	4	20 pcs.	40 pcs.	80 pcs.	120 pcs.	160 pcs.	200 pcs.



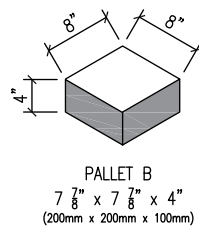
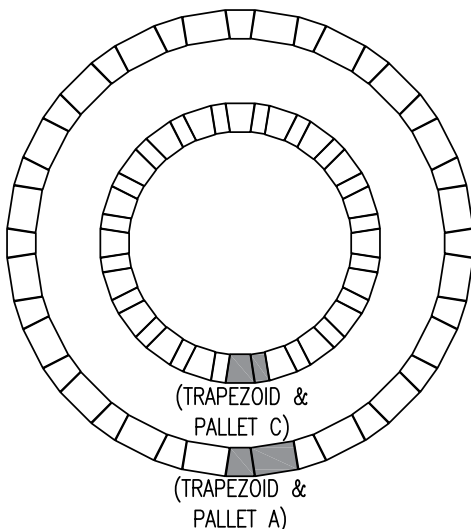
Trapezoid Details



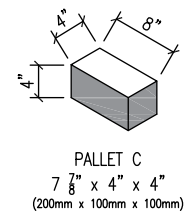
(TRAPEZOID) 1 piece
Strassen Trapezoid Units – 21
Radius: inside 1'-7" / outside 2'-3"
Diameter: inside 3'-2" / outside 4'-6"



(TRAPEZOID & PALLET A) 2 piece
Strassen Trapezoid Units – 20
Strassen Wall Units – 20
Radius: inside 4'-8" / outside 5'-4"
Diameter: inside 9'-4" / outside 10'-8"
Laying Ratio: 1:1

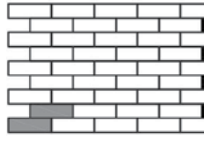


(TRAPEZOID & PALLET B) 2 piece
Strassen Trapezoid Units – 20
Strassen Wall Units – 20
Radius: inside 3'-8" / outside 4'-4"
Diameter: inside 7'-4" / outside 8'-8"
Laying Ratio: 1:1

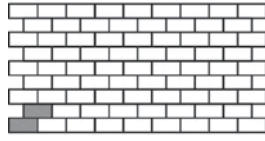


(TRAPEZOID & PALLET C) 2 piece
Strassen Trapezoid Units – 20
Strassen Wall Units – 20
Radius: inside 2'-6 1/2" / outside 3'-2 1/2"
Diameter: inside 5'-1" / outside 6'-5"
Laying Ratio: 1:1

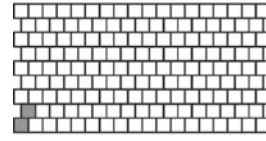
Strassen® Wall Patterns



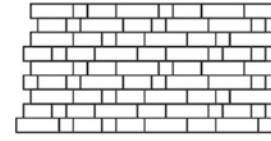
Pallet "A"
4"H x 12"L x 8"D - 100%



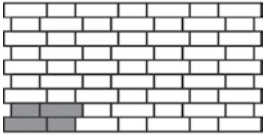
Pallet "B"
4"H x 8"L x 8"D - 100%



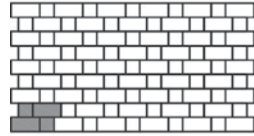
Pallet "C"
4"H x 4"L x 8"D
- 100%



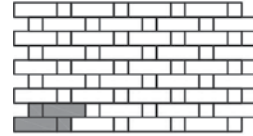
Random
Pallet "A,B & C"
4"H x 12"L x 8"D - 50%
4"H x 8"L x 8"D - 33%
4"H x 4"L x 8"D - 17%
Laying Ratio: 1:1:1



Pallet "A & B"
4"H x 12"L x 8"D - 60%
Pallet "B"
4"H x 8"L x 8"D - 40%
Laying Ratio: 1:1



Pallet "B & C"
4"H x 8"L x 8"D - 67%
Pallet "C"
4"H x 4"L x 8"D - 33%
Laying Ratio: 1:1



Pallet "A & C"
4"H x 12"L x 8"D - 75%
Pallet "C"
4"H x 4"L x 8"D - 25%
Laying Ratio: 1:1

*For pattern purposes only,
height is not implied.*

Strassen® Column Details

APPROXIMATE COLUMN HEIGHT	NUMBER OF COLUMNS (20" x 20")				
	1	2	3	4	5
2 courses 8 in.	8	16	24	32	40
3 courses 12 in.	12	24	36	48	60
4 courses 16 in.	16	32	48	64	80
5 courses 20 in.	20	40	60	80	100
6 courses 24 in.	24	48	72	96	120
7 courses 28 in.	28	56	84	112	140
8 courses 32 in.	32	64	96	128	160

Adhesive is used to secure corners and top row units.

A 12" solid wall, random pattern = 24 square foot face per cube
An 8" deep wall, running bond = 32 square foot face per cube

Column Details:

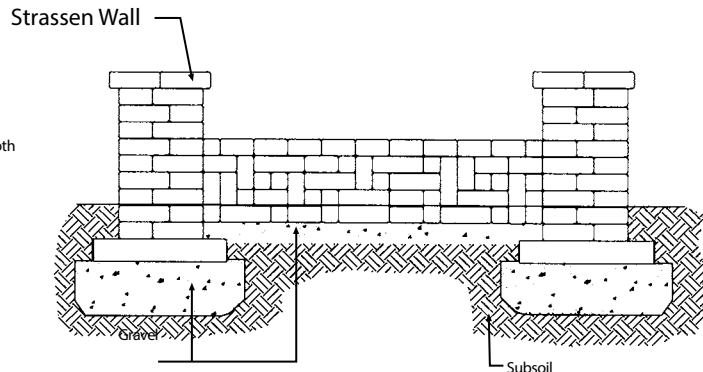
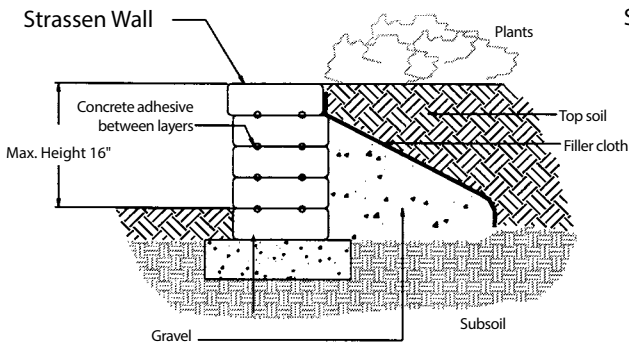
Dimension of column = 20" x 20"

Strassen Wall units per foot = 12

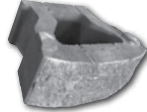
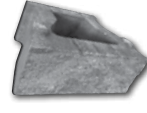
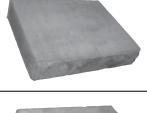
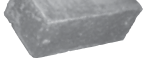
Strassen Wall for Caps = 6 units (24" x 24").

Maximum column height not to exceed 32".

Strassen® Wall Cross Sections



PANOMUR® WALL

ITEM		CODE	DIMENSIONS	WEIGHT PER UNIT	UNITS PER PALLET	WEIGHT PER PALLET
PanoMur® Wall 6" Curved Split Face		8PW	6"H x 16"W x 12"D	49#	45	2205#
PanoMur® Wall 6" Straight Split Face		8PWS	6"H x 16"W x 12"D	49#	45	2205#
PanoMur® Caps - Split		8PC	3"H x 16"W x 12"D	47#	60	2850#
PanoMur® Corner Units		8PQ	6"H x 16"W x 8"D	60#	36	2160#

Core fill with crushed aggregate. To figure quantity: Sq.Ft. of wall ÷ .67 = number of units needed.

All sizes are provided on separate pallets. See pages 37, 40-41 for more retaining wall information and basic grid charts. Engineering form available on pages 38-39.

PanoMur® Wall & Split Cap Stock Colors

For best blend results, always select from multiple cubes.

STOCK COLORS	CODE	STOCK COLORS	CODE
Minnesota River	18	Sterling Gray	05

PanoMur® Wall Smallest Circle Dimensions



Standard PanoMur® Full Unit Circle

15 Units Total

Diameter

6½ ft outside diameter

4½ ft inside diameter

Radius

3¼ ft outside radius

2¼ ft inside radius

These measurements are nominal



PanoMur® Unit Circle with Handhelds Removed

12 Units Total

Diameter

5½ ft outside diameter

3½ ft inside diameter

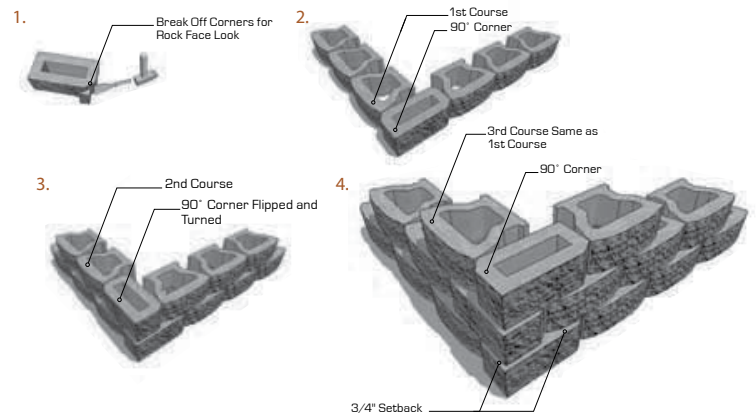
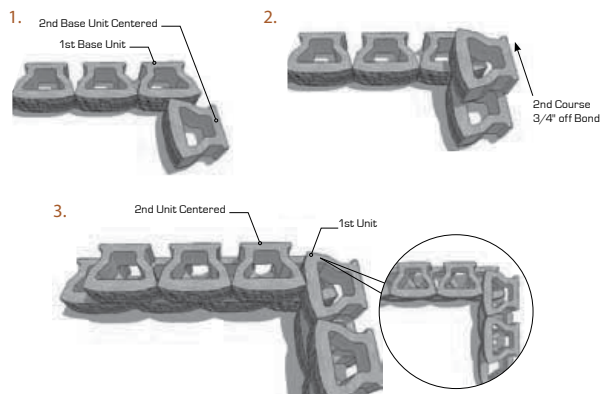
Radius

2¾ ft outside radius





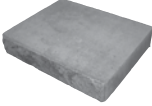
1¾ ft inside radius

These measurements are nominal

PanoMur® Inside & Outside Corner Details



MADERA WALL (AGED)

ITEM		CODE	DIMENSIONS	WEIGHT PER UNIT	UNITS PER PALLET	PER PALLET	PIECES PER LAYER
Pallet "A"		8MWA	Piece #1 - 6"H x 8"W x 12"D Piece #2 - 6"H x 12"W x 12"D Piece #3 - 6"H x 16"W x 12"D	32# 55# 78#	12 12 12	15 SF (30 LinFt) 2160#	3 Layers (12 pcs)
Pallet "B"		8MWB	Piece #5 - 6"H x 24"W x 12"D Piece #6 - 6"H x 28"W x 12"D	124# 147#	9 9	18 SF (36 LinFt) 2520#	3 Layers (6 pcs)
Pallet "D" - 3" High		8MWD	Piece #1 - 3"H x 8"W x 12"D Piece #2 - 3"H x 12"W x 12"D Piece #3 - 3"H x 16"W x 12"D	16# 27.5# 39#	24 24 24	15 SF (60 LinFt) 2160#	6 Layers (12 pcs)
Madera Column Unit		8MC	6"H x 8"W x 12"D	47#	54	2538#	
Madera Split Cap		8CMC	3"H x 14"W x 15"D	50#	36	1800#	

All sizes are provided on separate pallets. See pages 37, 40-41 for more retaining wall information and basic grid charts. Engineering form available on pages 38-39.

Madera Wall & Split Cap Stock Colors

For best blend results, always select from multiple cubes.

STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
North Shore	40	Sterling Gray	05	Minnesota River	18
Iron Range	45				

Madera is for freestanding and/or gravity walls.





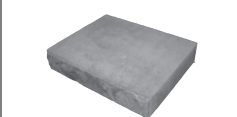
Madera Columns

Columns = 4 column units per layer

Average Column = 36" high or 6 layers

Each pallet has enough units to build 2 columns at 36" high.

MORTEZA WALL (NON-AGED)

ITEM		CODE	DIMENSIONS	WEIGHT PER UNIT	UNITS PER PALLET	PER PALLET	PIECES PER LAYER
Pallet "A"		8UMWA	Piece #1 - 6"H x 8"W x 12"D Piece #2 - 6"H x 12"W x 12"D Piece #3 - 6"H x 16"W x 12"D	32# 55# 78#	12 12 12	15 SF (30 LinFt) 2160#	3 Layers (12 pcs)
Pallet "B"		8UMWB	Piece #5 - 6"H x 24"W x 12"D Piece #6 - 6"H x 28"W x 12"D	124# 147#	9 9	18 SF (36 LinFt) 2520#	3 Layers (6 pcs)
Pallet "D" - 3" High		8UMWD	Piece #1 - 3"H x 8"W x 12"D Piece #2 - 3"H x 12"W x 12"D Piece #3 - 3"H x 16"W x 12"D	16# 27.5# 39#	24 24 24	15 SF (60 LinFt) 2160#	6 Layers (12 pcs)
Morteza Column Unit		8UMC	6"H x 8"W x 12"D	47#	54	2538#	
Morteza Split Cap		8UCMC	3"H x 14"W x 15"D	50#	36	1800#	

All sizes are provided on separate pallets. See pages 37, 40-41 for more retaining wall information and basic grid charts. Engineering form available on pages 38-39.

Morteza Wall & Split Cap Stock Colors

For best blend results, always select from multiple cubes.

STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
Charcoal <i>(Cap only)</i>	08	Iron Range	45	Minnesota River	18
North Shore	40	Sterling Gray	05		

NOTE: Morteza is for freestanding and/or gravity walls.

Morteza Columns

Columns = 4 column units per layer

Average Column = 36" high or 6 layers

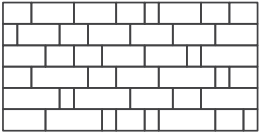
Each pallet has enough units to build 2 columns at 36" high.



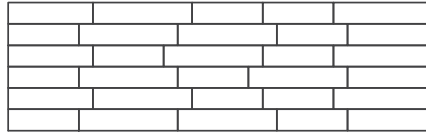
MADERA & MORTEZA WALL

Madera & Morteza Wall Patterns

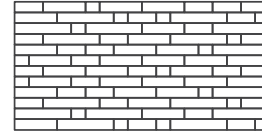
Patterns are not to scale and are for visual idea representation only.



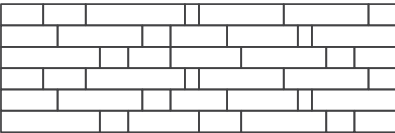
(A)
Pallet "A"
Piece #1 - 6"H x 8"L x 12"D
Piece #2 - 6"H x 12"L x 12"D
Piece #3 - 6"H x 16"L x 12"D
Laying Ratio: 1:1:1



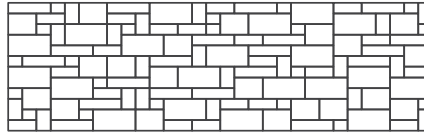
(B)
Pallet "B"
Piece #5 - 6"H x 24"L x 12"D
Piece #6 - 6"H x 28"L x 12"D
Laying Ratio: 1:1



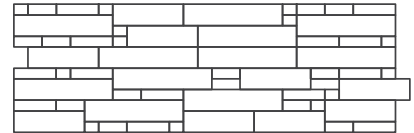
(D)
Pallet "D"
Piece #1 - 3"H x 8"L x 12"D
Piece #2 - 3"H x 12"L x 12"D
Piece #3 - 3"H x 16"L x 12"D
Laying Ratio: 1:1:1



(F)
Pallet "A & B"
Piece #1 - 6"H x 8"L x 12"D
Piece #2 - 6"H x 12"L x 12"D
Piece #3 - 6"H x 16"L x 12"D
Piece #5 - 6"H x 24"L x 12"D
Piece #6 - 6"H x 28"L x 12"D
Laying Ratio: 1:1:1:1:1



(I)
Pallet "A & D"
Piece #1 - 6"H x 8"L x 12"D
Piece #2 - 6"H x 12"L x 12"D
Piece #3 - 6"H x 16"L x 12"D
Piece #1 - 3"H x 8"L x 12"D
Piece #2 - 3"H x 12"L x 12"D
Piece #3 - 3"H x 16"L x 12"D
Laying Ratio: 1:1:1:1:1:1



(J)
Pallet "B & D"
Piece #1 - 3"H x 8"L x 12"D
Piece #2 - 3"H x 12"L x 12"D
Piece #3 - 3"H x 16"L x 12"D
Piece #5 - 6"H x 24"L x 12"D
Piece #6 - 6"H x 28"L x 12"D
Laying Ratio: 1:1:1:1:1



*Maximum freestanding
wall height not
to exceed 24"*

MADERA & MORTEZA WALL

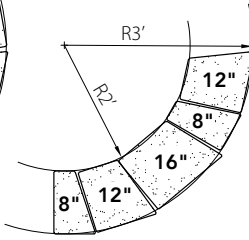
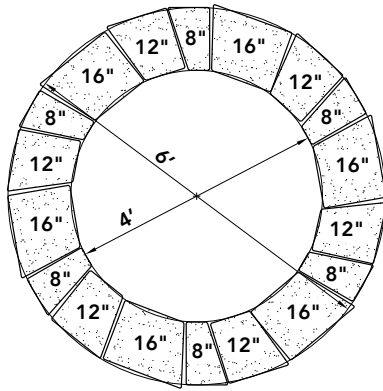


*For the radii using only one size, not all pieces in the pallet will be used.
Extra pieces cannot be returned for credit.*

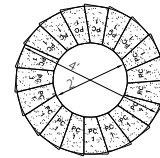
Circles & Radius with Pallet "A" Pieces

Inner diameter = 4'
Outer diameter = 6'

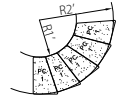
- Pc 1:
6 pcs
- Pc 2:
6 pcs
- Pc 3:
6 pcs



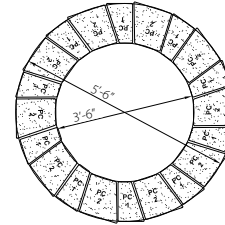
- Pc 1:
19 pcs



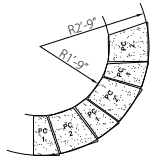
Inner diameter = 2'
Outer diameter = 4'



- Pc 1:
10 pcs
- Pc 2:
10 pcs

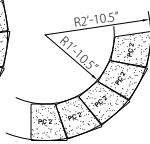
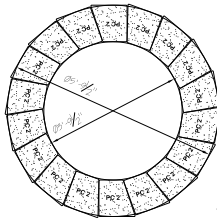


Inner diameter = 3'6"
Outer diameter = 5'6"

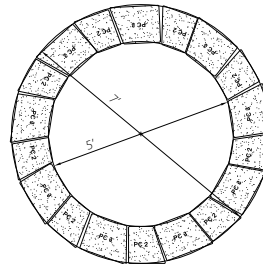


Inner diameter = 4'
Outer diameter = 6'

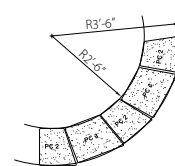
- Pc 2:
18 pcs



- Pc 2:
9 pcs
- Pc 3:
9 pcs

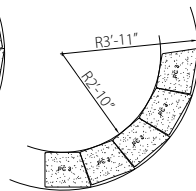
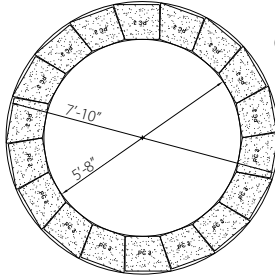


Inner diameter = 5'
Outer diameter = 7'



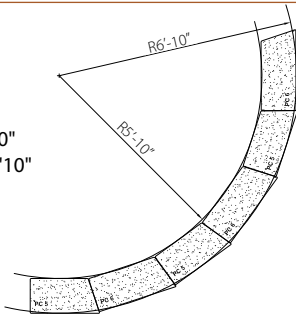
Inner diameter = 5'8"
Outer diameter = 7'10"

- Pc 3:
18 pcs



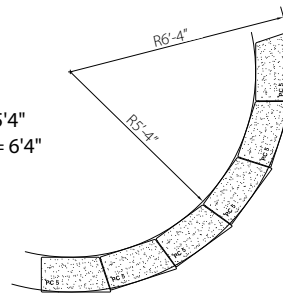
Inside radius = 5'10"
Outside radius = 6'10"

- Pc 5
- Pc 6



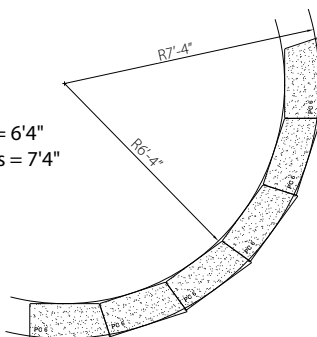
Inside radius = 5'4"
Outside radius = 6'4"

- Pc 5




Inside radius = 6'4"
Outside radius = 7'4"

- Pc 6



STEP UNIT

ITEM		CODE	DIMENSIONS	WEIGHT PER UNIT	UNITS PER PALLET	WEIGHT PER PALLET
Step Unit		8SU	6"H x 18"D x 48"W	425#	6	2550#

Step Unit Stock Colors

For best blend results, always select from multiple cubes.

STOCK COLORS	CODE	STOCK COLORS	CODE	STOCK COLORS	CODE
Buff	33	Charcoal	08	Iron Range	45
Minnesota River	18	North Shore	40	Sterling Gray	05



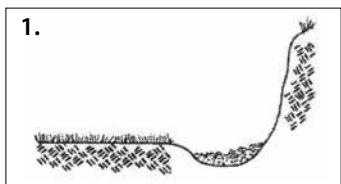
To prevent breakage of step unit use care when handling.

Due to the nature of the large scale of this product, shims may be needed to prevent breakage when they are placed.

RETAINING WALL INSTALLATION GUIDE

INSTALLATION GUIDE FOR PANOMUR® RETAINING WALLS

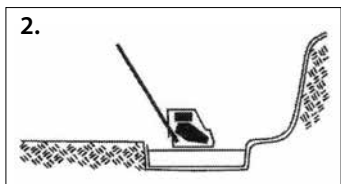
See SRW's "Standard Engineering and How-To-Guide" for more information.



1.

1. Excavate

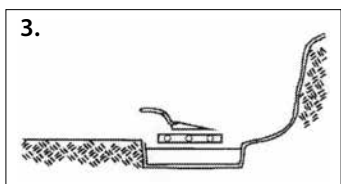
Dig a base trench 24" inches to 36" inches wide and a minimum of 12" inches deep. Remove all vegetation and unsuitable organic soils (Do not use these for structural backfill). Compact soil base properly.



2.

2. Prepare Leveling Pad

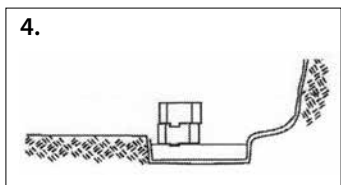
Fill trench with 6" inches of well graded gravel and compact firmly with vibrating compaction equipment.



3.

3. Level the Base

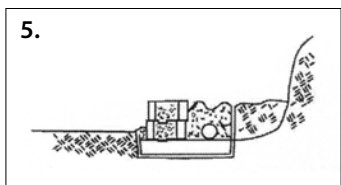
Level the gravel base from front to back and side to side. This procedure will ensure a straight and stable wall.



4.

4. Lay your First Course

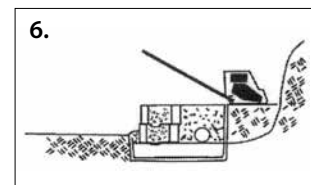
Use a string line to align your first row of units. For smooth curves, use a flexpipe as your guide. Place each unit edge to edge, lining up the back of the units.



5.

5. Build your Wall

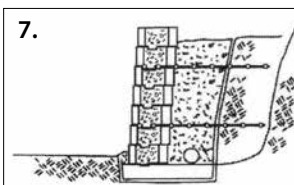
Sweep the top of each course of units to clear debris. Half-stagger the next course so each unit is centered on two units below. Pull each unit forward to lock connecting lugs in place.



6.

6. Install Backfill

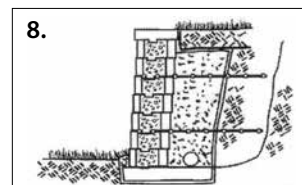
Place perforated drainage pipe behind the base of your wall. Add 12" inches of free-draining gravel behind the wall. Fill the hollow core of the units with same materials. Place the backfill materials in layers of no more than 12" inches deep. Compact each layer well, making sure to keep your compaction equipment 12" inches away from the back of your wall.



7.

7. Reinforce Wall

Place the geosynthetics on top and as close to the front of the units as possible. Lock the next course of units into place. Gently tension the geosynthetics toward the back of the compacted backfill. Repeat the backfilling steps. Always work from the back of the wall toward the end of the reinforced zone.



8.

8. Cap your Wall

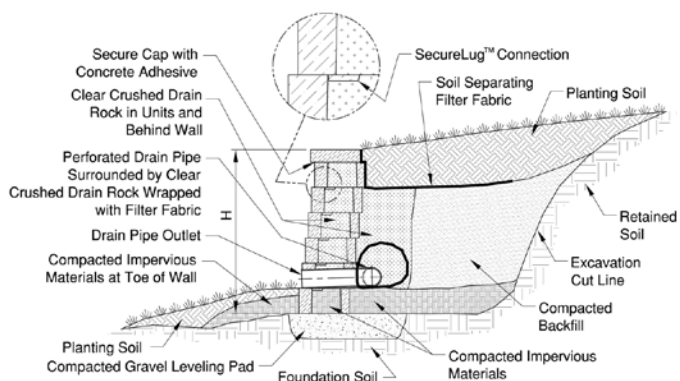
Sweep off the top course of units. Secure caps to the top of the wall using an approved concrete adhesive. Use a level piece of string to properly align the capping. Place filter soil separation fabric on top of the backfill and drainage materials as well as the back side of the wall. Cover with top soil.



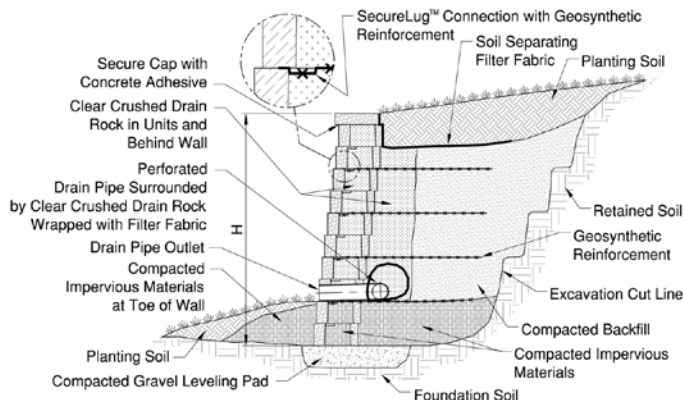
Please note: A qualified engineer should be consulted on PanoMur walls exceeding 3' feet (or 6 courses) in height.

Retaining Wall Cross Sections

Typical Gravity Cross Section



Typical Geo-Reinforced Cross Section



Need help figuring your project? Visit BorgertProducts.com to use our Stone Calculator.

ENGINEERING REQUEST FORM

FOR RETAINING WALLS UP TO 8' EXPOSED HEIGHT

Please fill out all items on this form.

Project Name: _____

Contractor/Installer: _____

Property Owner: _____

Property Address: _____

Property Address: _____

City: _____ State: _____ ZIP: _____

City: _____ State: _____ ZIP: _____

Phone: _____ Fax: _____

Phone: _____ Fax: _____

Email: _____

Email: _____

WALL INFORMATION

Block Being Used: _____

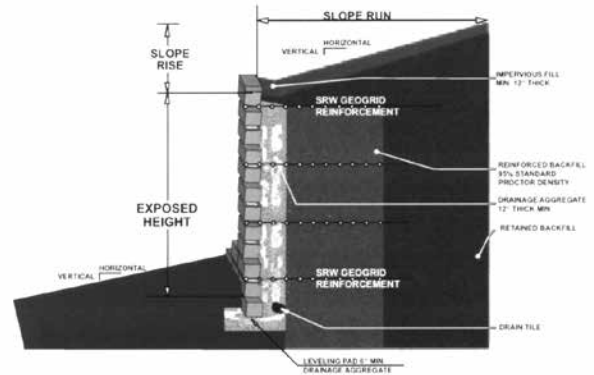
Maximum exposed wall height (ft): _____

Is your retaining wall project multi-tiered or terraced (Multi-tiered walls are not presently included in this standard engineering program)? Yes No

Are grading plans available that show wall placement, elevations, lineal footage with grade lines and/or wall face profiles? Yes No

- If YES, include the plans with this request form.
- If NO, sketches of a plan view and/or the wall face profile(s) must be provided with this engineering request (See graph sheets and instructions provided for sketching of retaining walls)

Photos of the proposed retaining wall site must be provided with this engineering request. (See "Photograph Instructions")



SURCHARGE LOAD INFORMATION

Indicate type of load at the top of the wall.

- Lawn or grassy
- Light auto parking/Drive
- Heavy truck parking/Highway

Is there any other loading within 2 times the height of the retaining wall? Yes No

- Indicate what type of loading it is _____
- Indicate load distance from top of wall _____ (measured in feet from the face of the retaining wall)

SLOPE INFORMATION

(See "Slope Angle Determination Instructions")

Top of wall

Is there a slope at the top of the wall (see diagram)?

Yes No

- If YES, indicate the angle of slope (example, 2 horizontal to 1 vertical)
Horizontal _____ **to Vertical** _____
- Is the slope rise (elevation change from top of wall to top of slope) the same as or greater than 2 times the height of the wall (see diagram)? Yes No

Bottom of wall

Is there a slope at the bottom/front of the wall (see diagram)?

Yes No

- If YES, indicate the angle of slope (example, 2 horizontal to 1 vertical)
Horizontal _____ **to Vertical** _____

SOILS INFORMATION

Is there a soils report available? Yes No

- If yes, include soils report with this request form.
- If no, include soil sample as outlined in soil sampling instructions.

Leveling pad shall consist of well graded sand & gravel, gravel, or drainage aggregate.

WATER INFORMATION

Is internal or external water involved? (External water would include run-off at the top of wall and/or a pond, lake or stream at the bottom of wall. Internal water could be seepage out of the retained soil.) Yes No

- If yes, indicate how water is involved.

OTHER

Is there a steel, wood, or PVC fence at top of wall?

Yes No

Are there utilities etc. needing to go through the facing or reinforced soil? Yes No

RETURN STAMPED ENGINEERING

To: _____

Property Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Email: _____

ADDITIONAL INFORMATION

Please write below anything additional that you feel the engineer needs to know about the retaining wall.

PRODUCT INFORMATION

What retailer did you (or plan to) purchase the supplies for this project? _____

What company manufactured the block unit you are using for this project? _____

PAYMENT INFORMATION

Account Number: _____ - _____ - _____ - _____ Exp. Date: _____ / _____ Business Personal

3-digit Number (on back of card) _____ VISA MASTERCARD OTHER _____

Name On Card: _____

Complete Billing Address: _____

City: _____ State: _____ Zip: _____

Disclaimer

By submitting and signing this form I certify that the information provided herein is accurate and correct. HTS will forward all required information to a licensed and registered engineer in the state of the project. If any site conditions change (e.g. water seepage, soil changes, surcharge changes, or height changes etc.), are encountered, construction of retaining wall must be stopped and Hardscape Technical Services informed of the new conditions before placing ANY retaining wall units. It can then be determined if the stamped designs are appropriate or if changes are required. If faxed or emailed documentation is acceptable for your local building authorities, the turnaround time is estimated to be no longer than five working days from the day that Hardscape Technical Services receives all the required information, including payment. **HOWEVER**, if raised embossed stamping is required by your local building authorities, add the necessary time to return the stamped engineering by means other than electronic.

Information Supplied by (please print): _____

Signature (required): _____ Date (required): _____



Hardscape Technical Services (HTS), PO Box 369, Princeton, MN 55371
866-582-0894, hts@hardscapetech.com

GEOGRID PLACEMENT TABLES

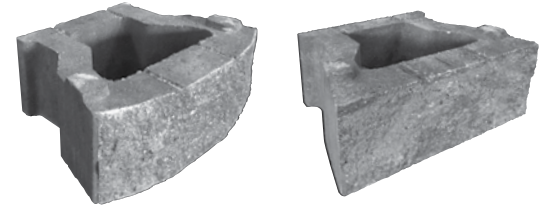
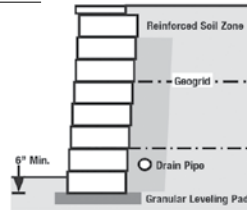
FOR WALLS UP TO 8' USING PANOMUR® BLOCK & SRW 3 SERIES GEOGRID

If used without the stamped engineering, the final determination of the suitability of the contemplated use, and its manner of use, are the sole responsibility of the user, and the user expressly releases all parties of any and all liability that might arise as a result. These designs have been performed with National Concrete Masonry Association (NCMA) software and have been analyzed for the appropriate factors of safety. © 2009 Hardscape Technical Services • Visit www.hardscapetech.com for stamped engineering services and additional design charts.

Grid Specification: SRW 3 Series - 1041 L TDS • Block Dimensions: 6"(H) x 16"(W) x 12"(D) • Covers: 2/3 Sq.Ft.

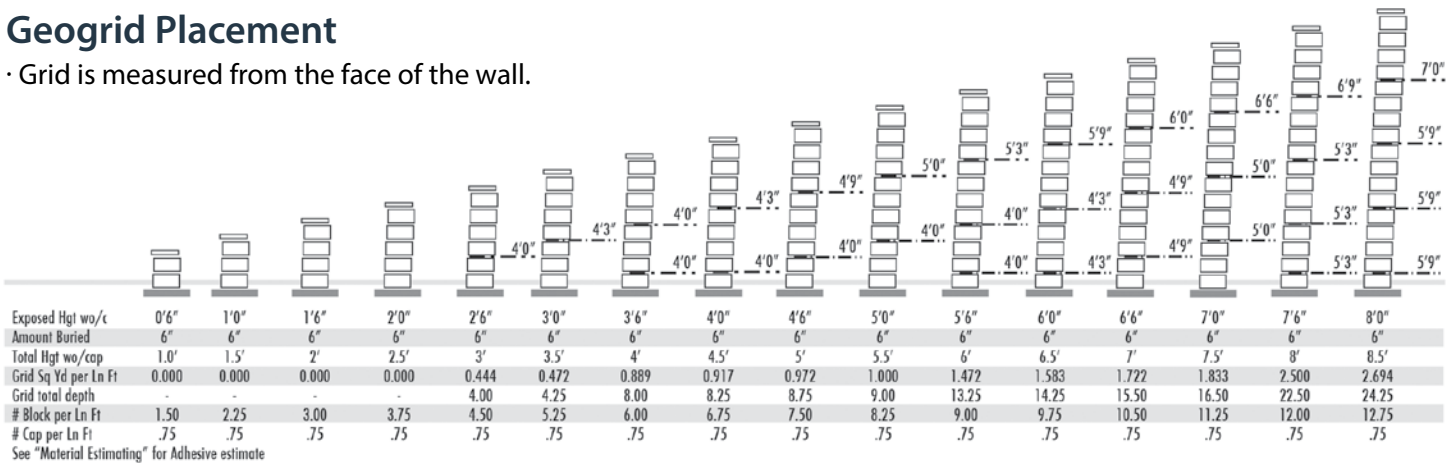
26 Degree Soil

- Flat at Top and Bottom of Wall
- No Surcharge



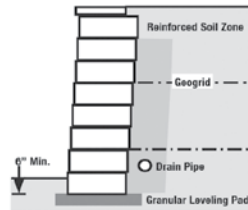
Geogrid Placement

- Grid is measured from the face of the wall.



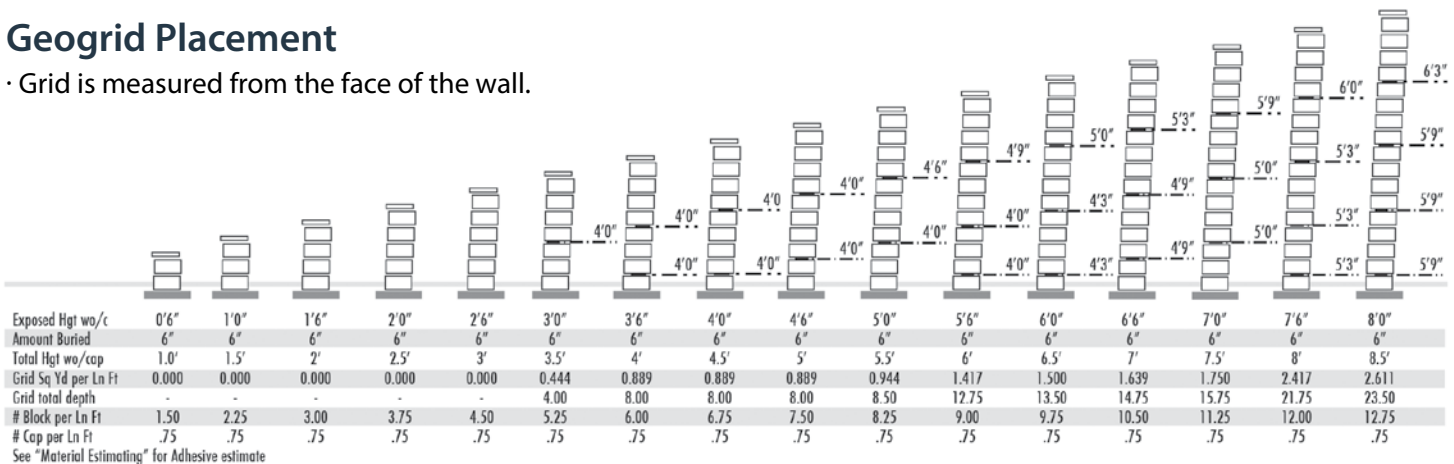
30 Degree Soil

- Flat at Top and Bottom of Wall
- No Surcharge

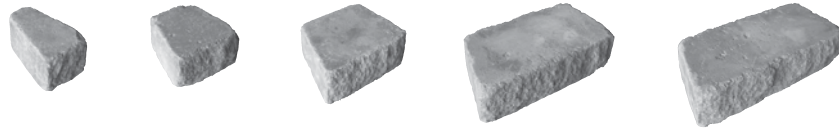


Geogrid Placement

- Grid is measured from the face of the wall.

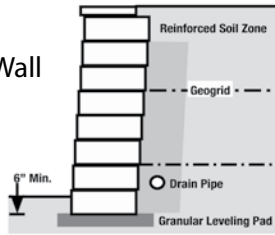


MADERA WALL & MORTEZA WALL



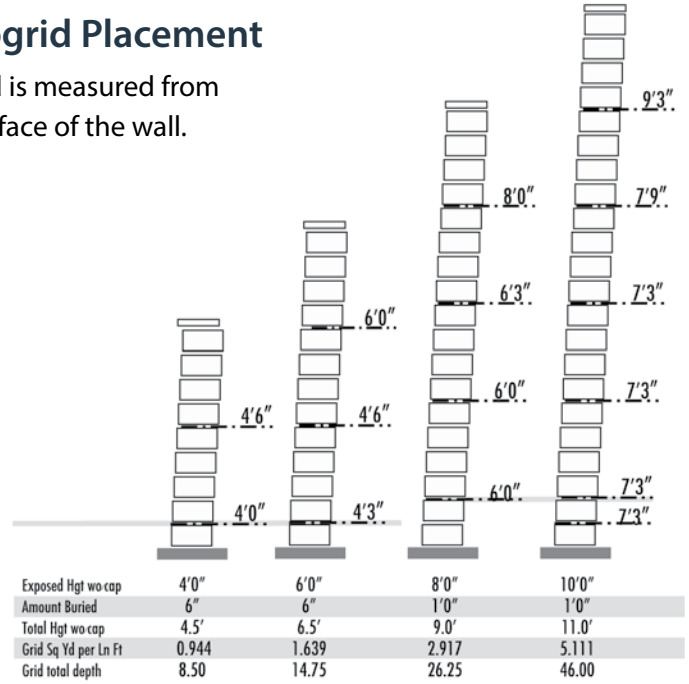
26 Degree Soil

- Flat at Top and Bottom of Wall
- No Surcharge



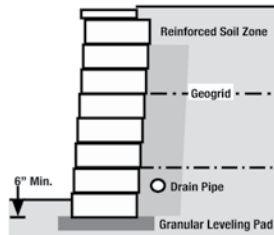
Geogrid Placement

- Grid is measured from the face of the wall.



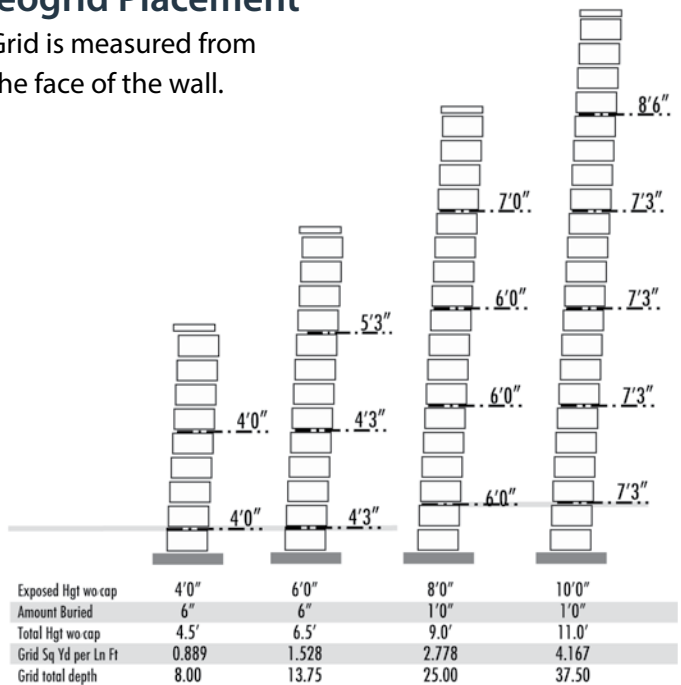
30 Degree Soil

- Flat at Top and Bottom of Wall
- No Surcharge



Geogrid Placement

- Grid is measured from the face of the wall.



See SRW's "Standard Engineering and How-To-Guide" for more information.

GEOGRID PLACEMENT TABLES

FOR WALLS UP TO 10' USING MADERA BLOCK & SRW 5 SERIES GEOGRID

The charts on the previous page are applicable for site soils when the friction angle is 26° - 30° degrees and the moist unit weight is 125 lbs. per cubic foot. That is typical for inorganic clays of low to medium plasticity. Site soils are assumed for the reinforced soil, backfill soil, and foundation soil.

1. Sample designs are to be used for preliminary design only when actual soil, site geometry, and surcharge conditions are conservatively represented by the assumptions of the tables in all situations. A qualified engineer using actual design conditions for the proposed site should perform the final as-built design.
2. Sample designs have been prepared exclusively for the use of SRW 5 Series Geogrid.
3. **Minimum Factors of Safety**
1.5 for internal reinforcement pullout and tensile overstress, 1.5 for external sliding, 2.0 for external overturning and bearing capacity. NO provision or analysis included for global stability or seismic design.
4. Sample designs require adequate drainage provisions for both the reinforced wall fill and retained backfill.
5. Geogrid must be one continuous piece from the face of the retaining wall block to the back of the reinforced soil mass. No splicing of geogrid. Geogrid must butt together at edges but must not be overlapped. Geogrid must be pulled taught and fastened before backfill is placed.
6. Follow the installation instructions that are supplied with the retaining wall system that you are purchasing. *(Which should include foundation preparation, block alignment, core filling of block, drainage rock placement, backfill placement, and compaction.)*
7. See your local building department for permitting requirements.
8. Each design is to be used up to the indicated height only. When the retaining wall exceeds that height a higher design shall be used.
9. When the retaining wall steps up at the bottom of the wall, bottom geogrid layers should be moved up with the steps and not dropped off until the next layer of geogrid is encountered.
10. Light traffic is auto or empty pickup truck loading. Any vehicle traffic or parking loads exceeding light traffic vehicle weights at the top of the retaining wall shall require a special site specific preliminary design.
11. If there is a slope at the bottom of the wall, additional embedment depth of the bottom courses and additional geogrid may be required.
12. If your site does not fit the above site configurations, call SRW Products at 800-752-9326 for a free site specific preliminary design.



See SRW's "Standard Engineering and How-To-Guide" for more information.

ACCENTS

8KFR - FIRE RING - STRASSEN® WALL TRAPEZOID FIRE KIT (NO CUT)

Packing List

- (63) Strassen Wall Trapezoid Units (21 units per layer)
- (1) 3' x 12" high Metal Ring
- (3) 10 oz. Tubes SRW Adhesive
- 945#

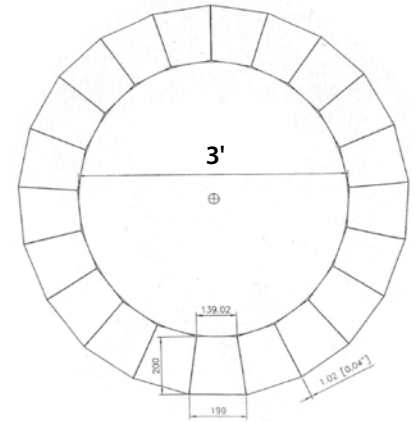
Colors

Trapezoid Colors:

Charcoal, Iron Range, MN River, North Shore, & Sterling Gray.

Trapezoid II - Non-Tumbled Colors:

Charcoal, MN River & Sterling Gray.



Outside dimension is 4'4"

Optional & Sold Separately

Strassen® Wall Fire Pit Cap (4 needed per ring)

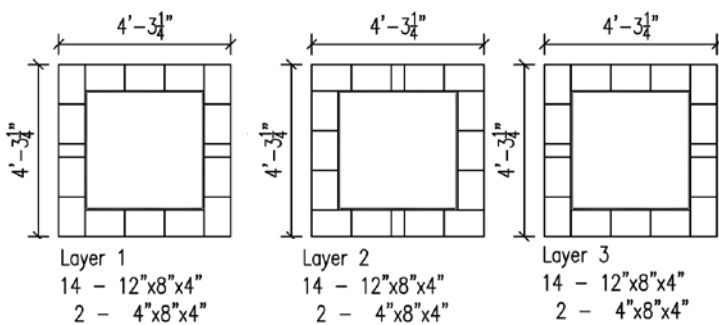
Colors: Charcoal & Limestone



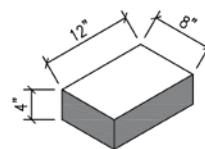
Important Note on Fire Ring Caps

There are no warranties, expressed or implied, on this product. When burning in the fire ring, leave a gap between the burning wood and the fire ring cap to allow heat to escape the fire. Failure to have an air buffer between the fire pit caps and the burning wood can result in heat stress cracks in the fire ring caps. Fire rings are for burning wood only. Burning other material may increase the fire temperature resulting in a higher risk for heat cracking.

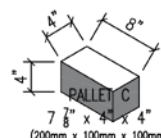
8KFS - SQUARE FIRE PIT - STRASSEN® WALL FIRE KIT (NO CUT) - 51½" X 51½" X 12"



Please allow 5 days notice on kits. No returns on unused kit items.



PALLET A
7 7/8" x 11 3/4" x 4"
(200mm x 300mm x 100mm)



PALLET C
7 7/8" x 4" x 4"
(200mm x 100mm x 100mm)

Packing List

- (42) Pallet A
- (6) Pallet C
- (3) 10.5 oz. Tubes SRW Adhesive
- (1) Steel Square 1285#

Wall Colors:

Iron Range, MN River, North Shore & Sterling Gray.



Use metal ring to protect concrete units, concrete is not fire rated.

INSTALLATION : 8KFR - FIRE RING

STRASSEN® WALL TRAPEZOID FIRE KIT (NO CUT)

⚠ Important Note on Fire Ring Caps

There are no warranties, expressed or implied, on this product. When burning in the fire ring, leave a gap between the burning wood and the fire ring cap to allow heat to escape the fire. Failure to have an air buffer between the fire pit caps and the burning wood can result in heat stress cracks in the fire ring caps. Fire rings are for burning wood only. Burning other material may increase the fire temperature resulting in a higher risk for heat cracking. Always use the steel ring to protect the blocks from heat damage.

Fire Ring

Warm up to the fire with a new backyard fire pit. The following instructions will show you how to install a fire pit kit. Our kit can be installed on grass, on top of a gravel paver base, or on top of a patio.

Our fire pit kit is comprised of:

3 - 10 oz Tubes of Landscape Adhesive
1 Metal Insert
63 - Strassen® Wall Trapezoid Units (21 units per layer)

Inside Diameter: 3'

Outside Diameter: 4' x 4"

Kit Weight: 1010#



Trapezoid Colors:

Charcoal, Iron Range, MN River, North Shore & Sterling Gray.

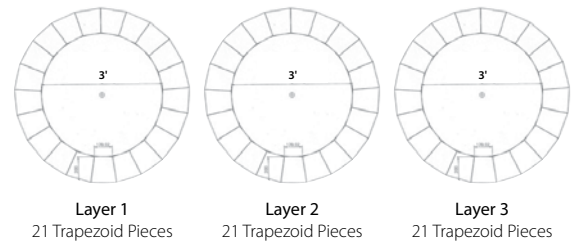
Trapezoid II - Non-tumbled Colors:

Charcoal, MN River & Sterling Gray.

Prepare the Area

Begin by marking a 5' diameter layout. If you're building on grass, use a stake, string and marking paint to create a compass and mark the outline of the pit. Our kit requires a base dug slightly wider than the assembled kit to ensure a wider, stable base for the blocks. After the kit is assembled, you can fill in areas around the stones with soil and grass seed. If you're building on grass or a patio, set the metal ring insert in place and lay the first layer of stones around it.

Optional & Sold Separately - Strassen® Precast Fire Pit Cap (4 needed per ring) - Colors: Charcoal & Limestone



Lay the Gravel Base

If you're building the fire pit in your yard, you'll need a gravel base to create a stable foundation for the Strassen® Wall.

INSTRUCTIONS

Step 1

Remove the sod and dirt to a depth of 2 inches.

Step 2

Check the area with a level. Adjust if necessary by adding or removing soil as needed and tamping again.

Step 3

Check the area with a level. Adjust if necessary by adding or removing soil as needed and tamping again.

Step 4

Add approximately 2 inches of gravel base and spread evenly using a garden rake.

Step 5

Wet the paver base with a garden hose and hand tamp down. Then add another 1/2 inch of paver base and hand tamp again, keeping the base level.

Set the Trapezoids

With the gravel base down, you can start placing the Trapezoids.

INSTRUCTIONS

Step 1

Place the 3' metal ring in the middle. Lay the first row of 21 Trapezoid pieces around the metal ring, making sure the blocks are touching.

Step 2

Set the second row of 21 Trapezoid pieces in place making sure the blocks are touching and staggering the joints with the first layer.

Step 3

Remove two stones at a time and apply landscape adhesive, then reposition the blocks.

Step 4

Set the third row of 21 Trapezoid pieces in place using the same technique used for the second row, checking the staggered joints and locking in place with landscape adhesive.

Allow the adhesive to cure overnight.

INSTALLATION : 8KFS - SQUARE FIRE PIT

STRASSEN® WALL FIRE KIT (NO CUT)

Square Fire Pit

Warm up to the fire with a new backyard square fire pit. The following instructions will show you how to install a square fire pit kit. Our kit can be installed on grass, on top of a gravel paver base, or on top of a patio.

Our fire pit kit is comprised of:

42 - 12" x 8" x 4" Strassen® Wall A
6 - 4" x 8" x 4" Strassen® Wall C
1 Metal Square Insert
3 - 10 oz Tubes of Landscape Adhesive

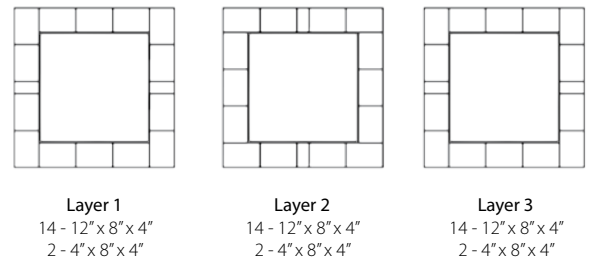
Inside Diameter: 35½" x 35½"
Outside Diameter: 51½" x 51½"
Square Metal Insert: 35½" x 35½" x 12"
Kit Weight: 1350#



Strassen® Wall Colors: Iron Range, MN River, North Shore & Sterling Gray.

Prepare the Area

Begin by marking a 4' x 6" by 4' x 6" square layout. If you're building on grass use marking paint and mark the outline of the pit. Our kit requires a base dug slightly wider than the assembled kit to ensure a wider, stable base for the blocks. After the kit is assembled, you can fill in areas around the stones with soil and grass seed. If you're building on grass or a patio, set the metal square insert in place and lay the first layer of stones around it.



Lay the Gravel Base *(If installing on grass)*

If you're building the fire pit in your yard, you'll need a gravel base to create a stable foundation for the Strassen® Wall.

INSTRUCTIONS

Step 1

Remove the sod and dirt to a depth of 2 inches.

Step 2

Check the area with a level. Adjust if necessary by adding or removing soil as needed and tamping again.

Step 3

Check the area with a level. Adjust if necessary by adding or removing soil as needed and tamping again.

Step 4

Add approximately 2 inches of gravel base and spread evenly using a garden rake.

Step 5

Wet the paver base with a garden hose and hand tamp down.

Step 6

Then add another 1/2 inch of paver base and hand tamp again, keeping the base level.

Set the Strassen® Wall A and C

With the gravel base down, you can start placing the Strassen® Wall.

INSTRUCTIONS

Step 1

Place the square metal insert (35½" x 35½" x 12") in the middle. Lay the first row of fourteen 12" x 8" x 4" Strassen® Wall A and two 4" x 8" x 4" Strassen® Wall C around the square metal insert, making sure the blocks are touching.

Step 2

Set the second row of fourteen 12" x 8" x 4" Strassen® Wall A and two 4" x 8" x 4" Strassen® Wall C in place, making sure the blocks are touching and staggering the joints with the first layer.

Step 3

Remove two stones at a time and apply landscape adhesive, then reposition the blocks.

Step 4

Set the third row of fourteen 12" x 8" x 4" Strassen® Wall A and two 4" x 8" x 4" Strassen® Wall C in place using the same technique used for the second row, checking the staggered joints and locking in place with landscape adhesive.

Allow the adhesive to cure overnight.



KING OF HEARTH'S

OUTDOOR FIREPLACES & OVENS



Important Product Information

Units must be veneered with brick, stone, or Borgert Strassen Wall. Units include fire brick already installed and forking points for ease of setting in place with machine.

Stress cracks in fireplaces and ovens are micro fractures that are a normal occurrence and do not affect the structural integrity of the unit, nor are grounds for rejection.

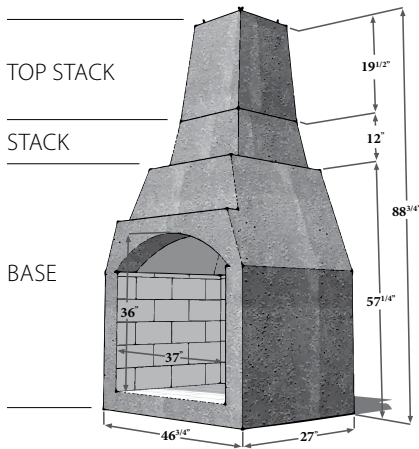
Lancelot oven must be veneered with high density insulation, meshed and scratch coated to ensure a good bond with the veneer.

All Units must have spark protector with solid top to keep water out, not included.

Learn more by visiting our website at
kingofhearths.com

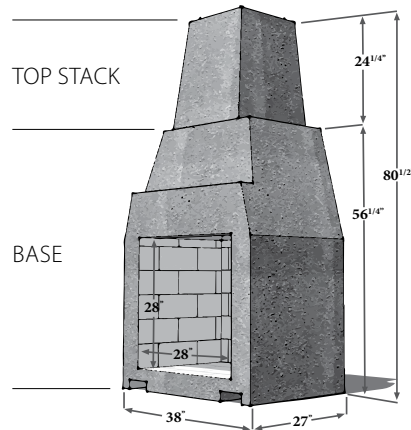
KING OF HEARTH'S

Outdoor Fireplaces & Ovens Available Styles



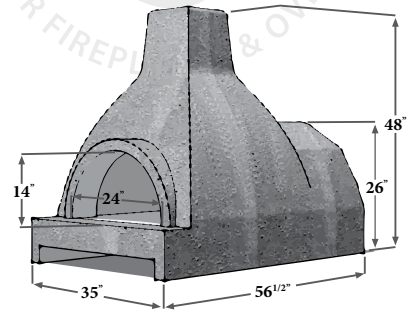
KING ARTHUR
46" Outdoor Fireplace

2123#
5FPA



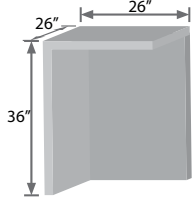
GUINEVERE
38" Outdoor Fireplace

1873#
5FPG



LANCELOT
Outdoor Oven

1850#
5FPL

ITEM		CODE	DIMENSIONS	WEIGHT PER UNIT
Side Wood Storage Box		5FSB	36"H x 26"W x 26"D	374#

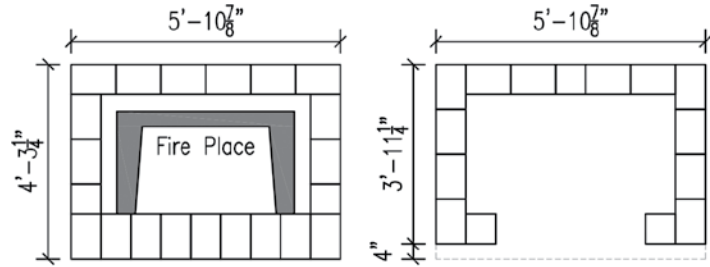
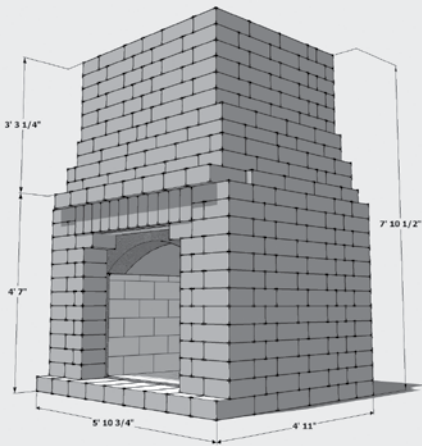
	KING ARTHUR	GUINEVERE	LANCELOT	SIDE BOX
WEIGHT	2123# Base: 1870# Stack: 121# Top Stack: 132#	1873# Base: 1626# Stack: 247#	1850#	374#
ANGLE IRON PIECE	48"	32"	N/A	N/A
STONE VENEER	63 SF	46 SF	26 - 30 SF	12 SF In/Out
LINEAR FOOT CORNERS	36	28	18	36 (Corners may vary)
SPARKER CAP MOUNT SIZE	13" x 13"	13" x 13"	9" x 9"	N/A

Angle iron needed when using dry stack such as Strassen® Wall units. Wooden pallet weight for all units is 55#.



KING ARTHUR - 46" OUTDOOR FIREPLACE

Layout Guide (Builds using Strassen® Wall)

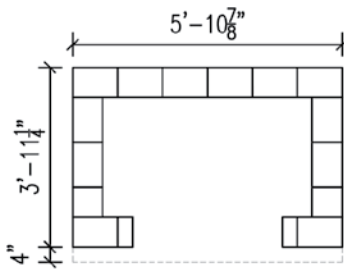


Layer 1

- 19 - 12"x8"x4"
- 2 - 8"x8"x4"
- 0 - 4"x8"x4"

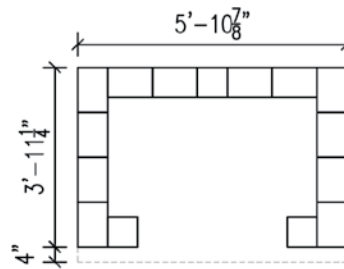
Layer 2

- 12 - 12"x8"x4"
- 3 - 8"x8"x4"
- 0 - 4"x8"x4"



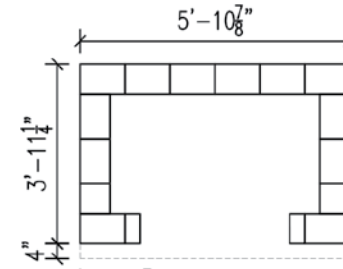
Layer 3

- 12 - 12"x8"x4"
- 2 - 8"x8"x4"
- 2 - 4"x8"x4"



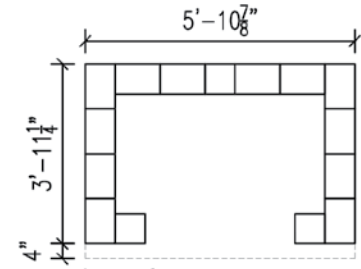
Layer 4

- 12 - 12"x8"x4"
- 3 - 8"x8"x4"
- 0 - 4"x8"x4"



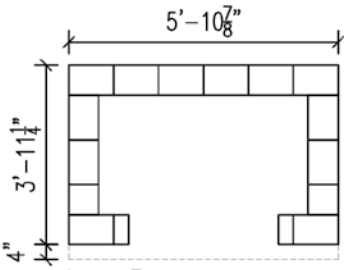
Layer 5

- 12 - 12"x8"x4"
- 2 - 8"x8"x4"
- 2 - 4"x8"x4"



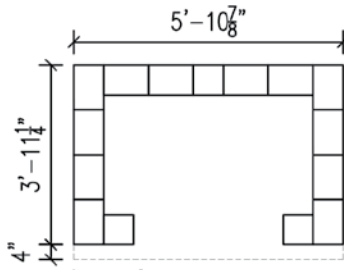
Layer 6

- 12 - 12"x8"x4"
- 3 - 8"x8"x4"
- 0 - 4"x8"x4"



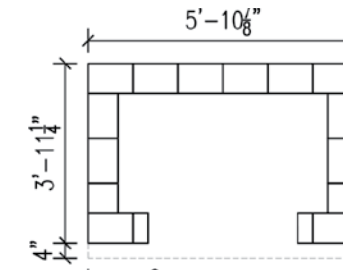
Layer 7

- 12 - 12"x8"x4"
- 2 - 8"x8"x4"
- 2 - 4"x8"x4"



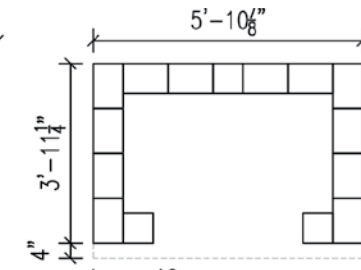
Layer 8

- 12 - 12"x8"x4"
- 3 - 8"x8"x4"
- 0 - 4"x8"x4"



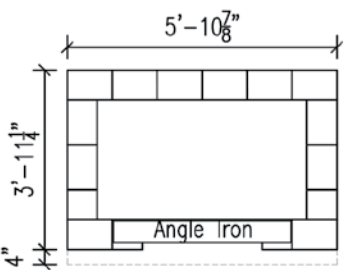
Layer 9

- 12 - 12"x8"x4"
- 2 - 8"x8"x4"
- 2 - 4"x8"x4"



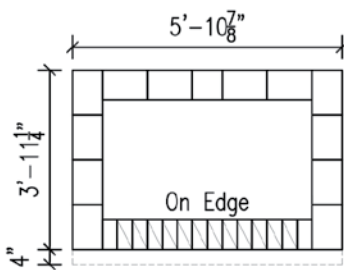
Layer 10

- 12 - 12"x8"x4"
- 3 - 8"x8"x4"
- 0 - 4"x8"x4"



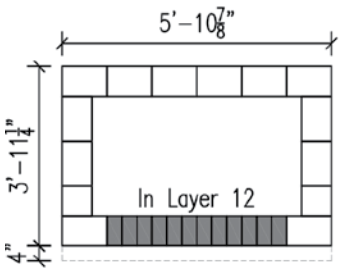
Layer 11

- 12 - 12"x8"x4"
- 4 - 8"x8"x4"
- 0 - 4"x8"x4"



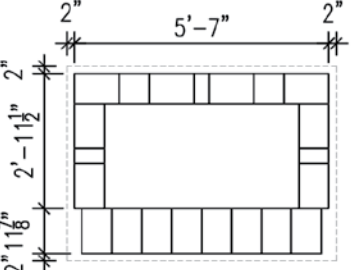
Layer 12

- 12 - 12"x8"x4"
- 13 - 8"x8"x4"
- 2 - 4"x8"x4"



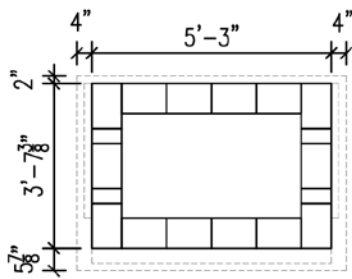
Layer 13

- 12 - 12"x8"x4"
- 2 - 8"x8"x4"
- 0 - 4"x8"x4"

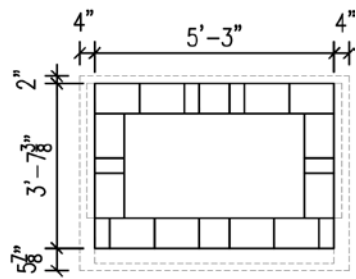


Layer 14

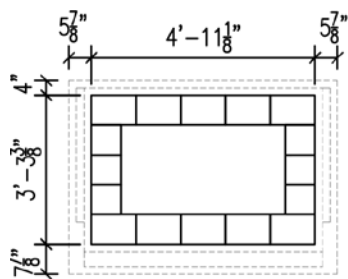
- 16 - 12"x8"x4"
- 2 - 8"x8"x4"
- 3 - 4"x8"x4"



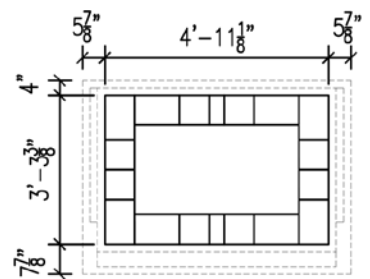
Layer 15
 14 - 12"x8"x4"
 0 - 8"x8"x4"
 4 - 4"x8"x4"



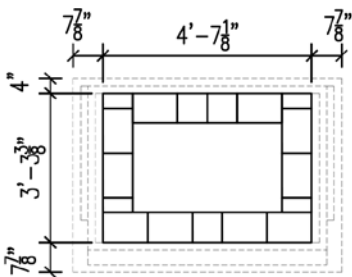
Layer 16
 12 - 12"x8"x4"
 2 - 8"x8"x4"
 6 - 4"x8"x4"



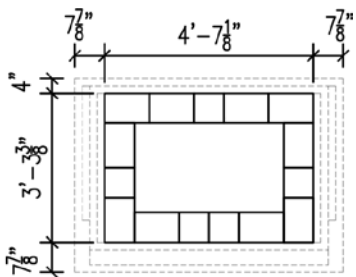
Layer 17
 10 - 12"x8"x4"
 6 - 8"x8"x4"
 0 - 4"x8"x4"



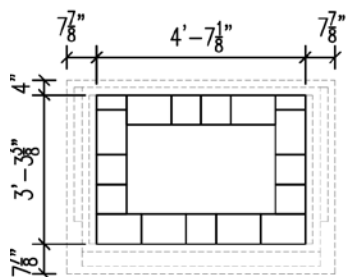
Layer 18
 8 - 12"x8"x4"
 8 - 8"x8"x4"
 2 - 4"x8"x4"



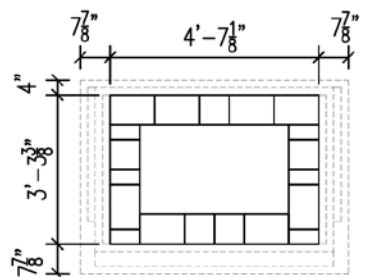
Layer 19
 10 - 12"x8"x4"
 3 - 8"x8"x4"
 4 - 4"x8"x4"



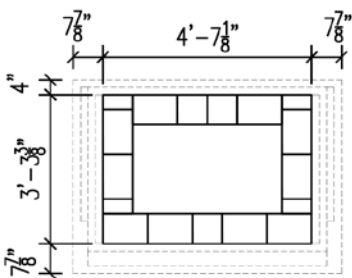
Layer 20
 10 - 12"x8"x4"
 5 - 8"x8"x4"
 0 - 4"x8"x4"



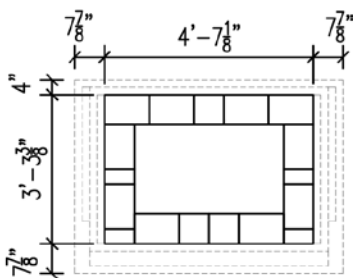
Layer 21
 8 - 12"x8"x4"
 7 - 8"x8"x4"
 2 - 4"x8"x4"



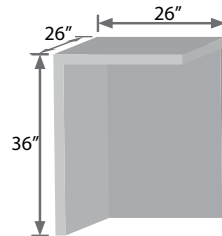
Layer 22
 8 - 12"x8"x4"
 5 - 8"x8"x4"
 6 - 4"x8"x4"



Layer 23
 10 - 12"x8"x4"
 3 - 8"x8"x4"
 4 - 4"x8"x4"



Layer 24
 10 - 12"x8"x4"
 3 - 8"x8"x4"
 4 - 4"x8"x4"



Strassen Wall

Sides only = 40 pcs - Pallet A

Top = 7 pcs - Pallet A (cuts needed)

The top of the side box supports the weight of the wall.

Total Count

- 279 - Strassen Wall Pallet A (4"H x 12"L x 8"D)
- 88 - Strassen Wall Pallet B (4"H x 8"L x 8"D)
- 45 - Strassen Wall Pallet C (4"H x 4"L x 8"D)



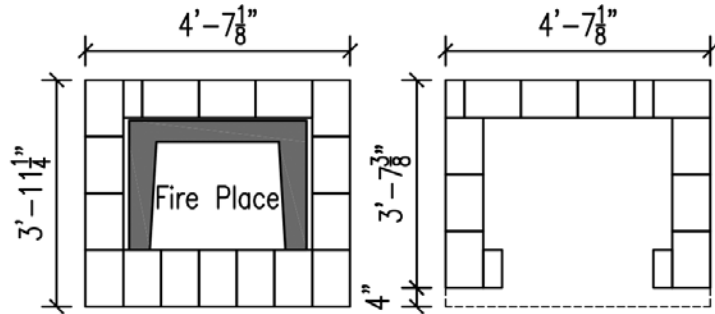
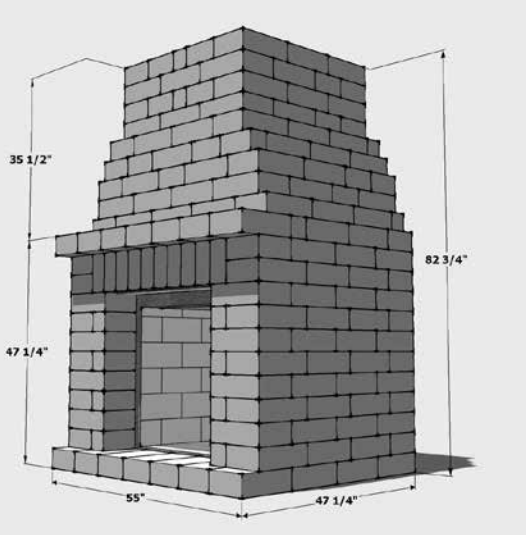
Dimensions shown are approximate.

Due to possible variations with the fireplace insert, positioning of the Strassen® Wall may have to be adjusted, or cut to fit.

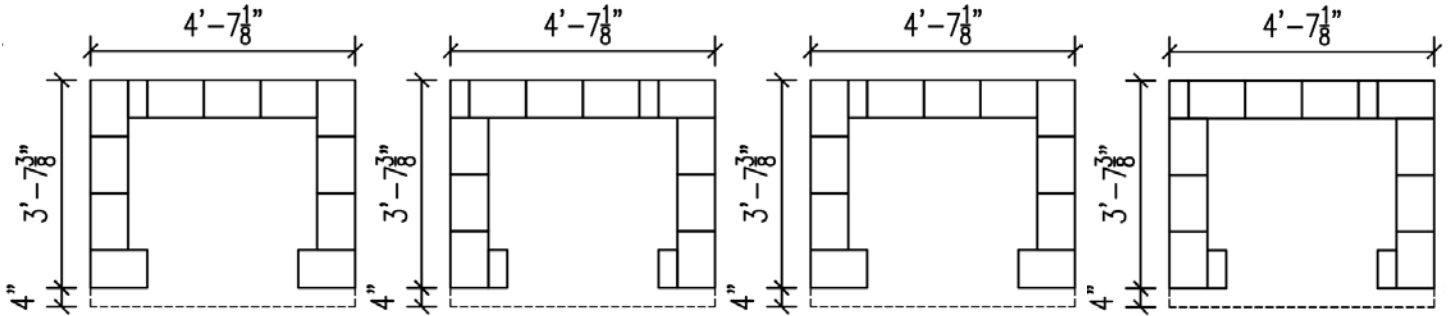


GUINEVERE - 38" OUTDOOR FIREPLACE

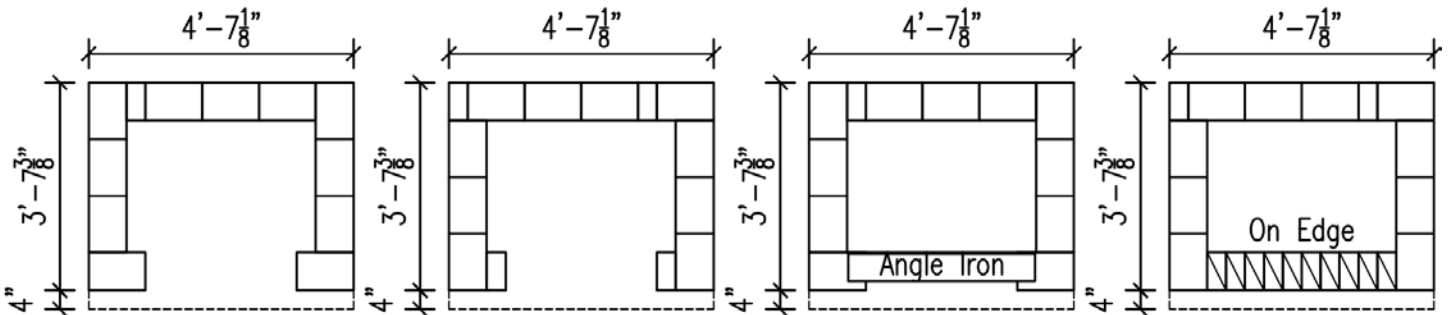
Layout Guide (Builds using Strassen® Wall)



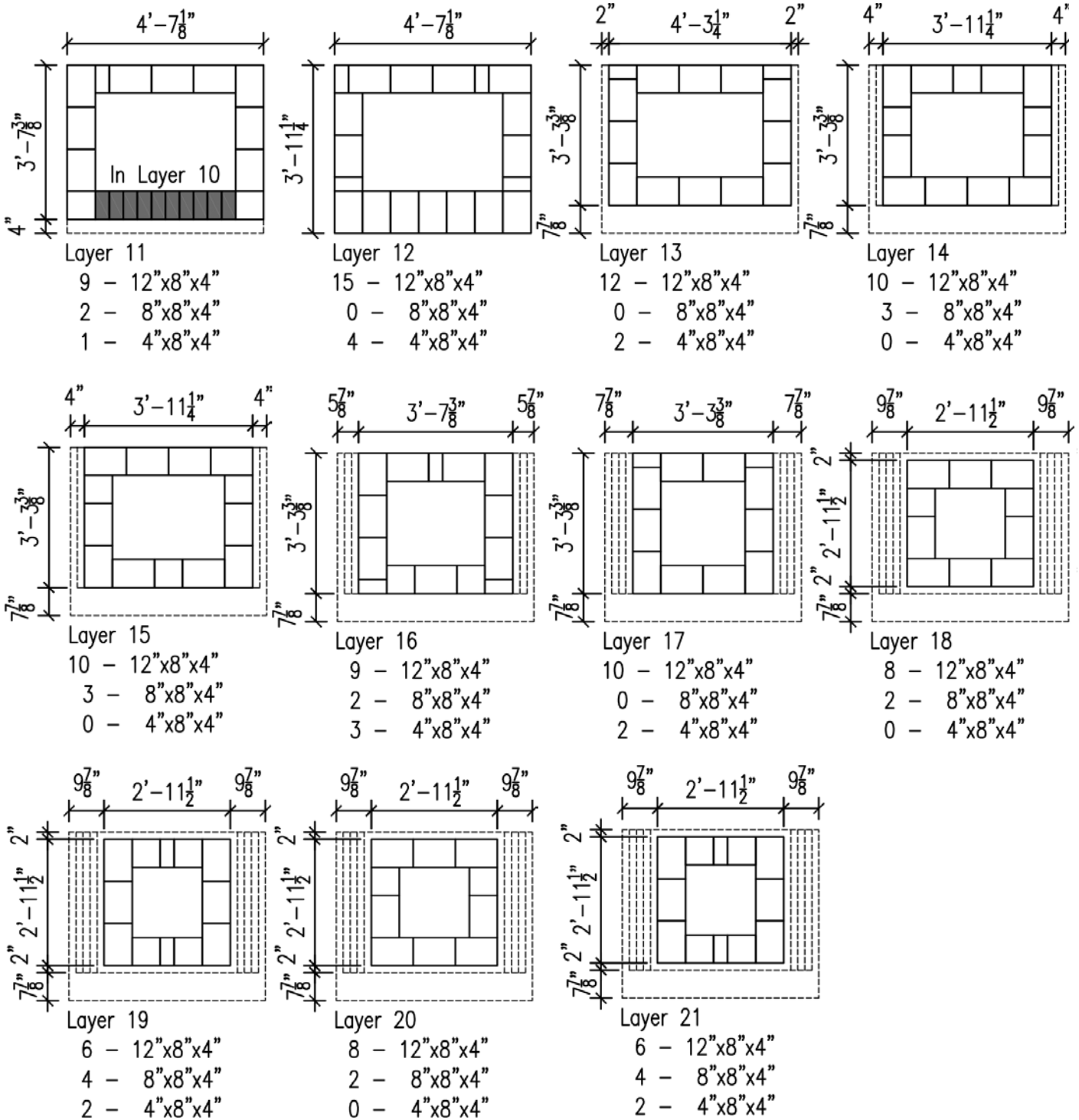
- | | |
|----------------|----------------|
| Layer 1 | Layer 2 |
| 16 - 12"x8"x4" | 10 - 12"x8"x4" |
| 0 - 8"x8"x4" | 0 - 8"x8"x4" |
| 4 - 4"x8"x4" | 4 - 4"x8"x4" |



- | | | | |
|----------------|----------------|----------------|----------------|
| Layer 3 | Layer 4 | Layer 5 | Layer 6 |
| 11 - 12"x8"x4" | 10 - 12"x8"x4" | 11 - 12"x8"x4" | 10 - 12"x8"x4" |
| 0 - 8"x8"x4" | 0 - 8"x8"x4" | 0 - 8"x8"x4" | 0 - 8"x8"x4" |
| 1 - 4"x8"x4" | 4 - 4"x8"x4" | 1 - 4"x8"x4" | 4 - 4"x8"x4" |



- | | | | |
|----------------|----------------|----------------|----------------|
| Layer 7 | Layer 8 | Layer 9 | Layer 10 |
| 11 - 12"x8"x4" | 10 - 12"x8"x4" | 11 - 12"x8"x4" | 10 - 12"x8"x4" |
| 0 - 8"x8"x4" | 0 - 8"x8"x4" | 0 - 8"x8"x4" | 10 - 8"x8"x4" |
| 1 - 4"x8"x4" | 4 - 4"x8"x4" | 1 - 4"x8"x4" | 2 - 4"x8"x4" |



Total Count

- 213 - Strassen Wall Pallet A (4"H x 12"L x 8"D)
- 32 - Strassen Wall Pallet B (4"H x 8"L x 8"D)
- 39 - Strassen Wall Pallet C (4"H x 4"L x 8"W)



Dimensions shown are approximate.

Due to possible variations with the fireplace insert, positioning of the Strassen® Wall may have to be adjusted, or cut to fit.



INSTALLATION & OPERATION

Outdoor Fireplace Instructions

A) Items to Consider Before Installation

The outdoor wood fireplaces constructed by The King of Hearths are a very high quality precast fireplace meant to enhance your outdoor living. They are not meant to be used inside a roofed area or building. Clearances to combustible materials are a major consideration. The stack of your fireplace is equipped to accept a chimney cap. **A cap with a spark arrestor is required.** There should be no combustible materials within 8 feet of the cap. The front of the fireplace opening requires a minimum of a 4 foot area where there should be no combustible materials. This includes items as wood decking, furniture and the like. Look for items such as power lines and trees in your yard area to make sure you have a safe clearance.

B) Pad Requirements

Your King of Hearths outdoor fireplace is constructed from a high strength light weight concrete. Because of this it may not be necessary to pour a pad to place your fireplace. Because the fireplace itself does not need assembly or to be mortared together a traditional frost foundation may not be required. You will need to remove all organic material (plant matter and topsoil) under your slab or hearth. That material needs to be replaced with gravel material and then compacted for support similar to what is done in preparation for proper sidewalk or driveway installations. Minimum pad dimensions are:

KING ARTHUR 50 inches wide by 40 inches deep

GUINEVERE 42 inches wide by 32 inches deep

The pad should be poured a minimum of 6 inches deep. A rebar mat needs to be installed in a checkerboard fashion with 12 inch centers. This will keep the pad from splitting and putting undue pressure on the fireplace. If using one of our hearths it will only be necessary to level the hearth. In the event you are using a sidebox it will be necessary to enlarge the pad width by 24 inches. Pads should cure for 7 days before placement of your fireplace.

C) Fireplace Placement

Once your pad or hearth installation is complete you can place your fireplace. Remove the stack from firebox. Your fireplace will come on a sturdy pallet in order to safely get the fireplace close to its final placement. It is not recommended to remove the fireplace from the pallet until it is placed next to the slab or hearth. The pallet will ensure proper weight displacement of the fireplace when coming across rough terrain. On the rear of the firebox there will be 2 fork pockets to lift the fireplace from its pallet and place onto the slab or hearth. It is advisable to center the fireplace on

your slab or hearth for equal weight distribution. The stack needs to be placed at this point. Make sure it is centered on the opening in the top of the firebox. It is not necessary to mortar the stack. When you complete your facing with cultured stone, cultured brick or stucco it will lock in and seal your stack. The King Arthur has a 2 piece stack to accommodate the larger firebox.

D) Conditioning Your Fireplace

It is recommended at this point before the facing is applied to build a few small fires. Make sure you have a proper chimney cap installed. Your King Of Hearths fireplace already has the firebrick installed. You can burn right on the bottom of the fireplace or install a log grate if you wish. This preburn is recommended to temper the unit. All materials including concrete will react to heat. This process will help bring the materials to a near final rest before the facing is applied. Your fireplace is meant to burn wood. Burning garbage, wood treated with preservatives or other materials can create temperatures much hotter than wood. In other words protect your investment. **NEVER** use gasoline or diesel fuel to start your fireplace. The preferred method would be using cardboard or kindling for starter.

E) Finishing Your Fireplace

Your King Of Hearths fireplace is left purposely with a semi rough surface. For best results mesh and scratch coat the surface to ensure a good bond between the unit and your finish material, whether it be cultured material or natural stone facing or stucco. It is recommended to leave a small gap of a quarter inch between the bottom of the fireplace veneer and pad. The reason for this is to prevent your facing from contacting the hearth or slab during the months when some movement can take place. Your King Of Hearths dealer will be able to make proper recommendations for your application. In the event you select to install one of our sideboxes with your fireplace you will notice that the height is slightly higher than the flat part of the firebox. This is done intentionally to ensure that a proper slope is installed in the veneer applied to prevent water and or ice pooling where the 2 precast units join. It is not necessary to anchor the sidebox to the firebox. The weight of the sidebox and the locking done by the veneer makes this not needed.



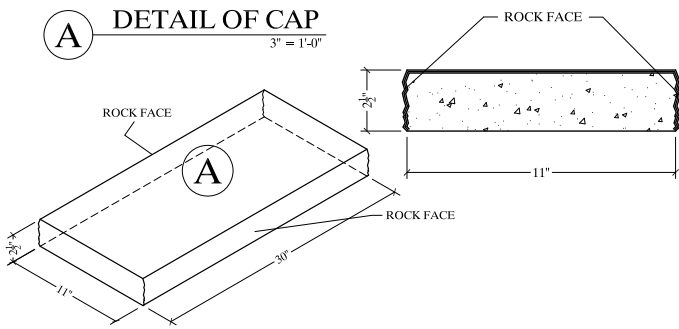
BEFORE YOU START ANY FIRE, MAKE SURE THE BURNING AREA IS COMPLETELY DRY. SPARK ARRESTOR IS REQUIRED BEFORE STARTING A FIRE.

STRASSEN® WALL PRECAST & ROUND FIRE PIT CAPS

⚠ Important Note on Fire Ring Caps

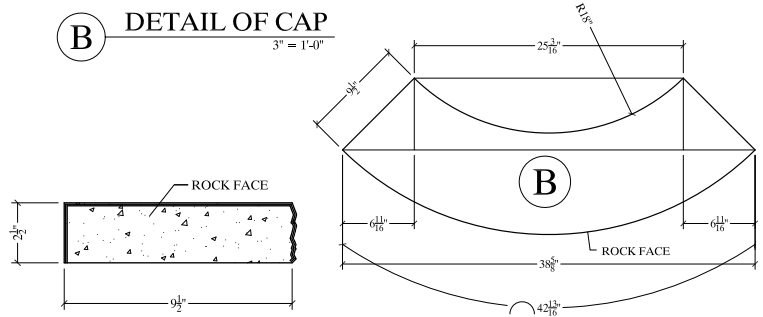
There are no warranties, expressed or implied, on this product. When burning in the fire ring, leave a gap between the burning wood and the fire ring cap to allow heat to escape the fire. Failure to have an air buffer between the fire pit caps and the burning wood can result in heat stress cracks in the fire ring caps. Fire rings are for burning wood only. Burning other material will increase the fire temperature resulting in a higher risk for heat cracking.

Strassen® Wall Precast Cap



Strassen® Precast Fire Kit Cap

*Precast caps & blocks are not fire rated.



Strassen® Wall Precast & Round Fire Pit Cap Colors


ACCENT SOLID COLORS	CODE	ACCENT SOLID COLORS	CODE
Charcoal <i>(Strassen precast cap color & round fire pit cap)</i>	08	Limestone <i>(Strassen precast cap color & round fire pit cap)</i>	30

For weights & packaging see page 27

NO SPLIT - FULL PALLET ONLY

PRECAST PILLAR CAPS

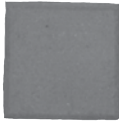





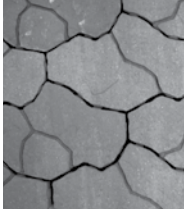



NO SPLIT - FULL PALLET ONLY

ITEM	WEIGHT/UNIT	UNITS/PALLET	WEIGHT/PALLET
Pillar Cap - Sloped Top or Flat - 24" x 24" x 2 1/4"  <p>5PCR - Rockface Edge Sloped 5FCR - Rockface Edge Flat (<i>Charcoal Only</i>)</p>	145#	8	1080#

Pillar Cap Stock Colors

STOCK COLORS	CODE	STOCK COLORS	CODE
Charcoal	08	Limestone	30

NON-STOCK PRODUCTS



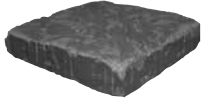
STYLE		CODE	DIMENSIONS	CUBES	
Double Holland™ 8" x 8" <i>*NOT SOLD BY THE BAND</i>		4DH	200mm x 200mm x 60mm 7 ⁷ / ₈ " x 7 ⁷ / ₈ " x 2 ³ / ₈ " (PSF = 2.25 stones @ 28#)	94 SF 2632# (216 pcs)	
Holland Stone Square™ 12" x 12" <i>*NOT SOLD BY THE BAND</i>		4HQ	300mm x 300mm x 60mm 11 ⁷ / ₈ " x 11 ⁷ / ₈ " x 2 ³ / ₈ " (PSF = 1 Stone @ 28#)	112 SF 3136# (112 pcs)	
Holland II™ 4" x 8" <i>*NOT SOLD BY THE BAND</i>			100mm x 200mm 3 ⁷ / ₈ " x 7 ⁷ / ₈ " (PSF = 4.5 stones @ 28#)	4HT - 94 SF 60mm 2632# Height (432 pcs)	4HT8 - 64 SF 80mm 2272# Height (288 pcs)
Symetry® <i>*NOT SOLD BY THE BAND</i>		4SY	60mm Height 4 ³ / ₈ " x 10 ³ / ₄ " x 2 ³ / ₈ " (PSF = 3.04 stones @ 28#)	84 SF 2352# (256 pcs)	
Cobble™ - 80mm 6" x 6" <i>*NOT SOLD BY THE BAND</i>		4TC8	160mm x 160mm x 80mm 6 ¹ / ₄ " x 6 ¹ / ₄ " x 3 ¹ / ₈ " (PSF = 3.69 stones @ 35.5#)	56.94 SF 2021# (210 pcs)	
Cobble™ - 80mm 6" x 9" <i>*NOT SOLD BY THE BAND</i>		4PC8	160mm x 240mm x 80mm 6 ¹ / ₄ " x 9 ³ / ₈ " x 3 ¹ / ₈ " (PSF = 2.46 stones @ 35.5#)	60.94 SF 2163# (150 pcs)	
Old Munich 70mm Thickness		4OM	355mm x 558mm x 70mm Approximate 13 ⁷ / ₈ " x 21 ⁷ / ₈ " x 2 ³ / ₄ " - Returns of full cubes only - NOT SOLD BY THE BAND There are 7 layers per cube at 11.10 SF per layer. - Sizes are all the same, the dummy groove creates the look of various sizes.	77.7 SF 2525#	
STYLE		CODE	DIMENSIONS	BANDS	CUBES
Strassen Classic Half Rectangle 4" x 6"		4SM	104mm x 173mm x 70mm 4 ¹ / ₄ " x 6 ³ / ₄ " x 2 ³ / ₄ " (PSF = 5.06 stones @ 31.5#)	4.75 SF 155# (24 stones)	52.2 SF 1696# (11 bands)
Strassen Classic Rectangle 6" x 8"		4ST	173mm x 208mm x 70mm 6 ³ / ₄ " x 8 ¹ / ₄ " x 2 ³ / ₄ " (PSF = 2.53 stones @ 31.5#)	9.49 SF 309# (24 stones)	66.4 SF 2160# (7 bands)
Strassen Classic Large Rectangle 8" x 13"		4SP	208mm x 348mm x 70mm 8 ¹ / ₄ " x 13 ⁵ / ₈ " x 2 ³ / ₄ " (PSF = 1.28 stones @ 31.5#)	9.38 SF 305# (12 stones)	56.3 SF 1830# (6 bands)

⚠ Classic Pavers do not have space bars. Lay pavers loosely with 1/16" joint to enable adjustments to maintain straight lines & minimize additional chipping over the life of the pavement.

8" x 13" and 4" x 6" need to run lengthwise perpendicular to the 6" x 8".

NON-STOCK PRODUCTS

All special orders are full cube quantities only. Lead time required.

STYLE		CODE	DIMENSIONS	CUBES
Strassen® Vavel (Tumbled) Small Square 7" x 7"		4VA	178mm x 178mm x 70mm Approximate 7" x 7" x 2¾" (PSF = 2.94 stones @ 31.5#)	48.96 SF 1591# (6 bands)
Strassen® Vavel (Tumbled) Rectangle 7" x 14"		4VB	178mm x 356mm x 70mm Approximate 7" x 14" x 2¾" (PSF = 1.47 stones @ 31.5#)	65.28 SF 2122# (3 bands)
Strassen® Vavel (Tumbled) Large Square 14" x 14"		4VC	356mm x 356mm x 70mm Approximate 14" x 14" x 2¾" (PSF = .74 stones @ 31.5#)	65.28 SF 2122# (3 bands)

All sizes are provided on separate pallets. Use protective plate during compaction.

Strassen® Vavel Colors



For best blend results, always select from multiple cubes.

COLORS	CODE	COLORS	CODE	COLORS	CODE
Iron Range	45	Minnesota River	18	North Shore	40
Sterling Gray	05				

Please call for quote, lead time and order requirements.

NON-STOCK PERMEABLE PRODUCTS



STYLE		CODE	DIMENSIONS	CUBES
Superior Interloc 80mm - Machine Lay <i>- NOT SOLD BY THE BAND</i>		4OL	(PSF = 1.76 stones @ 35.5#) Layer is 42" x 47.5" <i>NOTE: Mold configured for mechanical installation.</i> Cobble face or Standard Bevel	81.6 SF 2897#
DrenaPave™ 80mm - Machine Lay <i>- NOT SOLD BY THE BAND</i>		4FPH	5" x 10" x 3½" @ 35.5# SF (90° Herringbone Pattern) <i>NOTE: Mold configured for mechanical installation.</i>	72.6 SF 2577# (258 pcs)

All sizes are provided on separate pallets. 3 color blends may require some hand mixing for a better blending of color.



Please call for quote, lead time and order requirements on non-stock items.

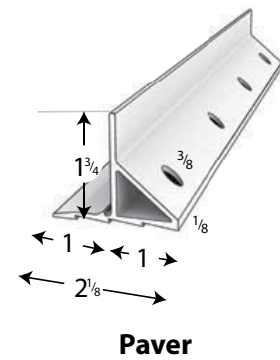
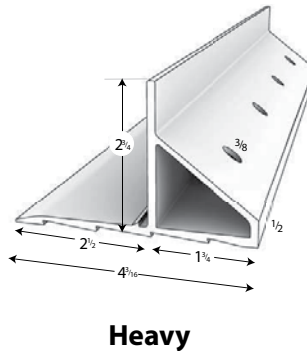
OTHER PRODUCTS & EQUIPMENT

FORTRESS ENGINEERED EDGE RESTRAINT

ITEM	CODE	SIZE	PIECES PER PALLET
Paver Straight	5FE01	7'	960
Paver Versa	5FE02	7'	960
Heavy Straight	5FE04	7'	960
Heavy Versa	5FE05	7'	960
Standard StrypRAIL Kit	5FE03	See packing info below	

Packing List for Kit:

- 84ft Paver Straight or Versa
- 84ft Grid - 4' Wide Roll
- 168 Screw Pack



LANDSCAPE SPIKES

ITEM	CODE	SIZE	PER BUNDLE CASE/BOX
Singles	5MSS1	10"	
Case Lot	5MS00	10"	150 (approximately)

Adhesives / Bonds

ITEM	CODE	SIZE	PER BUNDLE CASE/BOX
SRW Adhesive - Case Lot	5MA02	10 oz.	12
SRW Adhesive - Single Tube	5MA02S	10 oz.	
SRW Adhesive - Case Lot	5MA04	28 oz.	12
SRW Adhesive - Single Tube	5MA04S	28 oz.	

This is the adhesive that the contractors ask for as "SRW." Professional strength adhesive for masonry, concrete, brick, block, pavers and other common landscaping materials.

Works on wet or frozen surfaces.

Geotextile Fabrics — SS5 for Under Base

SRW Woven polypropylene geotextiles provide excellent puncture and tear resistant properties, along with high tensile strength. The primary use of wovens are for separation.

Silt Film Wovens: Use for soil separation and reinforcement over moderate sub-grades, under roadways, parking lots and residential streets. This fabric will improve the long-term performance of your project 50 - 70% and may save you as much as 30% in base materials costs.

ITEM	CODE
12.5 x 27 (Folded)	5MG50
12.5 x 54	5MG04
12.5 x 108	5MG51

Features

Easy Installation - Conforms easily to the ground and offers good resistance to installation abuse.

Versatile - Chemically stable in a wide range of aggressive environments.

Sizes - Available in retail and large construction roll sizes



SRW Products: Geogrid

Visit SRWProducts.com for installation Instructions

SRW Geogrid is composed of high-molecular weight, high-tenacity multi-filament polyester yarns that are woven into a stable network placed under tension and coated with PVC.

ITEM	CODE
Universal 4' x 50' Bi-directional for walls up to 6'	5MG60

Features

- Adds strength and longevity to your wall
- Easy to handle roll sizes
- Helps prevent premature wall failure
- Provides excellent stress transfer



SRW Products: EF Efflorescence Remover

Specialty Clean™ EF is a product which acts quickly to dissolve efflorescence (white mineral deposits) that dulls pavers. It can easily be applied to pavers, retaining walls, brick and masonry.



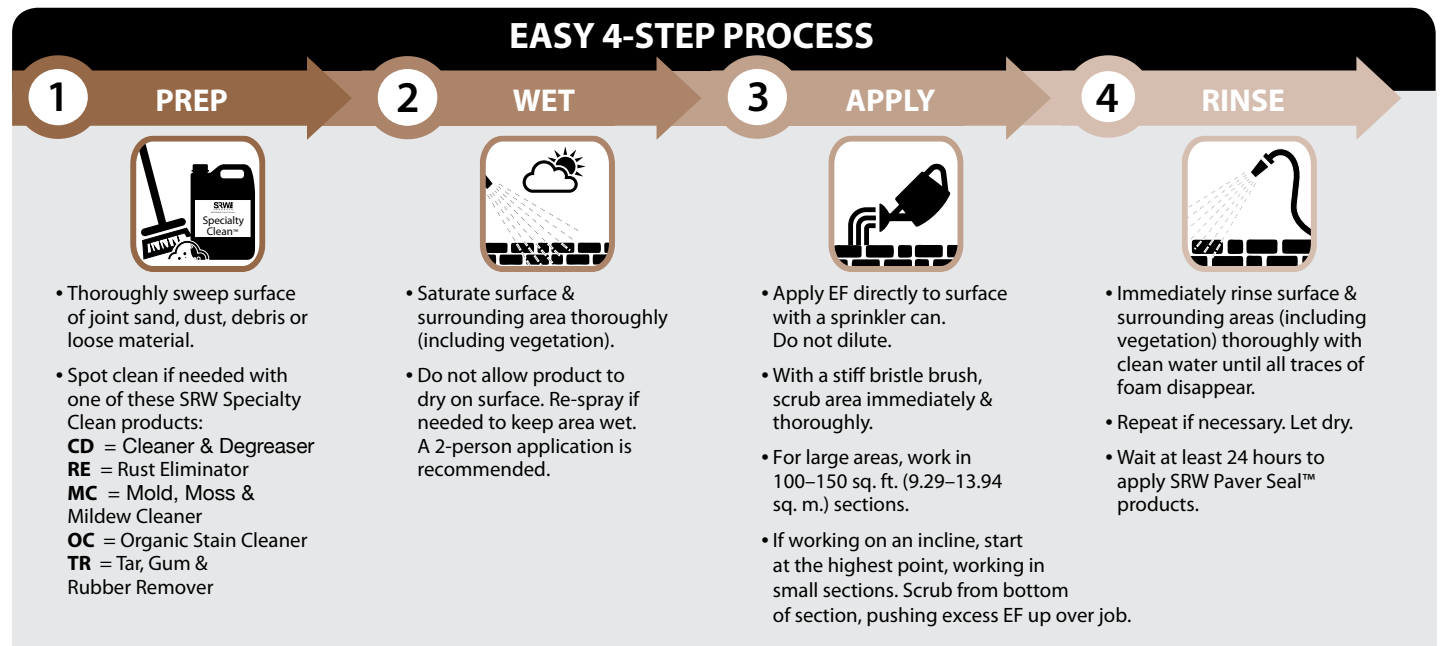
ITEM	CODE	WEIGHT	QTY
EF Efflorescence Remover	5ER	10#	Gallon (4 Gal/CTN)

Features

- Dissolves mineral deposits
- Prepares surface for sealer application
- Restores natural paver color
- Contains no muriatic acid or hydrochloric acid

Coverage

Up to 200 sq. ft. per gallon (18.58 sq. m. per 3.78 liters). Coverage may vary depending on surface and application.



User Tips

- Wait 60-90 days for new pavers to cure before applying EF.
- Wear eye protection and rubber gloves when applying EF.
- Prolonged contact of cleaner on metal or other surfaces may result in etching or damage.
- Saturate vegetation before and after application of EF.
- **NOT FOR USE ON:** Sealed surfaces, wetcast or natural stone

Clean-Up & Storage

- Rinse off all equipment with clean water and let dry.
- **KEEP FROM FREEZING.** Store container in a cool area with cap or lid firmly in place. Rinse off all equipment with clean water and let dry.

BORGERT COLOR SELECTION GUIDE

	ADOBE	AUTUMN BLEND	BRONZE GRANITE	BUFF	CHAMOIS	CHARCOAL	CLASSIC BRONZE	GRAPHITE	GRAND CANYON	IRON RANGE	LANNON	LIMESTONE	MINNESOTA RIVER	NORTH SHORE	PEWTER	SADDLEBACK	SLATE	STERLING GRAY
Cobble Series™	●	●							●			●	●					●
<i>Cobble Accent Colors</i>					● 6x9, 4x6	● 6x9, 4x6	● 6x9, 4x6									●		
Holland Stone™	●				●	●			●			●	●		●			●
Holland Stone™ (80mm)					●													
Bavaria II™									●			●	●					●
<i>Bavaria II™ Accent Colors</i>					● 6x9, 5x5	● 6x9 Only												
Vavel II™									●			●	●					●
LaLosa									●	●		●						●
<i>LaLosa Accent Colors</i>							● 6x9 Only									● 6x9 Only		
Strassen® Cracovia							●	●				●	●					●
<i>Strassen® Cracovia Accent Colors</i>					● 4x6 Only													
Strassen® Bavaria								●				●	●					●
<i>Strassen® Bavaria Accent Colors</i>					● 6x9, 5x5	● 6x9 Only												
DrenaPave™												●						●
DrenaMontage™												●						●
BrükStone®												●	●					
Kastle Flats <i>(textured & smooth)</i>						●			●									●
Bulovar® & Bulovar® Max	●							●						●		●		
Strassen® Wall II <i>Pallet A & Trapezoid</i>					●							●						●
Strassen® Wall Tumbled <i>Pallet A & Trapezoid</i>					●			●				●	●					●
<i>Pallet B</i>								●				●	●					●
<i>Pallet C</i>								●				●	●					●
<i>Strassen® Wall Precast Cap</i>					●					●								
Madera Wall								●				●	●					●
<i>Madera Split Cap</i>								●				●	●					●
Morteza Wall								●				●	●					●
<i>Morteza Split Cap</i>					●			●				●	●					●
PanoMur® Wall <i>(curved & straight)</i>												●						●
<i>PanoMur® Split Cap</i>												●						●
Round Fire Pit Cap					●					●								
Pillar Cap					●					●								
Step Unit			●	●				●			●	●						●

For best blend results, always select from multiple cubes.

Selecting Colors:

Make final color selection from actual samples.

Choosing Blends:

Borgert Products manufactures pavers and walls in various blend colors that consist of either two or three colors. When choosing a blend, it is important to keep in mind that some of the pavers will be dominant in one of the colors and some will be a combination of the colors that are in that particular blend. (i.e., Minnesota River is a blend consisting of Chamois, Brown & Charcoal - some pavers will be entirely Chamois, some entirely Brown, and some will be entirely Charcoal, and others will be a combination of two or three of these colors.)

Colors are not limited. For special orders, call your Borgert representative.



Not all products are stocked in Colorado.

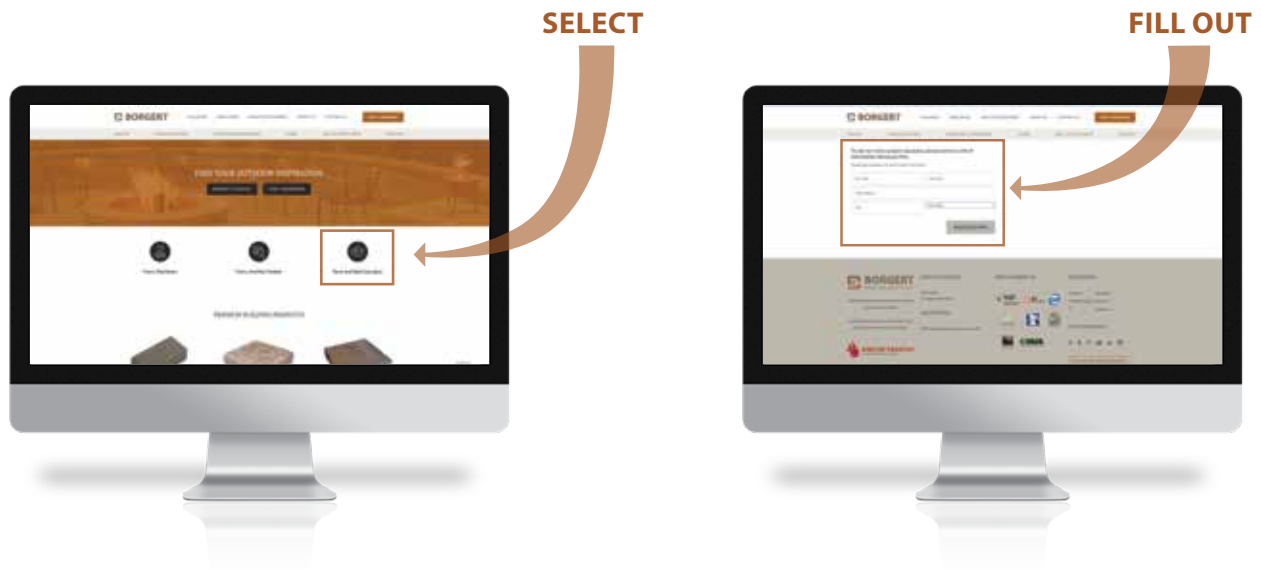
STONE CALCULATOR INSTRUCTIONS

Free Easy, Online Calculator

Borgert makes it easy to calculate our product quantities using our Online Stone Calculator and its FREE!

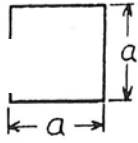
Here's how it works:

- Go to BorgertProducts.com at the bottom of the home page click on Paver and Wall Calculator.
- It will ask for your name and email information to get to the calculator, save the calculator as a favorite and it will skip the prompt for your name and e-mail address in the future.
- Need instructions? At the bottom of the drop-down menu button you will see a 2 minute demonstration video that will walk you through how to use the Stone Calculator.
- When ready to calculate your project click on the menu button and follow the prompts to calculate pavers, circles, borders, accents and walls simply click to calculate the quantities based on the information entered. The calculator is designed to calculate to the nearest packaging of our products. It also gives you the number of what you actually need to what it calculates to our packaging.
- All finished calculating, print off the quantities and use it to place your order.

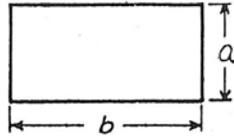


Borgert makes it easy to calculate our product quantities using our Online Stone Calculator and its FREE!

MATHEMATICAL FORMULAS



Area of a square = $a \times a$

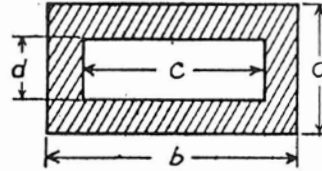
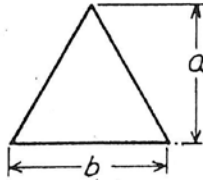


Area of a rectangle = $a \times b$



Area of a Triangle = $\frac{a \times b}{2}$

Equilateral triangles
 $a = .866 \times b$
 Area = $\frac{.866 \times b \times b}{2}$

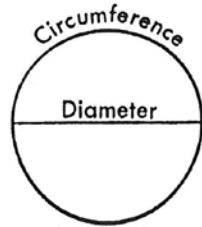


Area of a hollow rectangle = $(a \times b) - (d \times c)$

Circles

Circumference equals $3.1416 \times D$

Diameter equals $\frac{\text{Circumference}}{3.1416}$



Area equals $1.1416 (D \times D)$ or $3.1416 R^2$ or $.7854 D^2$ or $.0796 (\text{circumference})^2$

Length of arc equals number of degrees \times diameter \times 0.008727

To find side of an inscribed square multiply diameter by 0.7071 or multiply circumference by 0.2251 or divide circumference by 4.4428

The side of inscribed cube equals radius of sphere \times 1.1547

To find side of an equal square multiply diameter by .8862

Square: The thickness multiplied by 1.155 equals diameter of its circumscribing circle

Hexagon: The thickness multiplied by 1.155 equals diameter of the circumscribing circle

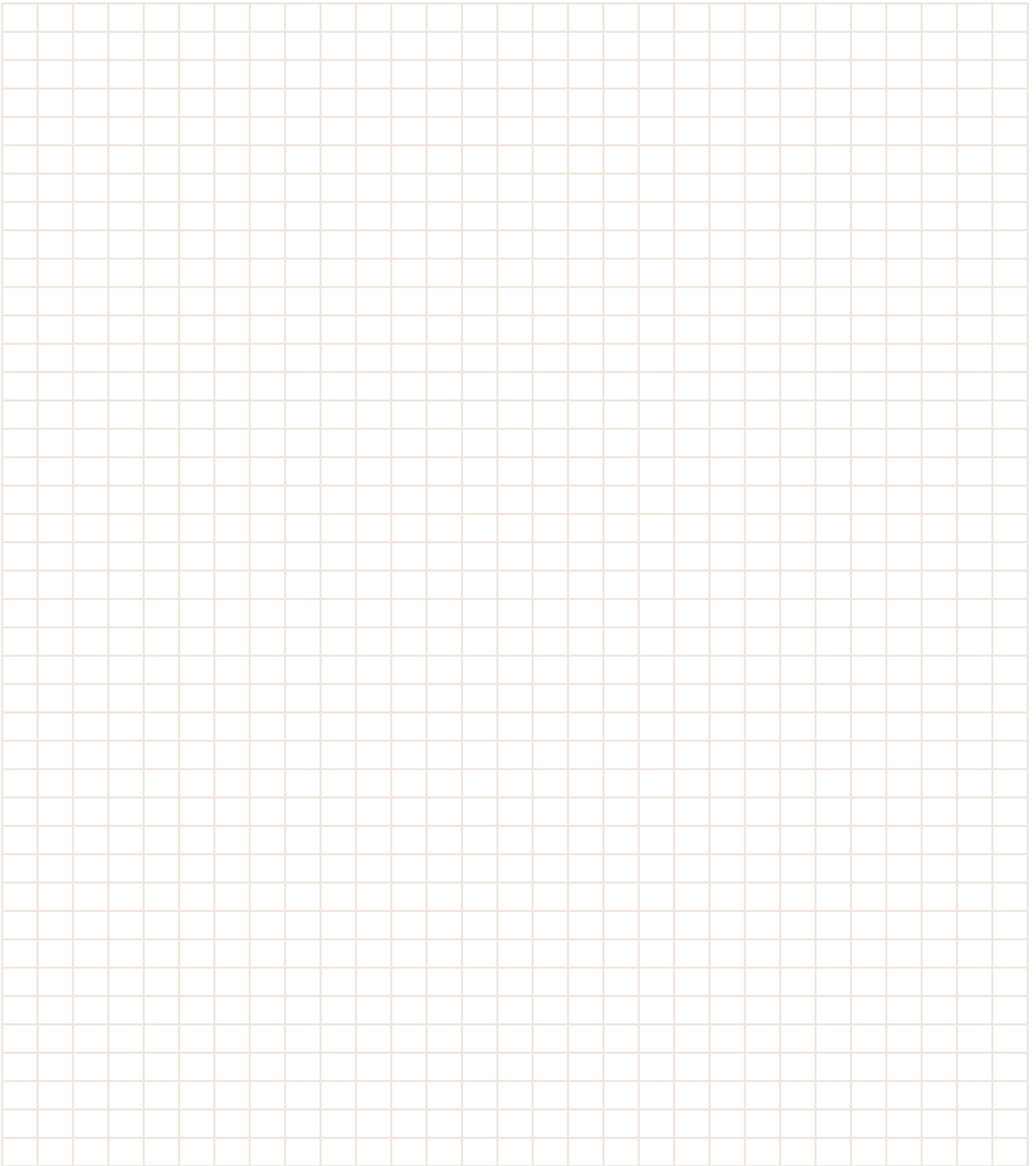
Octagon: The thickness multiplied by 1.082 equals the diameter of the circumscribing circle

A side of a square multiplied by 4.443 equals circumference of its circumscribing circle; multiplied by 1.128 equals diameter of a circle of equal area multiplied by 3.547 equals circumference of a circle of equal area.

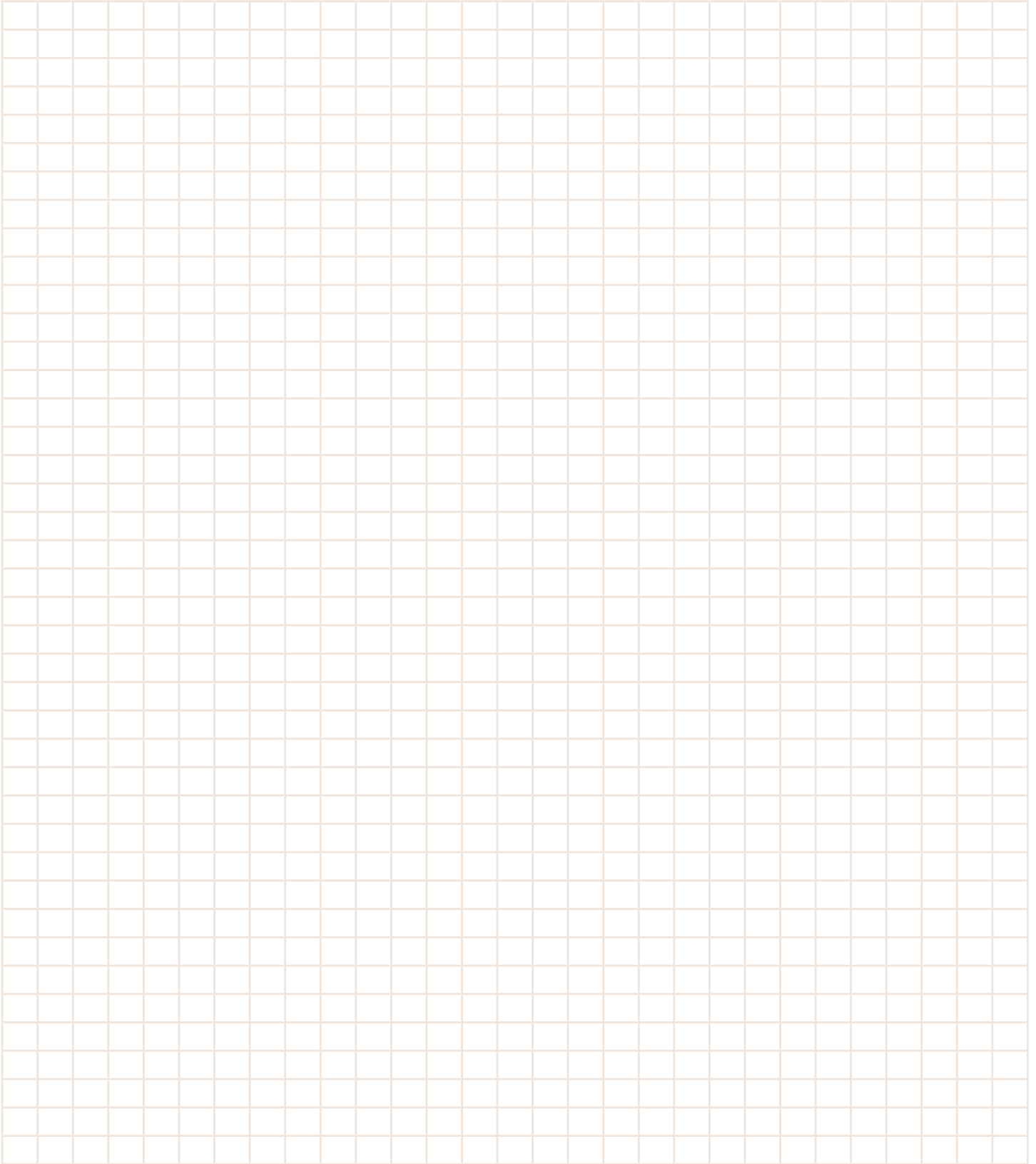
Area of a Parallelogram = Base \times Altitude

Area of a Trapezoid = $\frac{1}{2}$ the sum of the parallel sides \times perpendicular height

NOTES



NOTES



RESIDENTIAL WARRANTY

Limited Warranty for Non-Permeable Interlocking Concrete Pavers, Permeable Concrete Pavers and Retaining Walls in Residential Applications

Borgert Products, Inc. is pleased to provide this lifetime warranty on the structural integrity of its paving stones and retaining wall to the original purchaser for residential applications. A residential application for retaining walls and pavers is limited to a driveway, patio or similar use for a single-family residence. The original sales receipt is required for all warranty claims. Borgert Products has a minimum of one year from the time it receives notice to make a determination on a warranty claim. If Borgert Products approves the claim, it may at its option either replace the affected pavers or refund the original purchase price of the pavers to the original purchaser. Color matching is not guaranteed and replacement labor for removal or reinstallation is not included in this warranty. This warranty does not cover normal wear and tear, accidental damage or damage caused by improper installation or abuse such as chipping, breakage, overloading, uneven bedding, abrasion, etc. Efflorescence is not a manufacturing defect and is not covered by this warranty. This warranty is also void if the pavers are not installed using installation methods approved by Borgert Products, Inc., or if the pavers are damaged due to failure to clean and maintain them properly. Please see www.icpi.org for more information regarding installation and maintenance of pavers. Borgert Products, Inc. shall not be liable for incidental, punitive, exemplary, indirect or consequential damages, or lost profits arising under or relating to the purchase and use of its products. This is the only warranty provided by Borgert Products, Inc. Borgert Products, Inc. disclaims all other warranties, expressed or implied.

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