

# Wall Characteristics

TYPE OF BLOCK	INSTALLATION	MAXIMUM HEIGHT AT THE TOP OF WALL INCLUDING BURIED UNIT WITHOUT OVERLOAD		MINIMUM POSSIBLE RADIUS		WALL ANGLE	AMOUNT OF WALL UNITS REQUIRED	
		FT	M	FT	M		/FT <sup>2</sup>	/M <sup>2</sup>
Tandem System (Lafitt, Melville)	Angled	3.5	1.1	4.0	1.2	9	variable	variable
	Vertical	2.2	0.67	4.0	1.2	0	variable	variable
Celtik® 90 Wall	Angled	3.5	1.1	3.0	0.9	9	variable	variable
	Vertical	2.2	0.67	3.0	0.9	0	variable	variable
Grande Wall (see note)	375, 750, 1125 units	8.5	2.6	65	20	0	5	0.46
	375, 750, 1125 units	10.5	3.2	65	20	9	5	0.46
	375, 750, 1125 units	13.1	4.0	65	20	17	5	0.46
Keystone Wall (see note)	Compact	3.0	0.9	4.0	1.2	0 or 9	22 and/or 11	2 and/or 1
Orion Wall	Vertical	2.3	0.72	-	-	0	variable	variable
RB wall	Angled	2.4	0.60	-	-	9.6	3.10	33.40
Split-face Universal* Slope Block Wall	Without joints	5.0	1.5	5.0	1.5	10	35	3.2
	50 mm - 2 in. joints	4.25	1.3	5.0	1.5	10	28	2.6
	100 mm - 4 in. joints	3.7	1.1	5.0	1.5	10	24	2.2
Universal* Slope Wall	Without joints	4.00	1.20	5.0	1.5	15	35	3.2
	50 mm - 2 in. joints	3.25	1.00	5.0	1.5	15	28	2.6
	100 mm - 4 in. joints	2.75	0.80	5.0	1.5	15	24	2.2
Urbano Wall	Angled	2.4	0.72	-	-	3	variable	variable
	Vertical	2	0.60	-	-	0	variable	variable
Vario Wall (90 - 180 mm)	Angled	3.5 - 2.3	1.08 - 0.72	-	-	9.46	variable	variable
	Vertical	2.3 - 1.75	0.72 - 0.54	-	-	0	variable	variable
Wallstone Wall	Angled	16	0.40	-	-	14	3.10	33.40
	Vertical	16	0.40	-	-	0	3.10	33.40
Wedgestone Wall	Angled	16	0.40	2.0	0.6	14	variable	variable
	Vertical	16	0.40	2.0	0.6	0	variable	variable

NOTE: The walls can be installed with other height and overload specifications than those above. Specific designs for special project conditions are available. Consult your Permacon Sales Representative for details.

The information contained in these technical documents is supplied for information purposes only. Any application of the information is the sole responsibility of the installer. The installer must ensure that the installation and use of retaining wall projects comply with local regulations and code requirements. A qualified engineer must be consulted for final design for construction purposes. Oldcastle Building Products Canada, Inc. and its affiliates cannot be held responsible for the improper use of information contained in these technical documents.

# Wallstone and Wedgestone Walls

## DESCRIPTION

Wallstone and Wedgestone wall can be used separately or in combination for greater flexibility.

Suitable for gravity or grid, vertical or setback, straight or curved walls. All Wallstone and Wedgestone wall component units come pre-split. End grooves on Wallstone standard units maintain interlock between courses, even when placed vertically. Two thirds of standard units are also double rock-faced.

Wedgestone wall units are 100% double rock-faced and reversible for inside and outside curves. Units create a 600 mm - 2 in. outside radius without cutting.

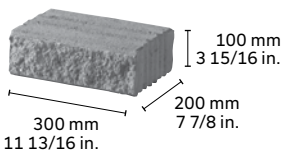
### TIP

4 Wedgestone wall units are required for a rounded 90° corner, 16 pcs for a full circle.

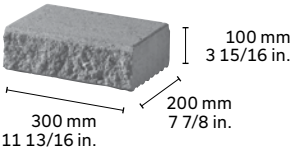
Patterned Wallstone walls can be stacked vertically up to 6 courses high (7 courses if using a Wallstone double unit in the base) or up to 8 courses if 50% of units have at least a one groove setback and a Wallstone double unit is used in the base course.

## WALLSTONE UNITS

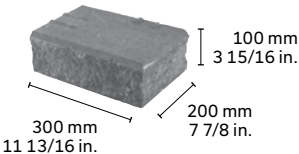
### STANDARD UNIT



### 12 IN. CAPPING UNIT

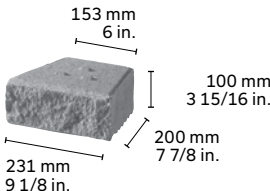


### CORNER/COLUMN UNIT

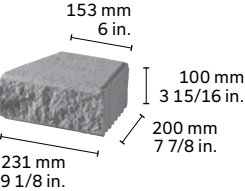


## WEDGESTONE UNITS

### STANDARD UNIT



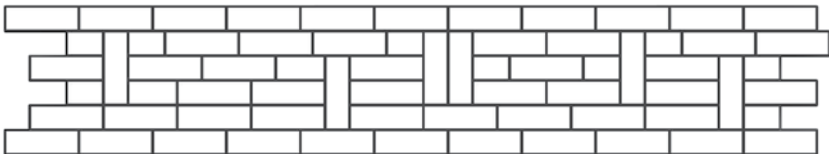
### CAPPING UNIT



## PATTERNS

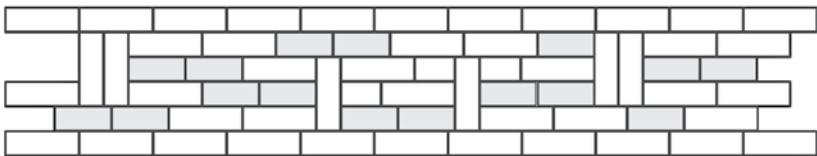
### PATTERN 1

Place Wallstone standard units vertically and horizontally to create interesting patterns within the wall.



### PATTERN 2

Add an additional dimension to your wall by including Wedgestone wall units in your pattern (shaded).

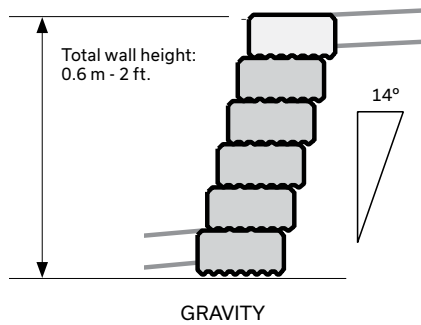


Consider recessing blocks to add further distinction. Except for the capping course, it is not recommended to set units forward beyond the front of the base course.

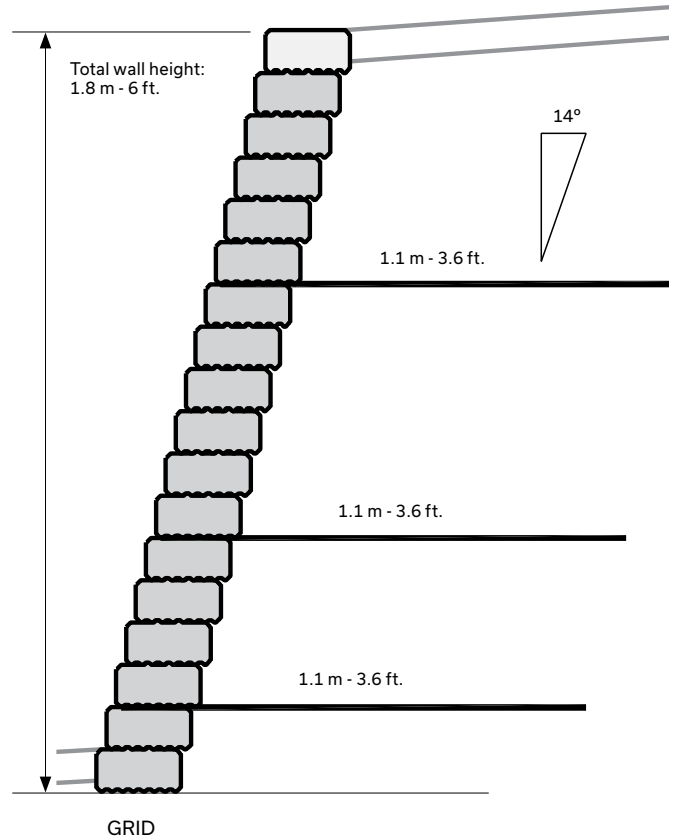
# WALLSTONE AND WEDGESTONE WALLS

## CROSS-SECTION -SETBACK GRAVITY WALL

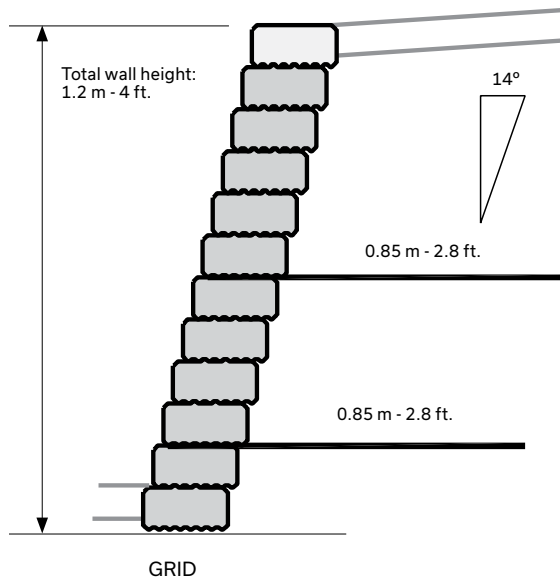
### 2 FOOT WALL HEIGHT



### 6 FOOT WALL HEIGHT



### 4 FOOT WALL HEIGHT



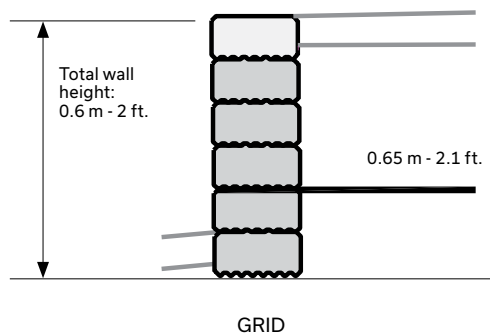
#### NOTES:

- 01 - Sample designs based on 2.4 kPa (50 psf) pedestrian surcharge. Use as preliminary design only when actual soil and surcharge conditions are conservatively represented by the standard engineering. In all cases, designs should be reviewed by a geotechnical engineer to ensure applicability to site.
- 02 - Designs consider free draining sand and gravel backfill material compacted to 95% SPMDD to a minimum depth of 375 mm - 15 in. behind the wall or to full extent of geogrid reinforcement, whichever is greater. Backfill materials to have less than 8% passing through the # 200 sieve.
- 03 - Designs consider 19 mm - 0 to 3/4 in. well graded, crushed angular granular materials for a minimum depth of 200 mm - 8 in. under the wall compacted to 98% SPMDD. Material to have less than 8% passing through the # 200 sieve.
- 04 - Designs consider minimum bearing capacity in subgrade soil below wall of 150 kPa (3000 psf).
- 05 - Different batter configurations, surcharge conditions or wall heights require different design configurations.
- 06 - No provision has been made for overall global stability of the designs.
- 07 - Minimum 100 mm - 4 in. of product must be buried in all situations. Design may require more depending on soil conditions or toe slope.
- 08 - Grid lengths are measured from front face of wall.
- 09 - Geogrid used in designs is Miragrid 2XT or 3XT.
- 10 - Designs for wall heights, batters and surcharges not represented on these pages can be attained from Permacon.
- 11 - Refer to standard engineering drawings for further details.
- 12 - Total wall height for Wallstone wall does not include capping unit.
- 13 - Sample designs are not designed for handrail, guard or fence loading. In these cases, design modifications will be required.
- 14 - Poor soil conditions and excessive moisture will require drainage and design modifications.

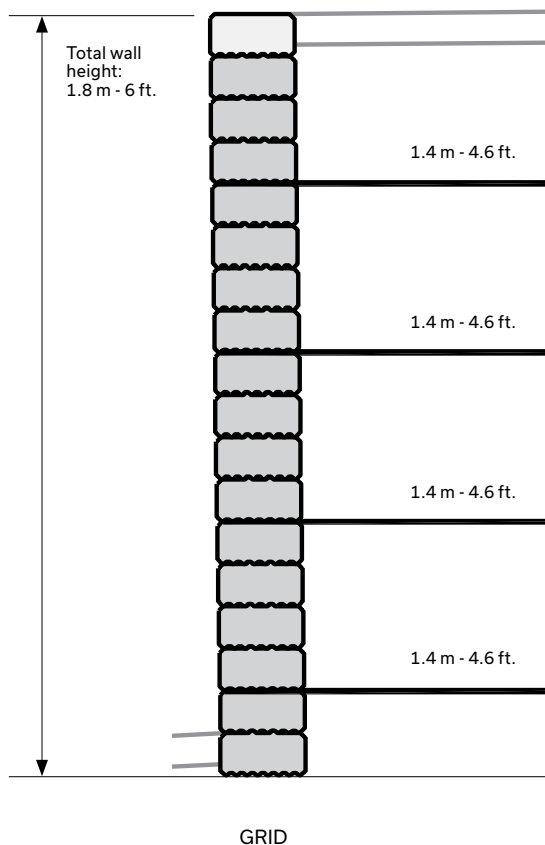
# WALLSTONE AND WEDGESTONE WALLS

## CROSS-SECTION -SETBACK VERTICAL WALL

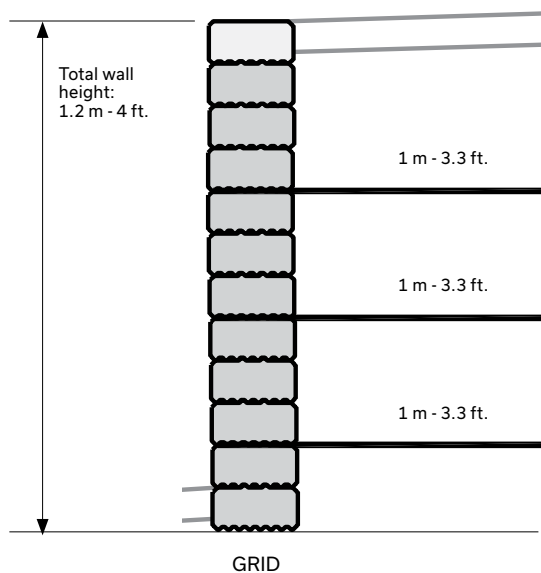
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### 6 FOOT WALL HEIGHT



### 4 FOOT WALL HEIGHT

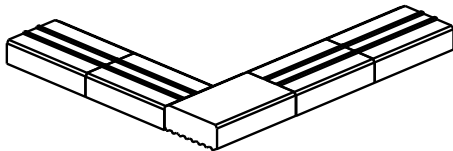


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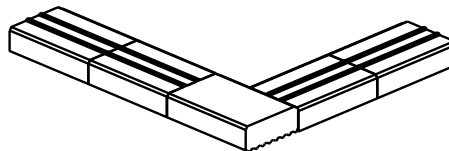
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## WALLSTONE AND WEDGESTONE WALLS

### CORNER - SINGLE DEPTH

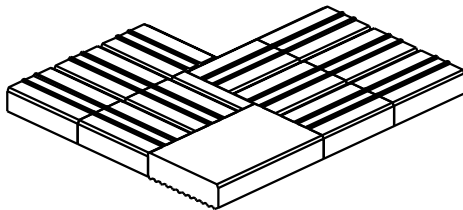


ROW A

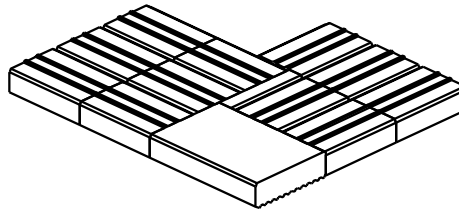


ROW B

### CORNER - MULTI DEPTH



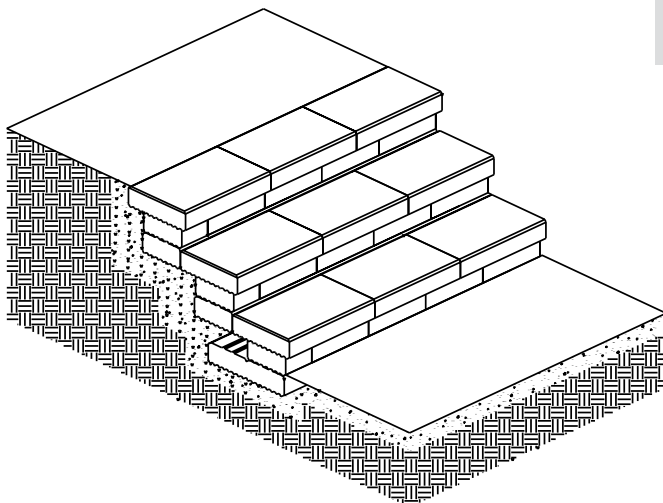
ROW A



ROW B

### STEPS

A double unit in the base of the bottom of the riser adds stability. Use 12 in. capping units as the stair tread.



#### TO CALCULATE PRODUCT REQUIREMENTS:

Double units = step width x 1

Standard units = step width x 2 x # of risers + step width x 1

Capping units = step width ÷ by capping width x # of risers

# WALL INSTALLATION GUIDELINES

## GENERAL INFORMATION - GRANDE, WALLSTONE AND RB WALL

These installation guidelines apply to garden and decorative walls built with any Permacon retaining wall system. For large structural or retaining walls, walls that exceed the maximum recommended height or walls in areas of poor drainage of soil conditions, please contact your Permacon sales representative for more specific installation requirements.

### DESIGN CONSIDERATIONS

When planning a garden or retaining wall, you should ask yourself several questions to ensure your finished installation will look good and last a lifetime.

- > How high will the wall be? Height of the wall should always include a minimum of one buried base course in addition to the height above ground. Different wall systems have different height capabilities. Be sure not to exceed the maximum recommended height for the wall product you choose.
- > Will the wall be straight, curved or both? Permacon Grande and Wallstone walls can create circles, soft flowing curves, straight linear designs or any of these in combination. Measure the curved and straight sections of the wall separately to make estimating easier.
- > What is the purpose of the wall? Some wall products are suitable for large retaining wall projects while others are ideal for small garden walls or planters.
- > Will the height of the wall vary? If the property has a slope, the wall height may vary accordingly. To make estimating easier, break the wall up into sections of equal height, always maintaining one buried base course.
- > Will the wall be terraced? If so, the front of the upper wall must be at least 1.5 times the height of the lower wall behind the back of the base course of the lower wall.
- > What setback do you need? Some Permacon wall products are capable of achieving vertical walls and other products have an automatic setback. Vertical walls typically can't go as high as setback walls without geogrid reinforcement. In addition, setback walls may require less product. When planning and measuring, keep in mind that a single setback moves the top of the wall back 25 mm (1") per course from the front of the base course.

Walls that exceed the maximum recommended height, walls in areas of poor drainage and walls with extra loading at the top may require special engineering. Please contact Permacon for more information if your wall falls into one of these categories.

### EXCAVATION & BASE PREPARATION

Set an excavation line using a chalk or string line. To create an accurate radius, drive a stake into the ground at the desired center of your project. Attach a string to the stake equal in length to the desired inside radius. Rotate the string to indicate the location of the back of the first course. Once laid out, excavate a trench equal to the depth of gravel material plus the height of one unit, or to firm soil. The trench should be approximately 100 to 150 mm - 4 to 6 in. wider than the wall block you have chosen.

After excavation, spread the base material uniformly throughout the trench with a hard toothed rake in layers of no more than 100 mm - 4in. Use the vibrating or hand tamper to compact the entire area evenly. Continue spreading and compacting base material until the desired depth is achieved and the surface has no low or high areas.

Place screed rails at the desired grade of the underside of the first course of wall. Level the screed rails with a 4 foot level or transit level. Place granular base material between the rails and screed level with a straight edge, such as a 2 x 4 timber. Compact this area with a hand tamper. After compacting, place more granular base material between the rails and screed level. This is the level surface for laying the wall base pieces.

### BASE COURSE & WALL CONSTRUCTION

Start placing the base course on top of the compacted base, beginning at the lowest point of the wall. Check alignment and leveling as you proceed. Continue with additional courses, adding and compacting backfill material behind the wall after every second course. To ensure adequate interlock between courses, we recommend a minimum joint overlap of 1/4 bond.

To ensure proper color distribution, take pieces from several bundles at a time, removing them in stacks rather than by layer.

TIP: Check the levelness of the wall every 2-3 courses by putting a string line along the length of the wall.