

## Redi-Rock 41" (1030 mm) Retaining Blocks

The Redi-Rock 41" (1030mm) Retaining wall blocks are machine-placed, wet-cast, precast modular block units manufactured from first-purpose, non-reconstituted concrete and intended for use in the construction of dry-stacked modular retaining wall systems. The block units are manufactured from structural-grade concrete mixes in accordance with ASTM C94 or ASTM C685 that produce a finished unit with excellent resistance to freeze-thaw, deicing chemical exposure, and submerged conditions in both fresh water and salt water applications. All Redi-Rock Retaining wall products are manufactured and distributed through an international network of individually-owned, licensed precast concrete manufacturers.

### DIMENSIONAL PROPERTIES

DIMENSIONS <sup>(1)</sup>	TOP	MIDDLE	BOTTOM	HALF TOP	HALF MIDDLE	HALF BOTTOM
HEIGHT (FRONT OF BLOCK)	18 ± 3/16 (457 ± 5)	18 ± 3/16 (457 ± 5)	18 ± 3/16 (457 ± 5)	18 ± 3/16 (457 ± 5)	18 ± 3/16 (457 ± 5)	18 ± 3/16 (457 ± 5)
HEIGHT (BACK OF BLOCK)	13 ± 3/16 (330 ± 5)	18 ± 3/16 (457 ± 5)	18 ± 3/16 (457 ± 5)	13 ± 3/16 (330 ± 5)	18 ± 3/16 (457 ± 5)	18 ± 3/16 (457 ± 5)
LENGTH (FRONT OF BLOCK)	46 1/8 ± 1/2 (1172 ± 13)			22 13/16 ± 1/4 (579 ± 6)		
LENGTH (BACK OF BLOCK)	36 5/8 ± 1/2 (930 ± 13)			13 9/16 ± 1/4 (344 ± 6)		
WIDTH	35 1/8 ± 1/2 (892 ± 13) FORM LINE TO BACK OF BLOCK AND ± 5 5/8 (136) FACE TEXTURE					
CONCRETE VOLUME	BOTTOM	MIDDLE	BOTTOM	HALF MIDDLE	HALF MIDDLE	HALF BOTTOM
LIMESTONE/COBBLESTONE FACE	±12.22 ft <sup>3</sup> (0.346 m <sup>3</sup> )	±16.14 ft <sup>3</sup> (0.457 m <sup>3</sup> )	±17.06 ft <sup>3</sup> (0.483 m <sup>3</sup> )	±5.38 ft <sup>3</sup> (0.15 m <sup>3</sup> )	±7.14 ft <sup>3</sup> (0.202 m <sup>3</sup> )	±7.58 ft <sup>3</sup> (0.214 m <sup>3</sup> )
LEDGESTONE FACE	±11.73 ft <sup>3</sup> (0.332 m <sup>3</sup> )	±15.65 ft <sup>3</sup> (0.443 m <sup>3</sup> )	±16.56 ft <sup>3</sup> (0.469 m <sup>3</sup> )	±5.14 ft <sup>3</sup> (0.15 m <sup>3</sup> )	±6.90 ft <sup>3</sup> (0.195 m <sup>3</sup> )	±7.33 ft <sup>3</sup> (0.208 m <sup>3</sup> )
SHIPPING/HANDLING WEIGHT <sup>(2)</sup>	MIDDLE	BOTTOM	HALF MIDDLE	HALF MIDDLE	HALF BOTTOM	
LIMESTONE/COBBLESTONE FACE	± 1748 lb (793 kg)	± 2309 lb (1047 kg)	± 2439 lb (1106 kg)	± 770 lb (350 kg)	± 1022 lb (463 kg)	±1083 lb (491 kg)
LEDGESTONE FACE	± 1677 lb (760 kg)	± 2237 lb (1015 kg)	± 2368 lb (1074 kg)	± 735 lb (333 kg)	± 987 lb (448 kg)	± 1048 lb (475 kg)

<sup>(1)</sup> All dimensions are inches (mm).

<sup>(2)</sup> Weight shown is based on an assumed concrete unit weight of 143 lb/ft<sup>3</sup> (2291 kg/m<sup>3</sup>). Actual weights will vary.

### CONCRETE MIX PROPERTIES <sup>(3)</sup>

FREEZE THAW EXPOSURE CLASS <sup>(4)</sup>	MINIMUM 28 DAY COMPRESSIVE STRENGTH <sup>(5)</sup>	MAXIMUM WATER CEMENT RATIO	NOMINAL MAXIMUM AGGREGATE SIZE	AGGREGATE CLASS DESIGNATION <sup>(6)</sup>	AIR CONTENT <sup>(7)</sup>
MODERATE	4,000 psi (27.6 MPa)	0.45	1 inch (25 mm)	3M	4.5% ± 1.5%
SEVERE	4,000 psi (27.6 MPa)	0.45	1 inch (25 mm)	3S	6.0% ± 1.5%
VERY SEVERE	4,500 psi (30.0 MPa)	0.40	1 inch (25 mm)	4S	6.0% ± 1.5%
MAXIMUM WATER-SOLUBLE CHLORIDE ION (Cl <sup>-</sup> ) CONTENT IN CONCRETE, PERCENT BY WEIGHT OF CEMENT <sup>(8,9)</sup>					0.15
MAXIMUM CHLORIDE AS Cl <sup>-</sup> CONCENTRATION IN MIXING WATER, PARTS PER MILLION					1000
MAXIMUM PERCENTAGE OF TOTAL CEMENTITIOUS MATERIALS BY WEIGHT <sup>(10,12)</sup> (VERY SEVERE EXPOSURE CLASS ONLY)					
FLY ASH OR OTHER POZZOLANS CONFORMING TO ASTM C618					25
SLAG CONFORMING TO ASTM C989					50
SILICA FUME CONFORMING TO ASTM C1240					10
TOTAL OF FLY ASH OR OTHER POZZOLANS, SLAG, AND SILICA FUME <sup>(12)</sup>					50
TOTAL OF FLY ASH OR OTHER POZZOLANS AND SILICA FUME <sup>(12)</sup>					35
ALKALI-AGGREGATE REACTIVITY MITIGATION PER ACI 201					

<sup>(3)</sup> Concrete mix properties are in general accordance with ACI 318 durability requirements. Research has shown that concrete manufactured to these standards demonstrates good durability and performance. When these requirements are followed, specific freeze-thaw testing of the concrete is typically NOT required.

<sup>(4)</sup> Exposure class is as described in ACI 318. "MODERATE" describes concrete that is exposed to freezing and thawing cycles and occasional exposure to moisture. "SEVERE" describes concrete that is exposed to freezing and thawing cycles and in continuous contact with moisture. "VERY SEVERE" describes concrete that is exposed to freezing and thawing cycles and in continuous contact with moisture and exposed to deicing chemicals. Exposure class should be specified by owner/purchaser prior to order placement. Longer lead times may be required for block units manufactured for "severe" and "very severe" exposure classes.

<sup>(5)</sup> Test method ASTM C39.

<sup>(6)</sup> Defined in ASTM C33 Table 3 *Limits for Deleterious Substances and Physical Property Requirements of Coarse Aggregate for Concrete*.

<sup>(7)</sup> Test method ASTM C231.

<sup>(8)</sup> Test method ASTM C1218 at age between 28 and 42 days.

<sup>(9)</sup> Where used in high sulfate environments or where alkali-silica reactivity is an issue, water soluble chloride shall be limited to no more than trace amounts (from impurities in concrete-making components, not intended constituents.)

<sup>(10)</sup> The total cementitious material also includes ASTM C150, C595, C845, and C1157 cement. The maximum percentages shall include:

- (a) Fly ash or other pozzolans in type IP, blended cement, ASTM C595, or ASTM C1157.
- (b) Slag used in the manufacture of an IS blended cement, ASTM C595, or ASTM C1157.
- (c) Silica fume, ASTM C1240, present in a blended cement.

<sup>(11)</sup> Fly ash or other pozzolans and silica fume shall constitute no more than 25 and 10 percent, respectively, of the total weight of the cementitious materials.

<sup>(12)</sup> Prescriptive limits shown may be waived for concrete mixes that demonstrate excellent freeze/thaw durability in a detailed and current testing program.

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## DESIGN PROPERTIES

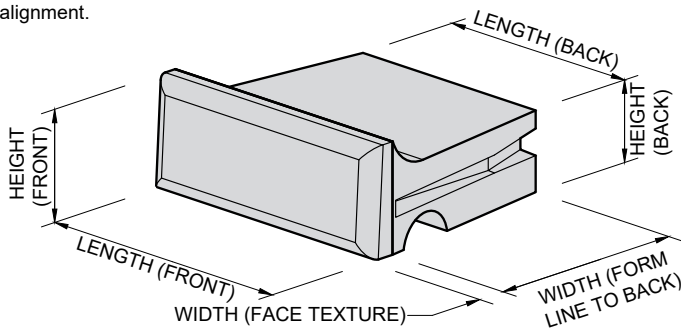
HORIZONTAL SETBACK / WALL FACE BATTER OPTIONS		BLOCK TO BLOCK INTERFACE SHEAR <sup>(13)</sup>
10 inch (254 mm) KNOB	1 5/8 inch (41 mm) PER BLOCK COURSE (5.2° BATTER)	$V = 6,061 + N \tan 44^\circ \leq 11,276 \text{ lb/ft} (88.4 + N \tan 44^\circ \leq 164.5 \text{ kN/m})$
7 1/2 inch (190 mm) KNOB	3/8 inch (10 mm) PER BLOCK COURSE (1.2° BATTER)	$V = 1,178 + N \tan 54^\circ \leq 10,970 \text{ lb/ft} (17.2 + N \tan 54^\circ \leq 160.1 \text{ kN/m})$
6 3/4 inch (171 mm) KNOB	NO SETBACK (NO BATTER) <sup>(12)</sup>	$V = 1,178 + N \tan 54^\circ \leq 10,970 \text{ lb/ft} (17.2 + N \tan 54^\circ \leq 160.1 \text{ kN/m})$
INFILLED UNIT WEIGHT FOR WALL STABILITY CALCULATIONS <sup>(14)</sup>		
LIMESTONE / COBBLESTONE BLOCKS		130 lb/ft <sup>3</sup> (2082 kg/m <sup>3</sup> )
LEDGESTONE BLOCKS		126 lb/ft <sup>3</sup> (2018 kg/m <sup>3</sup> )
MINIMUM CONSTRUCTION RADIUS <sup>(15)</sup>		
CONCAVE CURVE		14 ft 6 in (4.42 m)
CONVEX CURVE		14 ft 6 in (4.42 m)

<sup>(12)</sup> Special consideration should be given to the design of vertical retaining walls subject to active lateral earth pressure.

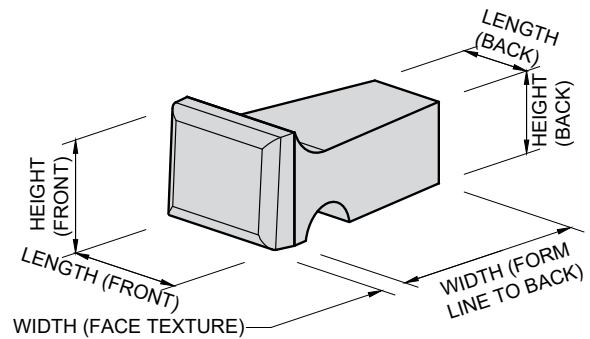
<sup>(13)</sup> Values based on full scale testing performed in October 2011. Copies of the full test reports are available at [www.redi-rock.com](http://www.redi-rock.com).

<sup>(14)</sup> The infilled unit weights shown here are based on an assumed concrete unit weight of 143 lb/ft<sup>3</sup> (2291 kg/m<sup>3</sup>) and an assumed soil unit weight of 100 lb/ft<sup>3</sup> (1602 kg/m<sup>3</sup>). They are reference values. Several factors can cause the unit weights of both concrete and infill soil to vary. The designer should use sound engineering judgement when assigning an infilled unit weight value for analysis.

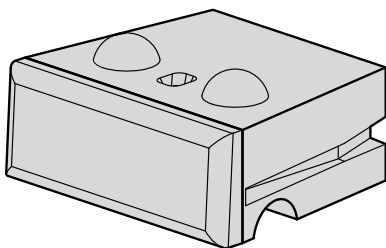
<sup>(15)</sup> The minimum construction radius stated is applicable to both concave and convex curved retaining wall sections. Increases to this minimum radius are required to account for wall batter. Special consideration should be given to block selection, facing batter, and wall height when selecting the minimum radius for the final wall alignment.



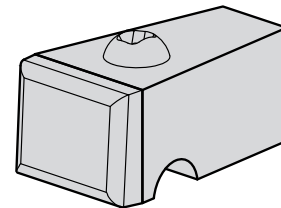
TOP



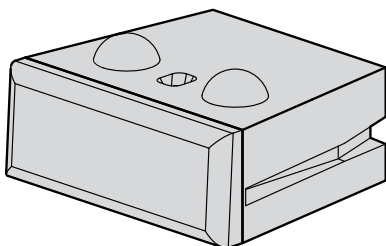
HALF TOP



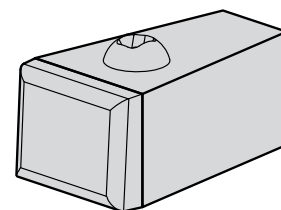
MIDDLE



HALF MIDDLE



BOTTOM



HALF BOTTOM