IMPORTANT NOTICE

The design specifications for Redi-Rock® blocks suggest maximum installation heights under certain assumed conditions. These wall heights were calculated using the assumed material properties and loading conditions in the Design Resource Manual and will vary from location to location depending on the soil properties and terrain. Since soil conditions and topography vary greatly from site to site, an engineering analysis must be performed for each wall installation.

Because Redi-Rock International does not build the blocks or install the wall system, Redi-Rock International does not assume any responsibility regarding structural stability of any particular block or particular wall system. In addition, Redi-Rock International assumes no responsibility in connection with any injury, death, or property damage claim whatever whether asserted against a Leasee, Lesor, Purchaser or others, arising out of or attributable to the operation of or products produced with Redi-Rock International equipment.

9" (230 mm) SETBACK WALLS

34° | DENSE WELL-GRADED SAND or SAND AND GRAVEL ........................................... 108
30° | FINE TO MEDIUM SAND or SILTY SAND ................................................................. 116
28° | SILTY SAND or CLAYEY SAND .................................................................................. 121

ALLOWABLE STRESS DESIGN

Preliminary Height Guide

This preliminary height guide has been prepared showing Redi-Rock walls in a variety of assumed conditions. It is intended to give the specifier an idea of what block types are required and what heights are achievable with Redi-Rock in different applications. A combination of Redi-Rock 28° (710 mm), 34° (1070 mm), 41° (1370 mm), and 60° (1620 mm) wide blocks with blocks in the 9" (230 mm) setback position are used to provide the most efficient cross-section available in the different conditions.

Several assumptions have been made in preparation of the guide. They are listed in the notes below. If these assumptions do not match the wall section under consideration, block selections and achievable heights may vary from the sections shown in this guide. All wall sections for construction must be designed by a registered Professional Engineer using the actual conditions of the site.

Notes:

- This preliminary guide has been prepared for three different soil types and three different load conditions to give an indication of the performance of Redi-Rock walls. Redi-Rock walls are not limited to these conditions. Specific wall sections can be designed for different soil and loading conditions.
- Unit weight of soil is assumed to be 120 lb/ft³ (18.61 kN/m³) or 180 lb/ft³ (28.6 kN/m³) as noted for each section of this preliminary guide.
- Minimum factor of safety is 1.5 for bearing capacity and 1.3 for global stability. Other factors of safety will result in changes from the wall heights and block selections shown in this guide.
- No seismic or hydrostatic loads were included in this preliminary guide.
- All Redi-Rock products are manufactured by independently owned, licensed manufacturers. Product offerings will vary between manufacturers. Contact your local manufacturer to determine what products are available for your job.
Preliminary Height Guide

9° (230 mm) SETBACK WALLS

ALLOWABLE STRESS DESIGN

**φ = 34°**

**DENSE WELL-GRDED SAND or SAND AND GRAVEL**

<table>
<thead>
<tr>
<th>LOAD CONDITION A</th>
<th>NO LIVE LOAD SURFACE, NO BACK SLOPE, NO TOE SLOPE</th>
<th>NO LIVE LOAD SURCHARGE, NO BACK SLOPE, NO TOE SLOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large batter gravity walls</td>
<td>Assumed retained and foundation soils for this Section</td>
<td>SECTION 1 OF 3</td>
</tr>
<tr>
<td>SW, GW</td>
<td>Internal angle of friction</td>
<td>φ = 34°</td>
</tr>
<tr>
<td>γ = 130 lb / ft² (20.4 kN / m²)</td>
<td>Unit weight</td>
<td>c = 0 lb / ft² (0 kPa)</td>
</tr>
<tr>
<td>♦ ♦ ♦ ♦</td>
<td>Cohesion</td>
<td>♦ ♦ ♦ ♦</td>
</tr>
<tr>
<td>♦ ♦ ♦ ♦</td>
<td>♦ ♦ ♦ ♦</td>
<td>♦ ♦ ♦ ♦</td>
</tr>
</tbody>
</table>

LOAD CONDITION B | 250 lb/ft² (12 kPa) LIVE LOAD SURCHARGE, NO BACK SLOPE, NO TOE SLOPE

LOAD CONDITION C | 1 : 2.5 BACK SLOPE, NO TOE SLOPE, NO LIVE LOAD SURCHARGE

SEE NOTES AND RECOMMENDED DETAILS AT START OF PRELIMINARY HEIGHT GUIDE.
Preliminary Height Guide

**LOAD CONDITION A**

**NO LIVE LOAD SURCHARGE, NO BACK SLOPE, NO TOE SLOPE**

<table>
<thead>
<tr>
<th>BLOCK HIGH SECTION</th>
<th>LOAD</th>
<th>BLOCKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 BLOCK HIGH SECTION</td>
<td>(1) 28&quot; (710 mm) Top Block</td>
<td>(9) 41&quot; (1030 mm) Blocks</td>
</tr>
<tr>
<td>12 BLOCK HIGH SECTION</td>
<td>(1) 28&quot; (710 mm) Top Block</td>
<td>(11) 41&quot; (1030 mm) Blocks</td>
</tr>
<tr>
<td>14 BLOCK HIGH SECTION</td>
<td>(1) 28&quot; (710 mm) Top Block</td>
<td>(15) 41&quot; (1030 mm) Blocks</td>
</tr>
</tbody>
</table>

**LEGEND:**

![Block Symbols]

SEE NOTES AND RECOMMENDED DETAILS AT THE START OF PRELIMINARY HEIGHT GUIDE.
Preliminary Height Guide

LOAD CONDITION C  1:2.5 BACK SLOPE, NO TOE SLOPE, NO LIVE LOAD SURCHARGE

2 BLOCK HIGH SECTION
(1) 28” (710 mm) Top Block
(2) 41” (1030 mm) Blocks

3 BLOCK HIGH SECTION
(1) 28” (710 mm) Top Block
(2) 41” (1030 mm) Blocks

4 BLOCK HIGH SECTION
(1) 28” (710 mm) Top Block
(2) 41” (1030 mm) Blocks

5 BLOCK HIGH SECTION
(1) 28” (710 mm) Top Block
(2) 41” (1030 mm) Blocks

6 BLOCK HIGH SECTION
(1) 28” (710 mm) Top Block
(2) 41” (1030 mm) Blocks

7 BLOCK HIGH SECTION
(1) 28” (710 mm) Top Block
(2) 41” (1030 mm) Blocks

8 BLOCK HIGH SECTION
(1) 28” (710 mm) Top Block
(2) 41” (1030 mm) Blocks

9 BLOCK HIGH SECTION
(1) 28” (710 mm) Top Block
(2) 41” (1030 mm) Blocks

Legend:
= 28” (710 mm) BLOCK
= 41” (1030 mm) BLOCK
= 60” (1520 mm) BLOCK

SEE NOTES AND RECOMMENDED DETAILS AT START OF PRELIMINARY HEIGHT GUIDE.
9" (230 mm) SETBACK WALLS

**Preliminary Height Guide**

**ALLOWABLE STRESS DESIGN**

### \( \phi = 30° \) FINE TO MEDIUM SAND or SILTY SAND

**Large batter gravity walls**

**Section 2 of 3**

**Assumed retained and foundation soils for this Section**

SW, SP, SM

**Internal angle of friction**

\( \phi = 30° \)

**Unit weight**

\( \gamma = 120 \text{ lb} / \text{ft}^3 (18.8 \text{ kN} / \text{m}^3) \)

**Cohesion**

\( c = 0 \text{ lb} / \text{ft}^2 \) (0 kPa)

**Load Condition A**

No live load surface, no back slope, no toe slope

---

**Load Condition B**

250 lb/ft² (12 kPa) live load surcharge, no back slope, no toe slope

---

**Load Condition C**

1 : 2.5 back slope, no toe slope, no live load surcharge

---

**Legend:**

- 28" (710 mm) BLOCK
- 41" (1020 mm) BLOCK
- 60" (1580 mm) BLOCK

SEE NOTES AND RECOMMENDED DETAILS AT START OF PRELIMINARY HEIGHT GUIDE.
### Preliminary Height Guide

#### \( \phi = 30° \) | FINE TO MEDIUM SAND or SILTY SAND

**LOAD CONDITION C** | 1:2.5 BACK SLOPE, NO TOE SLOPE, NO LIVE LOAD SURCHARGE

#### 9" (230 mm) SETBACK WALLS

**2 BLOCK HIGH SECTION**
1. 28" (710 mm) Top Block
2. 41" (1030 mm) Block

#### 4 BLOCK HIGH SECTION
1. 28" (710 mm) Top Block
2. 41" (1030 mm) Block

#### 6 BLOCK HIGH SECTION
1. 28" (710 mm) Top Block
2. 41" (1030 mm) Block
3. 40" (1020 mm) Block

---

#### \( \phi = 28° \) | SILTY SAND or CLAYEY SAND

**SECTION 3 OF 3**

- Assumed retained and foundation soils for this Section
  - SM, SC
- Internal angle of friction
  - \( \phi = 28° \)
- Unit weight
  - \( \gamma = 120 \text{ lb} / \text{ft}^3 (18.8 \text{ kN} / \text{m}^3) \)
- Cohesion
  - \( c = 0 \text{ lb} / \text{ft}^2 (0 \text{ kPa}) \)

**LOAD CONDITION A** | NO LIVE LOAD SURFACE, NO BACK SLOPE, NO TOE SLOPE

**LOAD CONDITION B** | 250 lb/ft\(^2\) (12 kPa) LIVE LOAD SURCHARGE, NO BACK SLOPE, NO TOE SLOPE

**LOAD CONDITION C** | 1:2.5 BACK SLOPE, NO TOE SLOPE, NO LIVE LOAD SURCHARGE

---

**Legend:**

- \( \theta = 28° (710 \text{mm}) \) BLOCK
- \( \theta = 41" (1030 \text{mm}) \) BLOCK
- \( \theta = 40" (1020 \text{mm}) \) BLOCK

---

SEE NOTES AND RECOMMENDED DETAILS AT START OF PRELIMINARY HEIGHT GUIDE.
9" (230 mm) SETBACK WALLS

Preliminary Height Guide

**LOAD CONDITION A**
NO LIVE LOAD SURCHARGE, NO BACK SLOPE, NO TOE SLOPE

**ϕ = 28°**
Silty Sand or Clayey Sand

**2 BLOCK HIGH SECTION**
(1) 28" (710 mm) Top Block
(1) 41" (1050 mm) Blocks

**ϕ = 28°**

**3 BLOCK HIGH SECTION**
(1) 28" (710 mm) Top Block
(2) 41" (1050 mm) Blocks

**ϕ = 28°**

**4 BLOCK HIGH SECTION**
(3) 28" (710 mm) Top Block
(3) 41" (1050 mm) Blocks

**ϕ = 28°**

**5 BLOCK HIGH SECTION**
(1) 28" (710 mm) Top Block
(4) 41" (1050 mm) Blocks

**ϕ = 28°**

**6 BLOCK HIGH SECTION**
(1) 28" (710 mm) Top Block
(5) 41" (1050 mm) Blocks

**ϕ = 28°**

**7 BLOCK HIGH SECTION**
(1) 28" (710 mm) Top Block
(5) 41" (1050 mm) Blocks
(1) 60" (1520 mm) Block

**ϕ = 28°**

**8 BLOCK HIGH SECTION**
(1) 28" (710 mm) Top Block
(4) 41" (1050 mm) Blocks
(2) 60" (1520 mm) Blocks
(1) 83½" (2120 mm) Block

**ϕ = 28°**

**9 BLOCK HIGH SECTION**
(1) 28" (710 mm) Top Block
(2) 41" (1050 mm) Blocks
(3) 60" (1520 mm) Blocks
(1) 104½" (2650 mm) Block

**ϕ = 28°**

Legend:

- ± 28" (710 mm) BLOCK
- ± 41" (1050 mm) BLOCK
- ± 60" (1520 mm) BLOCK
- ± 83½" (2120 mm) BLOCK
- ± 104½" (2650 mm) BLOCK

SEE NOTES AND RECOMMENDED DETAILS AT START OF PRELIMINARY HEIGHT GUIDE.
### Preliminary Height Guide

#### ALLOWABLE STRESS DESIGN

**Load Condition C**

<table>
<thead>
<tr>
<th>Number of Blocks</th>
<th>Block Height</th>
<th>Block Width</th>
<th>Angle (°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>28&quot; (710 mm) Top Block</td>
<td>4&quot; (102 mm)</td>
<td>28°</td>
</tr>
<tr>
<td>3</td>
<td>28&quot; (710 mm) Top Block</td>
<td>4&quot; (102 mm)</td>
<td>28°</td>
</tr>
<tr>
<td>4</td>
<td>28&quot; (710 mm) Top Block</td>
<td>4&quot; (102 mm)</td>
<td>28°</td>
</tr>
</tbody>
</table>

#### 9" (230 mm) Setback Walls

**Residential Erosion Protection**

- **Block Manufacturer:** MDC Contracting, LLC
- **Engineer:** Benchmark Engineering
- **Installer:** Harbor Springs Excavating
- **Location:** Harbor Springs, Michigan
- **Completed:** 2008

---

**Legend:**

- 28" (710 mm) BLOCK
- 41" (1030 mm) BLOCK
- 60" (1520 mm) BLOCK

SEE NOTES AND RECOMMENDED DETAILS AT START OF PRELIMINARY HEIGHT GUIDE.

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