NOTES

Typical Gravity Wall Section

- **Exposed wall** (Height varies with design)
- **Setback = 1 3/8" (41 mm)** (5° batter angle on wall)
- **Grade to drain surface water away from wall**
- **Drain (As specified by Engineer)**
- **Drainstone (AASHTO No. 57 or equivalent)**
  - to extend at least 12" (305 mm) behind blocks
- **Fill vertical core slot with drainstone (PC blocks)**
- **Non-woven geotextile fabric** (if specified by Engineer based on site soil conditions)
- **Middle block (Typical)**
  - Block widths vary with design
- **Solid bottom block**
  - Block widths vary with design
- **Bury depth**
- **Top block**
- **Leveling pad (As specified by Engineer)**

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
**Alternating Planter & Standard Batter Wall Section**

The Redi-Rock retaining blocks are available with multiple shear knob size and location options, to permit wall batter design flexibility. This detail depicts alternating 16 5\(\frac{3}{8}\)" (422 mm) Planter and 1 5\(\frac{3}{8}\)" (41 mm) Standard setback blocks, however designs are possible using more than one Standard setback block between Planter blocks. The regular repetition of combinations of different setback blocks within a wall profile can have structural and aesthetic significance. Abrupt changes in wall batter that carry over multiple blocks are not recommended.

**Effective Wall Setback**
Varies, Depending Upon Combination of Blocks Used to Construct Wall.

**Min. Bury Depth**
28" (710 mm)

**Exposed Wall Height**
(Height varies with design)

**Top Block**
Move Blocks Forward During Installation to Engage Shear Knobs (Typical)

**Leveling Pad**
(As specified by Engineer)

**Perforated Sock Drain**
(As specified by Engineer)

**Non-Woven Geotextile Fabric**
(If specified by Engineer)

**Drainage aggregate**
Fill vertical core slot and wedge between adjacent blocks with drainage aggregate (Typical)

**Reinforced Soil**

**Retained soil**

**L**
(Length of geogrid strip - Typical)

**Setback**
1 5\(\frac{3}{8}\)" (41 mm)

**Grade to drain surface water away from wall**

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site. Final wall design must address both internal and external drainage and all modes of wall stability.

---

**Typical Reinforced Wall Section**

**Non-woven geotextile fabric**

**Leveling pad (As specified by Engineer)**

**Setback**
1 5\(\frac{3}{8}\)" (41 mm)

12" (305 mm) wide strip of geogrid wrapped through block and extending full length (L) back into reinforced fill zone (Typical)

**Grade to drain surface water away from wall**

**Non-woven geotextile fabric**
(If specified by Engineer)

**Drain (As specified by Engineer)**

**Reinforced Soil**

**Drainage aggregate**

**28" (710 mm) PC Middle block (Typical)**

**28" (710 mm) PC Bottom block**

**Fill (As specified by Engineer)**

**Leveling pad (As specified by Engineer)**

**Non-woven geotextile fabric**

**28" (710 mm) PC Middle block (Typical)**

**28" (710 mm) PC Bottom block**

**Only use strips of Mirafi geogrid that have been factory cut and are certified for width and strength by TenCate Mirafi.**

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
TYPICAL CONSTRUCTION DETAILS

**Conceptual Seawall Detail**

- **Optional Concrete Footing**
  - Shear Key for Wall Sliding Resistance
  - Footing Size and Dimensions per Site Specific Design

- **Wall Section**
  - Armor stone as specified by local Professional Engineer
  - Water surface (Elevation varies)
  - Blocks to extend below long term scour depth determined by local Professional Engineer based on site-specific conditions

- **Notes:**
  - Use ASTM No. 57 stone (or as specified by local Professional Engineer) to infill between blocks.
  - Preliminary wall height charts do not apply and should not be used for walls in water applications due to the variety of site-specific variables.
  - Contact your local Professional Engineer for specific details and final design.
  - Walls may require geogrid reinforcement.
  - Refer to final engineering plans.

**Conceptual Sheetpile Protected Seawall Detail**

- **Ground Surface**
- **Water Surface** (Elevation Varies)
- **Armor Stone** (If Specified)
- **ASTM No. 57 Drainstone**
- **Non-woven geotextile fabric**

- **Steel Sheet Pile** (Design as Required for Long Term Scour Depth and Global Stability)

- **Steel Reinforcement**
  - As Required per Footing Design

- **Shear Key for Wall Sliding Resistance**

**NOTES:**
- Use ASTM No. 57 stone (or as specified by local Professional Engineer) to infill between blocks.
- Maximum wall height charts are not provided for walls in water applications due to the variety of site-specific variables. Contact your local Professional Engineer for specific details and final design.
- Walls may require geogrid reinforcement. Refer to final engineering plans.
- Seawalls could be constructed with filled trough Planter Blocks using a 165° setback per course.

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
Typical Construction Details

Internal Drainage Options

Typical Section - Option 1

- 18" x 12" (457 mm x 305 mm) non-woven geotextile fabric (AASHTO M288 Survivability Class 3) in corner of joint between adjacent blocks.
- Drainage aggregate in wedge between blocks, in vertical core slot, and 12" (305 mm) behind blocks.
- Drain pipe (As specified).

Typical Section - Option 2

- Non-woven geotextile fabric (AASHTO M288 Survivability Class 3) glued to back of blocks to cover vertical joints.
- Drainage composite (Chimney drain).

Blanket and Chimney Drain Section

Intended for poor-draining retained soils and/or areas with potential groundwater impact.

- Drainage aggregate (In wedge between blocks).
- Coarse drainage aggregate (AASHTO M273 Survivability Class 3).
- Non-woven geotextile fabric (AASHTO M288 Survivability Class 3) in corner of joint between adjacent blocks.
- Drain pipe (As specified).

Typical Drainage Detail - Cross Section

Grade to drain surface water away from wall.

Drainage composite (Chimney drain) located at 0.7H or Maximum Elevation of Groundwater Rise.

Non-woven geotextile fabric (AASHTO M288 Survivability Class 2) in corner of joint between adjacent blocks.

Drainage aggregate in wedge between blocks and in vertical core slot.

Drain pipe (As specified).

Blanket and Chimney Drain Section

- Coarse drainage aggregate (AASHTO M273 Survivability Class 3).
- Non-woven geotextile fabric (AASHTO M288 Survivability Class 3) in corner of joint between adjacent blocks.
- Drain pipe (As specified).

Alternate Detail for Concrete or Impervious Leveling Pad

- Crushed stone leveling pad.
- Perforated pipe, gravity drain to outlet (as specified by Engineer).

Applicable for sites with groundwater well below the leveling pad elevation and well-drained retained soils.

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
### Typical Drainage Detail - Isometric View

- **Grade to drain surface water away from wall**
- **Extend geotextile over drainstone and below surface materials**
- **Drainstone (AASHTO No. 57 or equivalent) to extend at least 12 inches (305 mm) behind 18-inch high Redi-Rock blocks**
- **Non-woven geotextile fabric at back of XL blocks and between drainstone and retained soil (if specified by Engineer based on site soil conditions. Shown cut away.)**
- **Fill all void spaces in and between blocks with drainstone (AASHTO No. 57 or equivalent)**

**Non-woven geotextile fabric between adjacent blocks at face (Required between all blocks. Shown only in indicated location for clarity.)**

**Crushed stone leveling pad**

**Perforated pipe, gravity drain to outlet (as specified by Engineer)**

---

### Wall Drain Weep Hole Options

- **Solid PVC or HDPE drain pipe cast into block**
  - Diameter = 3" (76 mm) or 4" (102 mm) as specified on plans

- **Pipe to extend 6" (152 mm) to 8" (203 mm) from back of block for connection to perforated wall drain**

#### Custom Pipe Cast into Block

- **Notch ± 2.5" x 5" (64 mm x 127 mm) hole in side of a Redi-Rock block**

#### Field Installed Pipe

- **Place Solid PVC or HDPE drain pipe through notched hole and grout pipe in place**

- **Connect to perforated wall drain**

---

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

90° Outside Corner

Isometric View of Corner

The top row of blocks in this diagram are shown in red. They have been cutout in line with their bottom grooves to show how they fit with the knobs on the bottom row of blocks.

10" (254 mm) knob is fully engaged

Non-woven geotextile fabric in all joints between blocks (Typical)

90 Degree Corner block

Top View of Bottom Two Rows

Steps Through Wall

Steps Through Wall Blocks (Per Design)

Step Blocks Placed Tight Against Wall Return Wall. Field Cut Step Blocks To Fill When Return Wall Has Batter

Freestand Blocks or Retaining Blocks (Per Design)

Retaining Wall Blocks (Per Design)

Slope 1%-2% for Drainage

Approach Grade

6" TYP

6" TYP

12" min.

6" Compacted Granular Base Below Steps

Stair Section

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
Notes:
- Wall is flush with building.
- Rows 2, 4, 6, and 8 require approximately 1/8" (3 mm) gaps between blocks for length of wall given.
- Solution shown based on a 24" (610 mm) wide corner block.

Flush End to 90° Corner

<table>
<thead>
<tr>
<th>Row</th>
<th>Short Blocks Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2 and 3</td>
<td>1 per Row</td>
</tr>
<tr>
<td>4 and 5</td>
<td>2 per Row</td>
</tr>
<tr>
<td>6 and 7</td>
<td>3 per Row</td>
</tr>
<tr>
<td>8</td>
<td>4 per Row</td>
</tr>
</tbody>
</table>

Double 90° Outside Corner - Short Block Solution

Alternate long and short face of Freestanding Corner block on either end of row for proper spacing (Typical)

Short Block Requirements
(1) Short Block on the 2nd Row
(2) Short Blocks on the 3rd Row
(3) Short Blocks on the 4th Row
(4) Additional Short Block For Every Additional Row to the Top of the Wall

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
One knob on each block must be removed from the planter blocks at the transition into and out of planters. Planter transitions will alter the bond (vertical joint) alignment from course to course.

**Transitions Into Planters**

**Transition From 5° Batter to 9" (230 mm) Setback**

- Untextured top of block and stone infill between adjacent blocks will be visible (Typical)
- Grade to wrap along wall return as needed if heights of wall sections differ
- Blocks to extend into the retained soil as needed
- Wall section with 5° batter
- Retaining block with 7 1/2" (190 mm) diameter knobs (Typical)
- Wall section with 9" (230 mm) setback
- Recess pocket and lifting insert may be visible
- Preferred option is to start construction at transition and work away in both directions.
- If construction cannot start at transition, blocks must be field cut as needed to fit.

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
90° Outside Corner for 9" (230 mm) Setback Walls

Freestanding Corner Top Block (Typical)

Special 9" (230 mm) Setback Block with 7 1/2" (190 mm) diameter knobs (Typical)

Multiple Row Installation

Untextured top of block and stone infill between adjacent blocks will be visible (Typical)

The top row of blocks in this diagram have been cutout in line with their bottom grooves to show how they fit with the knobs on the bottom row of blocks.

10" (254 mm) knob fully engaged with the groove on the block above (Typical)

7 1/2" (190 mm) knobs do not interfere with the groove on the block above (Typical)

Special 9" (230 mm) setback block with 7 1/2" (190 mm) knobs (Typical)

90° Outside Corner for 9" (230 mm) Setback Walls

Freestanding Corner Top Block (Typical)

Recess pocket and lifting insert may be visible

Options: Fill with tinted mortar or use custom blocks without top lifter if desired (Typical)

Top View of Bottom Two Rows

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

Double 90° Outside Corner for 9" (230 mm) Setback Walls

Freestanding Corner Top Block (Typical)

Short Block Requirements
(1) 9" (230 mm) Setback Short block on the 2nd row
(2) 9" (230 mm) Setback Short block on the 3rd row
(3) 9" (230 mm) Setback Short block on the 4th row
(1) Additional 9" (230 mm) Setback Short block for every additional row to the top of the wall

1st Row Installation

9" (230 mm) Setback block with 7 1/2" (190 mm) diameter knobs (Typical)

Alternate long and short face of Freestanding Corner Top block on either end of row for proper spacing (Typical)

Untextured top of block and stone infill between adjacent blocks will be visible (Typical)

2nd Row Installation

9" (230 mm) Setback 27 3/8" (695 mm) Short block (Typical)

Stagger Short block spacing as needed to help maintain running bond installation pattern as close as possible

3rd Row Installation

Stagger Short block spacing as needed to help maintain running bond installation pattern as close as possible

4th Row Installation

Stagger Short block spacing as needed to help maintain running bond installation pattern as close as possible

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
This drawing shows typical installation details required for setback walls with the bottom of the wall aligned. Specific block placement will vary depending on site grades.

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
**Freestanding and Cap Block Coping**

Secure cap block to freestanding block with polyurethane sealant. Optional shear lugs cast into cap block or rebar ties that can be embedded in site-cast concrete (with garden block) are also available.

- Setback = 0” (9 mm) on Freestanding blocks
- Setback = 2 7/8” (73 mm) when 10” (254 mm) knob used
- Setback = 1 5/8” (41 mm) when 7 1/2” (190 mm) knob used
- Setback = 1 7/8” (41 mm) when 10” (254 mm) knob used

**Setback = 0” (0 mm) on Freestanding blocks**

- Setback = 1 5/8” (41 mm) when 10” (254 mm) knob used

**Setback = 0” (0 mm) on Freestanding blocks**

One-component, highly flexible, non-priming, gun grade, high performance elastomeric polyurethane sealant shall have movement of plus or minus 25% per ASTM C719, tensile strength greater than 200 psi (1.4 MPa) per ASTM D412, and adhesion to peel on concrete greater than 20 PLI per ASTM C794. Apply sealant in one and one half-inch (1.5”) (38 mm) diameter round “hersey kiss” shaped dollops located in two rows at the top of the Freestanding blocks at 8” (203 mm) on center.

**Freestanding blocks used where block is exposed and textured surface is required on both sides of wall**

(Optional) Freestanding blocks can be secured to retaining blocks with J-Bolt connection

**Drainage Swale Options**

- **Grass Swale**
  - 7’10” (2.4 m) Minimum
  - 8” (203 mm) Minimum

- **Concrete Swale**
  - 3’-10” (1.17 m) Minimum
  - 6” (152 mm) Minimum

- **30 mil PVC or EPDM geomembrane (Textured on both sides)**

- **Non-woven geotextile fabric (AASHTO M288 Survivability Class 2)** between geomembrane and soil

**Drainage Swale Behind Wall**

This drawing is for reference only. Determination of the suitability and manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
**Top Block Coping Option**

Stack bricks under back corner of Corner Garden block to keep block supported prior to backfilling.

Grade drops along back and end of Corner Garden block.

**Alternate Garden Block Placement**

Sawcut and remove inside edge of Corner Garden block and fill with topsoil (Recommended).

Grade drops along side of Corner Garden block.

Note: Corner Garden Blocks are shown, Half Corner Garden Blocks are optional as grading permits.

**Grade Change on Top of Wall Using 9” (230 mm) Stepdown Blocks**

Freestanding block or Top Retaining block (Typical).

Freestanding Corner block (Typical).

9” (230 mm) Stepdown block (Garden insert optional). Typically, Secured to Retaining Block with Polyurethane Sealant or Segmental Retaining Wall Adhesive.

Sawcut and remove inside edge of Corner Garden block and fill with topsoil (Optional).

Field cut stepdown block to length if needed.

Middle Block with no knobs (Typical) (Specialty block / Non-inventory item).

Retaining blocks (Typical).

Sealant Adhesive: One-component, highly flexible, non-priming, gun grade, high performance elastomeric polyurethane sealant shall have movement of plus or minus 25% per ASTM C719, tensile strength greater than 200 psi (1.4 MPa) per ASTM D412, and adhesion to peel on concrete greater than 20 PLI per ASTM C794. Apply sealant in one and one half-inch (1.5”) (38 mm) diameter round “hersey kiss” shaped dollops located in two rows at 8” (203 mm) on center, immediately below the 9” (230mm) Stepdown Block.

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
### Minimum radius for bottom row

<table>
<thead>
<tr>
<th>Number of courses</th>
<th>Height of wall</th>
<th>Radius from face of block</th>
<th>Distance between blocks&lt;sup&gt;*&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1'-6&quot; (0.46 m)</td>
<td>14'-6&quot; (4.42 m)</td>
<td>0.13&quot; (3 mm)</td>
</tr>
<tr>
<td>2</td>
<td>3'-0&quot; (0.91 m)</td>
<td>14'-8&quot; (4.47 m)</td>
<td>0.21&quot; (5 mm)</td>
</tr>
<tr>
<td>3</td>
<td>4'-6&quot; (1.37 m)</td>
<td>14'-10&quot; (4.52 m)</td>
<td>0.28&quot; (7 mm)</td>
</tr>
<tr>
<td>4</td>
<td>6'-0&quot; (1.83 m)</td>
<td>15'-0&quot; (4.57 m)</td>
<td>0.38&quot; (9 mm)</td>
</tr>
<tr>
<td>5</td>
<td>7'-6&quot; (2.30 m)</td>
<td>15'-2&quot; (4.62 m)</td>
<td>0.43&quot; (11 mm)</td>
</tr>
<tr>
<td>6</td>
<td>9'-0&quot; (2.74 m)</td>
<td>15'-4&quot; (4.68 m)</td>
<td>0.50&quot; (13 mm)</td>
</tr>
<tr>
<td>7</td>
<td>10'-6&quot; (3.20 m)</td>
<td>15'-6&quot; (4.72 m)</td>
<td>0.57&quot; (15 mm)</td>
</tr>
<tr>
<td>8</td>
<td>12'-0&quot; (3.66 m)</td>
<td>15'-8&quot; (4.78 m)</td>
<td>0.63&quot; (16 mm)</td>
</tr>
<tr>
<td>9</td>
<td>13'-6&quot; (4.11 m)</td>
<td>15'-10&quot; (4.83 m)</td>
<td>0.70&quot; (17 mm)</td>
</tr>
<tr>
<td>10</td>
<td>15'-0&quot; (4.57 m)</td>
<td>16'-0&quot; (4.88 m)</td>
<td>0.78&quot; (19 mm)</td>
</tr>
<tr>
<td>11</td>
<td>16'-6&quot; (5.03 m)</td>
<td>16'-8&quot; (4.93 m)</td>
<td>0.83&quot; (21 mm)</td>
</tr>
<tr>
<td>12</td>
<td>18'-0&quot; (5.49 m)</td>
<td>16'-10&quot; (4.98 m)</td>
<td>0.89&quot; (22 mm)</td>
</tr>
<tr>
<td>13</td>
<td>19'-6&quot; (5.94 m)</td>
<td>17'-0&quot; (5.03 m)</td>
<td>0.95&quot; (24 mm)</td>
</tr>
<tr>
<td>14</td>
<td>21'-0&quot; (6.40 m)</td>
<td>17'-2&quot; (5.08 m)</td>
<td>1.01&quot; (26 mm)</td>
</tr>
</tbody>
</table>

<sup>*</sup> Distance between blocks is measured at the back of 28" (710 mm) blocks and 24" (610 mm) behind the form parting line (back edge of face texture) for 41" (1030 mm) blocks. This distance is intended to be a guide only. Minimum radius is controlling.

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

---

### Geogrid Layout for Convex Curves and Radial Corners

- Geogrid strips may be overlapped directly.
- Reinforcement effective unit perimeter for pullout calculations, \( C = 1.5 \) (1 side full contact with soil, 1 side partial contact with soil).
- Geogrid strips (for blocks one layer down)
- Place stone in joint between adjacent blocks
- Geogrid strips (for blocks one layer down)

14'-6" (4.42 m) is the minimum radius for Redi-Rock blocks. It occurs when all the blocks are placed tight together. A larger radius is required on the bottom row of a Redi-Rock wall to account for the batter between courses of blocks and still provide enough space to construct the top row of blocks.

---

### Geogrid Layout for Concave Curves and Radial Corners

- Geogrid strips (for blocks on current layer)
- Geogrid strips (for blocks one layer down)

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

---

**Notes:***

- 3'-0" (0.91 m) is the minimum radius for Redi-Rock blocks. It occurs when all the blocks are placed tight together. A larger radius is required on the bottom row of a Redi-Rock wall to account for the batter between courses of blocks and still provide enough space to construct the top row of blocks.

- Distance between blocks is measured at the back of 28" (710 mm) blocks and 24" (610 mm) behind the form parting line (back edge of face texture) for 41" (1030 mm) blocks. This distance is intended to be a guide only. Minimum radius is controlling.
**Geogrid Layout for 90° Inside Corner**

- Set 90° wall ± 4" (102 mm) from the middle of the end block to align back of knobs on the 90° wall.
- geogrid strips (for blocks on current layer)
- geogrid strips (for blocks one layer down)

**Block placement - First row**

- Set the first block in back row of blocks tight against the end block in the 90° wall.
- Align back of knobs.

**Block placement - Second row**

- Set the middle of the first block in 90° wall ± 4" (102 mm) past the end of the block in the row below to align back of knobs on the back row.
- Align back of knobs.

---

**Geogrid Layout for 90° Outside Corner**

- geogrid strips (for blocks on current layer)
- geogrid strips (for blocks one layer down)
- geogrid strips may be overlapped directly

- Reinforcement effective unit perimeter for pullout calculations, C = 1.5 (1 side full contact with soil, 1 side 50% contact with soil).

**Block Layout for 90° Outside Corner**

- The top row of blocks are shown in red. They have been cutout in line with their bottom grooves to show how they fit with the knobs on the bottom row of block.
- The geogrid strips are not shown for clarity.

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
Light Pole Base or Concrete Pile in Reinforced Soil Zone

- Light pole base or concrete pile
- Maximum diameter = 32" (0.81 m)
- Spacing = 46 1/8" (1.17 m) centers
- Geogrid strips installed every other row of blocks (25% coverage ratio)

3D View from Back

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

Manhole or Large Obstruction in Reinforced Soil Zone

- Threaded rod cast into block (Typical)
- Structural beam (2 steel channels shown)
- Geogrid strips (Typical)
- Threaded rod (Typical)
- Pipe (Typical)
- Hooked rod with threaded end cast into block (Typical)
- Structural tube or pipe (Typical)
- Structural beam

Top View

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
Utilities in the Reinforced Soil Zone

Storm or Sanitary Sewer Pipe

- Keep sufficient separation to meet max geogrid slope and clearance requirements
- Maintain 3" (76 mm) minimum between geogrid and pipe
- Wrap pipe joints with non-woven geotextile fabric (AASHTO M288 Survivability Class 2)
- 48" (1.22 m) wide minimum centered on joint

AASHTO No. 57 stone (or equivalent)

6" (152 mm) minimum around pipe

Storm drain or sanitary sewer pipe installed parallel to wall

Wrap pipe joints with non-woven geotextile fabric (AASHTO M288 Survivability Class 2)

48" (1.22 m) diameter concrete pipe shown

Use adequate measures to address scour, runoff, and other issues at base of wall

"Dry" Utilities (Electric, Gas, Telecommunications)

- Keep sufficient separation to meet max geogrid slope and clearance requirements
- Install geogrid strips above and below pipe

Utilities in the Reinforced Soil Zone

Pipes Installed Through Wall - Perpendicular

Plan View

- Pipe protruding through wall
- (48" (1.22 m) diameter concrete pipe shown)
- Use adequate measures to address scour, runoff, and other issues at base of wall

Section View

- Non-woven geotextile fabric (AASHTO M288 Survivability Class 1)
- 360° around pipe and behind collar

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
These generic pedestrian guard and fence details show a few potential options for their installation on the top of a Redi-Rock retaining wall. It is the design engineer’s responsibility to fully design and detail the connection of the guard posts to the retaining wall blocks and assure acceptable resistance to the applied forces. Redi-Rock blocks are plain concrete, without steel reinforcement.

Common Fence or Pedestrian Guard Connections

- **Grouted Connection (1 Block)**
  - Grout fence or railing post in place
  - Top block

- **Grouted Connection (2 Blocks)**
  - Grout fence or railing post in second course
  - Block in second row down

- **Flange Bolted Connection**
  - Flange base plate attached to top block with adhesive set anchor bolts

- **Moment Slab Connection**
  - Moment slab connection
  - Top view

**Connection Option #1**
- Anchor into the top block
- Consider block lengths when determining post spacing
- Weight of a single block available to resist overturning forces

**Connection Option #2**
- Core through top block and grout posts in V-shaped opening between lower blocks
- Spacing in multiples of 46 1/8” (1172 mm)
- Weight of a 2 adjacent blocks available to resist overturning forces

**Connection Option #3**
- Core through top block, and grout posts in v-shaped opening between lower blocks
- Spacing in multiples of 46 1/8” (1172 mm)
- Weight of a 2 adjacent blocks on second level down and 3 top row blocks available to resist overturning forces

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
Varies

Cap Block, Secure to Freestanding Block with Polyurethane Sealant, or Optional Rebar Embedded in Concrete

Freestanding Garden Block with Two (2) Continuous Reinforcing Bars, Filled with Cast-In-Place Concrete, as Designed by Wall Design Engineer

Sealant Adhesive: One-component, highly flexible, non-priming, gun grade, high performance elastomeric polyurethane sealant shall have movement of plus or minus 25% per ASTM C719, tensile strength greater than 200 psi (1.4 MPa) per ASTM D412, and adhesion to peel on concrete greater than 20 PLI per ASTM C794. Apply sealant in one and one half-inch (1.5") (38 mm) diameter round “hersey kiss” shaped dollops located in two rows at the top of the Freestanding blocks at 8" (203 mm) on center.

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

Freestanding Bond Beam at Top of Wall

Section View

Typical Cantilever Wall Section

Redi-Rock Cap
(if desired)

Exposed wall
(Height varies
with design)

Concrete Infill
(As specified
by Engineer)

Vertical and
Horizontal Rebar
(As specified
by Engineer)

Bury
depth

Reinforced concrete footing
(As specified by Engineer)

Footage rebar and wall ties
(As specified by Engineer)

Drain stone (No. 57 or equivalent)
Stone to extend at least 12" (305 mm) behind blocks.

Non-woven geotextile fabric
(If specified by Engineer based on soil conditions)

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site. Final wall design must address both internal and external drainage and all modes of wall stability.
TRIM TEXTURE AS REQUIRED FOR GOOD FIT BETWEEN BLOCKS

CUT CORNER BLOCK TO ALLOW FOR CONTINUATION OF REBAR

AVOID RIB-TO-RIB JOINTS, POSITION BLOCKS OR CUT RIBS AS REQUIRED

F-CHC CORNER HOLLOW CORE FREESTANDING BLOCK

F-CHC HOLLOW CORE FREESTANDING BLOCKS

CAST-IN-PLACE CONCRETE FOOTING, AS REQUIRED

ATTACH FLANGE MOUNTED FENCE POSTS TO CAP UNIT WITH CONCRETE ANCHOR BOLTS (RED HED TRU-BOLT WEDGE ANCHORS OR EQUAL)

SET CAP BLOCK ON TOP F-HC UNIT AND EMBED STEEL REINFORCEMENT IMMEDIATELY AFTER PLACEMENT OF CAST-IN-PLACE CONCRETE

CAST-IN-PLACE CONCRETE IN HOLLOW CORE OF F-HC UNITS AND IN TOP HALF OF VERTICAL CORE SLOT IN PC BLOCKS IMMEDIATELY BELOW F-HC BLOCKS, MINIMUM 28 DAY COMPRRESSIVE STRENGTH = 4,000 psi

No. 6 HORIZONTAL BARS, CONTINUOUS, 24" OVERLAP ON ENDS TYPICAL, BOTH SIDES OF CENTER CORE

No. 6 VERTICAL BARS, 11 ½" O.C. TYPICAL, BOTH SIDES OF CENTER CORE

No. 3 BAR HOOK - WRAP AROUND LIFTING INSERT IN TOP OF BLOCK AND EXTEND INTO HOLLOW CORE AREA OF F-HC BLOCK

RECESSED LIFTING HOOK AREA FILLED WITH CAST-IN-PLACE CONCRETE (WHEN FREESTANDING BLOCKS ARE FILLED)

COVER TOP OF RETAINING BLOCKS AND ALL EXPOSED GEOGRID WITH 6 mil VISQUEEN PLASTIC LAYER

NO. 57 STONE INFILL IN VERTICAL CORE SLOT, BETWEEN ADJACENT BLOCKS, AND 12" BEHIND BACK OF BLOCKS

FILL BOTTOM HALF OF VERTICAL CORE SLOT FOR PC BLOCKS IMMEDIATELY BELOW FREESTANDING BLOCKS.

ALL REINFORCING STEEL TO CONFORM TO ASTM A615 OR AASHTO M1 GRADE 60.
Freestanding Block Coping with Fence Attachment

- All reinforcing steel to conform to ASTM A706 or AASHTO M31 Grade 60.
- No. 6 Vertical Bars, 11 ½” O.C.
- No. 6 Horizontal Bars, Continuous, 24” Overlap on Ends
- No. 3 Bar Hook - Wrap Around Lifting Insert in Top of Block and Extend Into Hollow Core Area of F-HC Block
- Cast-in-place concrete in hollow core of F-HC units and in top half of vertical core slot in pc blocks immediately below F-HC blocks. Minimum 28 day compressive strength = 4,000 psi
- No. 4 Bars, 40” Long (Tie to Embedded Hooks)
- (2) Redi-Rock R Anchors (11 ½” from each end)
- Bend Detail
- End View

- Cap Block Cast with R-Anchors (Specialty Block)
- Attach Flange Mounted Fence Posts to Cap Unit with Concrete Anchor Bolts (Redi-Hed Tru-Bolt Wedge Anchors or Equal)
- No. 3 Rebar Hooks
- Cover Top of Retaining Blocks and All Exposed Geogrid with 6 mil Visqueen Plastic Layer
- No. 57 Stone Infill in Vertical Core Slot, Between Adjacent Blocks, and 12” Behind Back of Blocks. Fill Bottom Half of Vertical Core Slot for PC Blocks Immediately Before Freestanding Blocks.
- Set Cap Block on Top F-HC Unit and Embed Steel Reinforcement Immediately After Placement of Cast-in-place Concrete

Post and Beam Guardrail

- Upper leg of strip (Installed at top of block elevation)
- Lower leg of strip (Installed at bottom of block elevation)
- Geogrid installed on block one layer down (Typical)
- Install 12” (305 mm) diameter corrugated hdpe sleeve during wall construction.
- Install guardrail posts in sleeve and grout (min. 4,000 psi (27.6 mpa) compressive strength) in place after wall construction.
- Wrap geogrid strips around sleeve as needed
- Splay geogrid strips in block to keep equal tension on all main reinforcement strands

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
**TYPICAL CONSTRUCTION DETAILS**

**Cast-in-Place Moment Slab Traffic Barrier - Flat Grade Installation**

- **Steel ties per traffic barrier design** #4 (#13) bars at 8” (152 mm) O.C. minimum
- **Moment slab** shown is dimensioned based on an equivalent static load of 10,000 lbs (44.5 kN) per NCHRP Report 663.
- **Concrete for cast-in-place barrier and moment slab** shall be dot standard structure mix. Minimum 28 day compressive strength shall be 3,500 psi (24.1 MPa) or higher as specified. Reinforcing steel shall conform to ASTM A706 or AASHTO M31 Grade 60 (420 MPa).

**Materials**
- Concrete for cast-in-place barrier and moment slab shall be dot standard structure mix. Minimum 28 day compressive strength shall be 4,000 psi (27.6 mpa) or higher as specified. Reinforcing steel shall conform to ASTM A706 or AASHTO M31 Grade 60 (420 MPa).

**Design**
- Moment slab shown is dimensioned based on an equivalent static load of 10,000 lbs (44.5 kN) per NCHRP Report 663. Moment slab reinforcement shown is based on AASHTO LRFD Bridge Design Specifications, 5th edition, 2010. TL-4 loading detailed in Table A13.2.1. The selection and use of this detail, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the registered professional engineer in charge of the project.

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

**Cast-in-Place Moment Slab Traffic Barrier - Sloping Installation**

- **Steel ties per traffic barrier design** #4 (#13) bars at 8” (152 mm) O.C. minimum
- **Moment slab** shown is dimensioned based on an equivalent static load of 10,000 lbs (44.5 kN) per NCHRP Report 663.
- **Concrete for cast-in-place barrier and moment slab** shall be dot standard structure mix. Minimum 28 day compressive strength shall be 3,500 psi (24.1 MPa) or higher as specified. Reinforcing steel shall conform to ASTM A706 or AASHTO M31 Grade 60 (420 MPa).

**Materials**
- Concrete for cast-in-place barrier and moment slab shall be dot standard structure mix. Minimum 28 day compressive strength shall be 4,000 psi (27.6 mpa) or higher as specified. Reinforcing steel shall conform to ASTM A706 or AASHTO M31 Grade 60 (420 MPa).

**Design**
- Moment slab shown is dimensioned based on an equivalent static load of 10,000 lbs (44.5 kN) per NCHRP Report 663. Moment slab reinforcement shown is based on AASHTO LRFD Bridge Design Specifications, 5th edition, 2010. TL-4 loading detailed in Table A13.2.1. The selection and use of this detail, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the registered professional engineer in charge of the project.

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.
Design of reinforced concrete moment slab by local engineer to meet project requirements.

Rebar shown in barrier block meets AASHTO TL-3 loading requirements. Rebar design in barrier block is intended to be modified as necessary to meet other loading conditions.

All reinforcing steel shall be grade 60 (414 MPa) deformed rebar. All concrete shall have a minimum 28 day compressive strength of 4000 psi (27.6 MPa).

Precast Barrier Block

Isometric View

Top View

Side View

Back View

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.