# About the Anchorplex™ System

The Anchorplex system is a retaining wall built with Anchor™ products and self-compacting structural backfill that meets Anchor Wall Systems, Inc.’s specifications, and that is backed by engineering support tools developed by Anchor Wall Systems. Structural backfill, also known as “no-fines” concrete, is a widely available, easily workable, highly porous mixture of clean stone, cement and water. In the mid-1990s, Anchor’s licensee in Australia, Pioneer Building Products Ltd., developed a system of building retaining walls up to about 5 meters (about 15 feet) high from Anchor retaining wall blocks reinforced with a zone of structural backfill placed immediately behind the block facing.

When used in combination with blocks of the appropriate shape, the structural backfill attaches itself to the wall facing, effectively extending the depth and mass of the facing. In addition, the structural backfill zone also serves as the required drainage zone.

The Anchorplex construction method completely eliminates the need for the construction of a mechanically stabilized earth zone behind the wall facing and requires substantially less excavation and compaction than is usually necessary in a grid-reinforced wall construction project. Because of these efficiencies and the design flexibility afforded with Anchorplex construction, millions of square feet of Anchorplex retaining walls have been installed and are performing well in Australia. Anchor Wall Systems is now introducing this construction method in North America and other parts of the world.

## Applications

### Retaining Walls

Anchorplex construction is often a more cost-effective solution than building with geogrid reinforcement.

### Limited Room to Excavate

It is often possible to build an Anchorplex wall in situations where traditional geogrid reinforcement is not an option because of lot lines, rock outcroppings or other obstructions that limit the amount of excavation that can be done.

### Competing with Machine-Placed “Big Blocks”

For wall heights less than 11 feet, Anchorplex walls are almost always more economical than machine-placed “big block” walls – and are always better-looking structures.

---

The structural backfill that meets Anchor Wall Systems, Inc.’s specifications allows water to drain behind the wall.
1. SETTING OUT THE WALL AND EXCAVATION
This step is no different for Anchorplex™ system construction than for conventional construction, except that the amount of excavation will probably differ. Verify wall layout and wall location with the client and other appropriate parties. Survey grade stakes with distance to wall face, elevation for bottom of wall and steps in the foundation should be marked.

Mark the location of the excavation trench so that, when dug, it is wide enough to accommodate the wall block and leveling pad and complies with drawings and specifications. See Excavation Detail on page 6.

A geotechnical engineer should evaluate the foundation soil to verify that there is adequate bearing capacity for support of the structure before placing aggregate in the trench.

Firmly compact the soil in the base of the trench, using either a vibrating plate compactor or small vibrating trench roller before installing the leveling pad base aggregate.

2. LEVELING PAD
This step is no different for Anchorplex system construction than for conventional construction. Build the leveling pad from granular stone base material or 3/4-inch angular aggregate.

The pad must be a minimum of 6 inches deep after compaction. An additional distance of at least 6 inches in front of and behind the wall block must be included in the leveling pad. See Excavation Detail on page 6.

Fully compact the leveling pad using a vibrating plate compactor. Make sure the base material is level front to back and side to side.

3. BASE COURSE
This step is no different for Anchorplex construction than for conventional construction. It is the most important step in the construction process. Starting at the lowest point, lay the first block, checking level both front to back and side to side.

Place additional blocks side by side, flush against each other at the face, making sure the blocks are in full contact with the leveling pad.

Use a string line along back of blocks to align the wall units. Use a 4- to-6-foot level along the top of foundation blocks to check the level side to side and use a shorter level to check the level from front to back.

4. CONSTRUCTION OF ADDITIONAL COURSES
This step is no different for Anchorplex system construction than for conventional construction. Clean any debris off the top of blocks. Place the second course of blocks on top of the base course. Maintain running bond by placing units in a staggered pattern, running bond, to the course beneath. Pull each unit forward until the shear device is securely in contact with the units below.

Use string line on each course to align the blocks along the wall. Do not exceed 2 feet vertical stacking of block before placing a lift of structural backfill.
5. DRAINAGE DESIGN
This step is no different for Anchorplex™ system construction than for conventional construction. The ground levels on a site will determine at what level to install the perforated drainpipe, but generally the drainpipe is positioned as low as possible behind the wall so water drains down, out and away from the wall into a storm drain or to an area lower than and away from the wall.

The perforated pipe should be placed approximately 6 inches behind the back of the block. The actual location of the drainpipe should be noted on the engineered shop drawings.

6. INSTALLATION OF STRUCTURAL BACKFILL
After completion of the leveling pad, base course, drainpipe installation and stacking block 2 feet above grade, the first lift of structural backfill that meets Anchor Wall Systems, Inc.’s specifications can be installed.

The structural backfill can be placed directly from delivery vehicle or with skid-type loader or other equipment. It should be placed behind the blocks and worked into all voids and cores of the blocks. When properly formulated, the structural backfill material will not leak through the face of the wall.

After installation of the first lift of structural backfill, install additional courses and repeat the process. Place additional lifts from 8 to 24 inches depending on site conditions and project scale. Subsequent pours can be made as soon as the structural backfill in the previous lift has set – usually not longer than 2 to 3 hours.

7. CAPPING
Follow standard practice when capping the wall.

8. FINISHING
Protect the wall with a finish grade at the top and bottom.
Construction Details for the Anchorplex™ System

TYPICAL BASE PREPARATION

1:1 EXCAVATION DETAIL

Construction Details show the use of Artisana® products. Details for other Anchor™ products are located at www.anchorwall.com.

NOTES:
1. Structural backfill is to be placed in 8- to 24-inch (typical) lifts.
2. Structural backfill must be manipulated into all voids between blocks to ensure adequate bond between block and concrete mass.

Ensure void areas between units are filled completely.
Construction Details for the Anchorplex™ System

Subsequent Pours Artisana® Products

Construction Details show the use of Artisana® products. Details for other Anchor™ products are located at www.anchorwall.com.

Daylight Details

Remove portion of adjacent units to allow weep holes through face.

Spacing varies 50’ maximum.

Daylight drainpipe through wall face.

4” Diameter pipe weep holes

2” Cut

Finished Grade
Construction Details for the Anchorplex™ System

FENCE DETAILS

Construction Details show the use of Artisana® products. Details for other Anchor™ products are located at www.anchorwall.com.

Fence or Railing (Designed by Others)

Low-Permeability Soil

Filter Fabric

Cap Block

Artisana® Block

Depth Varies

Sleeve and Non-Shrink Grout Around Post Sleeve Installed During Wall Construction

Artisana® Block
Material Estimating Charts for Structural Backfill

NO SLOPE OR SURCHARGE

**CLAY AND SILT SOIL**

- $H = 26^\circ$
- $g = 120$ pcf ($19$ kN/m³)
- NO SLOPES OR SURCHARGES

**SILTY/CLAYEY SAND SOIL**

- $H = 30^\circ$
- $g = 120$ pcf ($19$ kN/m³)
- NO SLOPES OR SURCHARGES

**CLEAN SAND AND GRAVEL SOIL**

- $H = 34^\circ$
- $g = 120$ pcf ($19$ kN/m³)
- NO SLOPES OR SURCHARGES

<table>
<thead>
<tr>
<th>Total Height: 1'-0&quot; (300 mm)</th>
<th>Total Height: 1'-0&quot; (300 mm)</th>
<th>Total Height: 1'-0&quot; (300 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO STRUCTURAL BACKFILL REQUIRED</td>
<td>NO STRUCTURAL BACKFILL REQUIRED</td>
<td>NO STRUCTURAL BACKFILL REQUIRED</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Height: 2'-0&quot; (600 mm)</th>
<th>Total Height: 2'-0&quot; (600 mm)</th>
<th>Total Height: 2'-0&quot; (600 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'-0&quot; [300 mm]</td>
<td>NO STRUCTURAL BACKFILL REQUIRED</td>
<td>NO STRUCTURAL BACKFILL REQUIRED</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Height: 3'-0&quot; (900 mm)</th>
<th>Total Height: 3'-0&quot; (900 mm)</th>
<th>Total Height: 3'-0&quot; (900 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'-0&quot; [300 mm]</td>
<td>NO STRUCTURAL BACKFILL REQUIRED</td>
<td>NO STRUCTURAL BACKFILL REQUIRED</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Height: 4'-0&quot; (1200 mm)</th>
<th>Total Height: 4'-0&quot; (1200 mm)</th>
<th>Total Height: 4'-0&quot; (1200 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'-0&quot; [300 mm]</td>
<td>NO STRUCTURAL BACKFILL REQUIRED</td>
<td>NO STRUCTURAL BACKFILL REQUIRED</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Height: 5'-0&quot; (1500 mm)</th>
<th>Total Height: 5'-0&quot; (1500 mm)</th>
<th>Total Height: 5'-0&quot; (1500 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'-6&quot; [450 mm]</td>
<td>NO STRUCTURAL BACKFILL REQUIRED</td>
<td>NO STRUCTURAL BACKFILL REQUIRED</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Height: 6'-0&quot; (1800 mm)</th>
<th>Total Height: 6'-0&quot; (1800 mm)</th>
<th>Total Height: 6'-0&quot; (1800 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'-6&quot; [450 mm]</td>
<td>NO STRUCTURAL BACKFILL REQUIRED</td>
<td>NO STRUCTURAL BACKFILL REQUIRED</td>
</tr>
</tbody>
</table>

0.08 x Wall Length = CY of Structural Backfill

0.12 x Wall Length = CY of Structural Backfill

0.16 x Wall Length = CY of Structural Backfill

0.29 x Wall Length = CY of Structural Backfill

0.35 x Wall Length = CY of Structural Backfill

**Note:**

Detail shown is conceptual only and should not be used for construction without the seal of a local qualified engineer.
Material Estimating Charts for Structural Backfill

### 100 PSF SURCHARGE

*Construction Details show the use of Artisana® products. Details for other Anchor™ products are located at www.anchorwall.com.*

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Total Height</th>
<th>CY of Structural Backfill</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLAY AND SILT SOIL</strong></td>
<td><strong>1'-0&quot; (300 mm)</strong></td>
<td><strong>NO STRUCTURAL BACKFILL REQUIRED</strong></td>
</tr>
<tr>
<td><strong>100 PSF (5 kPa) SURCHARGE</strong></td>
<td><strong>2'-0&quot; (600 mm)</strong></td>
<td><strong>0.08 x Wall Length = CY of Structural Backfill</strong></td>
</tr>
<tr>
<td><strong>3'-0&quot; (900 mm)</strong></td>
<td><strong>4'-0&quot; (1200 mm)</strong></td>
<td><strong>0.12 x Wall Length = CY of Structural Backfill</strong></td>
</tr>
<tr>
<td><strong>5'-0&quot; (1500 mm)</strong></td>
<td><strong>6'-0&quot; (1800 mm)</strong></td>
<td><strong>0.39 x Wall Length = CY of Structural Backfill</strong></td>
</tr>
<tr>
<td><strong>CLEAN SAND AND GRAVEL SOIL</strong></td>
<td><strong>1'-0&quot; (300 mm)</strong></td>
<td><strong>NO STRUCTURAL BACKFILL REQUIRED</strong></td>
</tr>
<tr>
<td><strong>100 PSF (5 kPa) SURCHARGE</strong></td>
<td><strong>2'-0&quot; (600 mm)</strong></td>
<td><strong>0.12 x Wall Length = CY of Structural Backfill</strong></td>
</tr>
<tr>
<td><strong>3'-0&quot; (900 mm)</strong></td>
<td><strong>4'-0&quot; (1200 mm)</strong></td>
<td><strong>0.16 x Wall Length = CY of Structural Backfill</strong></td>
</tr>
<tr>
<td><strong>5'-0&quot; (1500 mm)</strong></td>
<td><strong>6'-0&quot; (1800 mm)</strong></td>
<td><strong>0.35 x Wall Length = CY of Structural Backfill</strong></td>
</tr>
</tbody>
</table>

Detail shown is conceptual only and should not be used for construction without the seal of a local qualified engineer.
Material Estimating Charts for Structural Backfill

3:1 CREST SLOPE

**Clay and Silt Soil**

- $F = 26^\circ$
- $g = 120 \text{pcf (19 kN/m}^3)$

**Silty/Clayey Sand Soil**

- $F = 30^\circ$
- $g = 120 \text{pcf (19 kN/m}^3)$

**Clean Sand and Gravel Soil**

- $F = 34^\circ$
- $g = 120 \text{pcf (19 kN/m}^3)$

**Zone of Structural Backfill**

<table>
<thead>
<tr>
<th>Height (mm)</th>
<th>CY of Structural Backfill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'-0&quot; (300 mm)</td>
<td>0.08 x Wall Length</td>
</tr>
<tr>
<td>1'-6&quot; (450 mm)</td>
<td>0.18 x Wall Length</td>
</tr>
<tr>
<td>2'-0&quot; (600 mm)</td>
<td>0.31 x Wall Length</td>
</tr>
<tr>
<td>2'-6&quot; (750 mm)</td>
<td>0.48 x Wall Length</td>
</tr>
<tr>
<td>3'-0&quot; (900 mm)</td>
<td>0.69 x Wall Length</td>
</tr>
<tr>
<td>4'-0&quot; (1200 mm)</td>
<td>0.92 x Wall Length</td>
</tr>
<tr>
<td>5'-0&quot; (1500 mm)</td>
<td>1.14 x Wall Length</td>
</tr>
<tr>
<td>6'-0&quot; (1800 mm)</td>
<td>1.37 x Wall Length</td>
</tr>
</tbody>
</table>

**Total Height**

- 1'-0" (300 mm)
- 1'-6" (450 mm)
- 2'-0" (600 mm)
- 2'-6" (750 mm)
- 3'-0" (900 mm)
- 4'-0" (1200 mm)
- 5'-0" (1500 mm)
- 6'-0" (1800 mm)

**Detail shown is conceptual only and should not be used for construction without the seal of a local qualified engineer.**