

Caps

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TECHNICAL BULLETIN

This Technical Bulletin is the fourth in a series of informational papers that provide specific application ideas and installation tips for VERSA-LOK® Retaining Wall Systems. Additional information is available in our Design & Installation Guidelines.

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VERSA-LOK® Cap units provide an easy-to-install, attractive finishing touch to the top of VERSA-LOK retaining walls. Like VERSA-LOK wall units, VERSA-LOK caps are solid. The cap units also have textured split faces and colors that match retaining wall units.

VERSA-LOK caps come in two types, A caps and B caps (Figure 1). Both cap types have the same area at the front but taper to different widths at the rear. These two cap units allow capping of many wall alignments including straight walls, inside and outside curves, and stairs. The caps are secured with high-strength, flexible, VERSA-LOK Concrete Adhesive.

The front of VERSA-LOK caps may be placed flush, setback or overhanging the faces of the VERSA-LOK units below. The preferred method is to overhang cap units about 3/4 inch, creating an "eyebrow" on top of the wall (Figure 2). This creates an attractive accent shadow on the wall. Also, overhanging cap units allows for slight adjustments to hide any minor misalignment in the wall below.

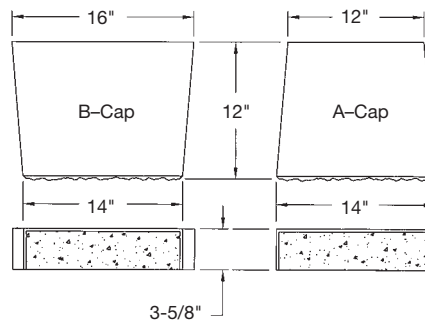


FIGURE 1

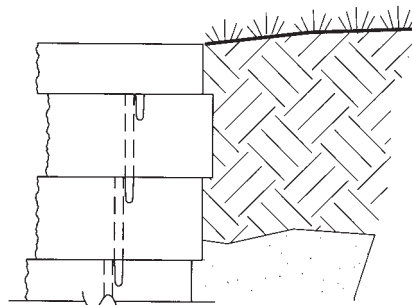


FIGURE 2


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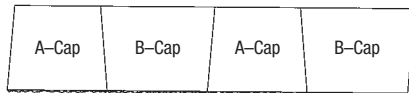


VERSA-LOK® Cap units help create an "eyebrow" effect on the top of walls.

CAPPING STRAIGHT WALLS

For straight walls, alternately place A and B caps along the length of the wall (Figure 3). Use a string line along the back of the cap units to keep them aligned and straight. Start at fixed ends of the wall and work away from them. Saw-cut partial units as needed to fill any remaining gaps between the A and B caps (See Saw-Cutting Cap Units section).

FIGURE 3



CAPPING CURVED WALLS

For tight convex (outside) curves, use A caps (Figure 4). For tight concave (inside) curves, use B caps (Figure 5). For more gradual curves or serpentine curves, a combination of A and B caps may best fit the curves.

FIGURE 4

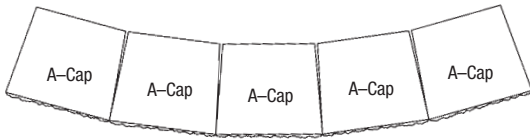
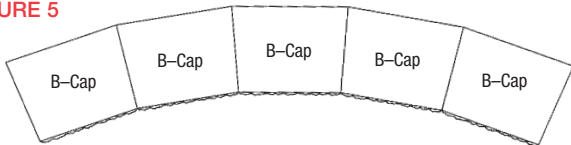


FIGURE 5



On all but the tightest curves, some gapping at the back of the caps will be needed to match wall alignment. Do not adjust caps by gapping at the front; the front joints between caps should be kept tight. Generally, gaps of up to 1/2 inch at the back of the cap units are considered acceptable. To completely eliminate gapping on most curves, saw-cutting the sides of cap units may be necessary. (See Saw-Cutting Cap Units section).

ADHERING CAPS

VERSA-LOK Concrete Adhesive is suggested for adhering caps because it is a premium, high-molecular-weight polymer designed for superior performance in retaining wall applications. It has exceptional adhesion, elasticity, and resistance to shear stress not provided by ordinary concrete adhesives.

Do not use rigid adhesives or mortar to secure caps. VERSA-LOK walls may move slightly (especially in areas subject to freeze/thaw cycles) and cause the rigid adhesive bond to fail.

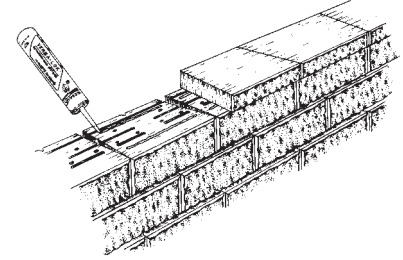


FIGURE 6

Before adhering caps, pre-arrange a group of four to five caps, starting at one end of the wall. Check the alignment of these caps and modify any as needed. After ensuring proper cap arrangement, remove this first group of cap units. Clear off any debris or dust.

Place two continuous, 1/4-inch beads of VERSA-LOK Concrete Adhesive on the wall units to be capped (Figure 6). Set the prepared group of cap units in place and press them firmly into the adhesive. Adjust caps as needed. Continue capping the remaining length of the wall in groups of four to five cap units at a time, fitting and adhering the groups as you go. Do not apply adhesive if wall units are too wet for the adhesive to stick.

Allow at least 2-3 days (in warm weather) for adhesive to cure. Thanks to the unique secondary-cure mechanism of VERSA-LOK Concrete Adhesive, its adhesion properties improve with time and weathering. In cold weather, keep the tubes of adhesive warm before applying.

SAW-CUTTING CAP UNITS

For most walls, some cap units must be saw-cut. Often, saw-cutting partial units is needed to adjust lengths of the wall cap between fixed points (wall ends or corners).

Saw-cutting creates a smooth edge on the side of a cap unit, so it will fit tightly against other cap units or any adjacent structures.



Saw-cutting can easily be done in the field. Start by laying caps at each fixed point. Then work away from these points until the cap units nearly meet, leaving only a gap smaller than a whole cap unit. Saw-cut a partial cap unit to fit in this remaining gap. Try to keep the remaining gap toward the center of the wall. This helps hide smaller cap pieces.

For aesthetics, keep partial cap units at least 4 inches wide. If any remaining gaps are smaller than this, make them bigger by cutting down the width of a cap unit placed next to the gap. Then saw-cut a wider partial cap unit to fill this bigger gap.

SPLITTING CAP UNITS

Splitting cap units is most often needed when the side of caps will be exposed, such as outside corners or where the top of the wall steps down. Splitting creates a textured face on a visible side of a cap unit, so it will match the textured front faces of caps and wall units.



To split a cap, score the top and bottom of the cap with a chisel at the location and angle of the needed split. At the scored line, split the cap unit with a hammer and chisel. A minimum split thickness of 2 inches is needed for an accurate split. Alternately, a mechanical splitter can be used.

CAPPING CORNERS

When capping walls with corners, start by modifying and laying the cap units for the corner first. If there are several corners, remember to start laying caps at each of the corners and work out from them, meeting the caps about halfway between the corners. This keeps the smaller partial cap units hidden from the corners. For an outside corner, split the cap unit to match the corner angle in the wall below. For inside and outside corners, saw-cutting the side of the adjacent cap unit is necessary to create a tight fit against the corner cap unit. Figure 7 illustrates suggested cap modifications and arrangements for a variety of corners.

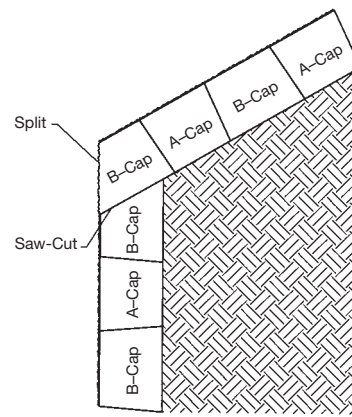
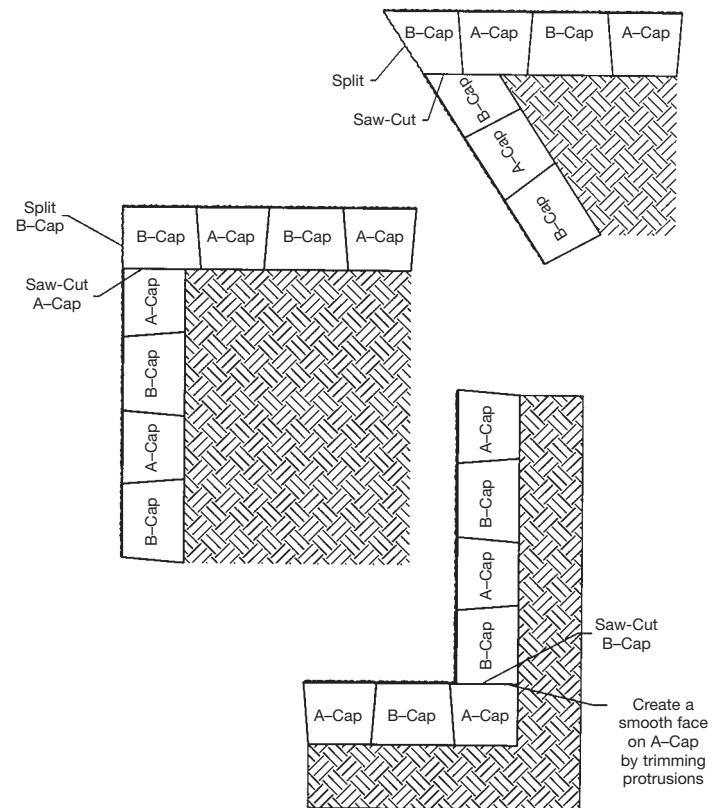


FIGURE 7



CAPPING STAIRS

VERSA-LOK Cap units make excellent treads for stairs, too. When capping stairs inset between two walls, saw-cut or split the caps to fit between the sidewalls (Figure 8). For ease of installation, place and adhere the caps before building the sidewalls. When placing caps on stairs extending out from walls (exposed on one or both sides), split the side of the caps at exposed end(s) of each riser, similar to capping an outside 90-degree corner.

When adhering caps as stair treads, remember VERSA-LOK Concrete Adhesive can take several days to cure. Do not allow stairs to be used until caps are secure. See

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TECHNICAL BULLETIN

For more detailed information regarding design and installation, please contact your local dealer or VERSA-LOK® Retaining Wall Systems.

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U.S. Patent D319,885,
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U.S. Patent D341,215,
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U.S. Patent D555,810,
U.S. Patent D569,010,
U.S. Patent 6,488,448,
U.S. Patent 6,960,048,
U.S. Patent 7,229,235,
U.S. Patent 7,244,079
and other U.S. patents pending

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No. 73912, No. 91178, No. 115161,
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No. 2,313,061, No. 2,313,062 and
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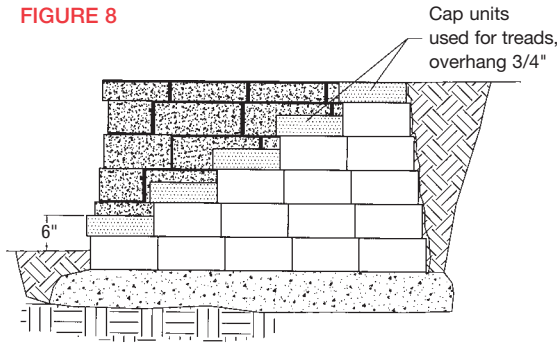
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Technical Bulletin No. 2 for more information on installation of VERSA-LOK stairs.

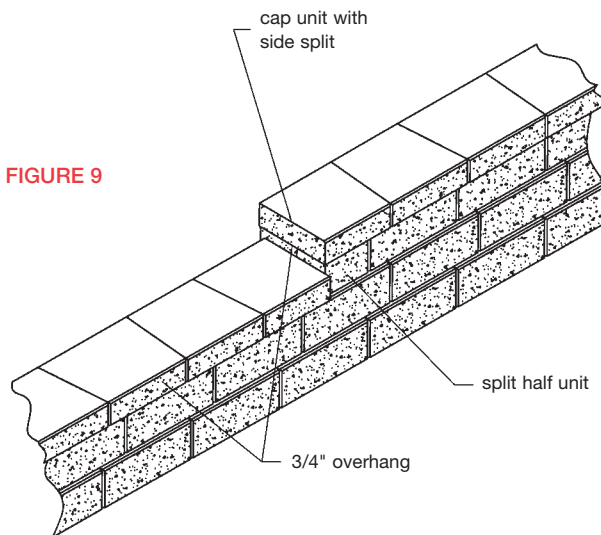
FIGURE 8



CAPPING TOP-OF-WALL STEP-DOWNS

Often the tops of walls are stepped down to match changing grades behind the wall. Where a course of units ends and steps down, split the exposed side of the cap unit to create an attractive textured end to each course. The split side of the cap should overhang the split half-unit below by 3/4 inch, similar to the suggested cap overhang at the front (Figure 9).

FIGURE 9



ESTIMATING CAPS

The first step in estimating caps is determining the length of the planned wall. For curved walls, be sure to figure the whole length of the wall along the curves, not just the straight-line length. Determine the number of cap units needed by multiplying the lineal feet of wall by 0.86. Round this number up to nearest whole number of caps. Order extra caps to cover losses due to saw-cutting and splitting, especially for walls requiring corners or other specialty fitting. For straight walls, half the caps will be type A and half type B. For tightly curved walls, all caps will be type A for outside curves and type B for inside curves. For gradual curves, a mix of A and B caps may be needed.

CAP OPTIONS

VERSA-LOK cap units provide an easy-to-install, flexible capping system with an appealing look that matches VERSA-LOK retaining wall units. However, other products such as concrete pavers, natural stone or precast concrete may be appropriate capping alternatives with proper design. Be sure any alternate capping system has sufficient flexibility or jointing to accommodate some movement in retaining wall units, especially in northern climates subject to freeze/thaw cycles. Also ensure capping systems can be properly adhered to retaining wall units below.