

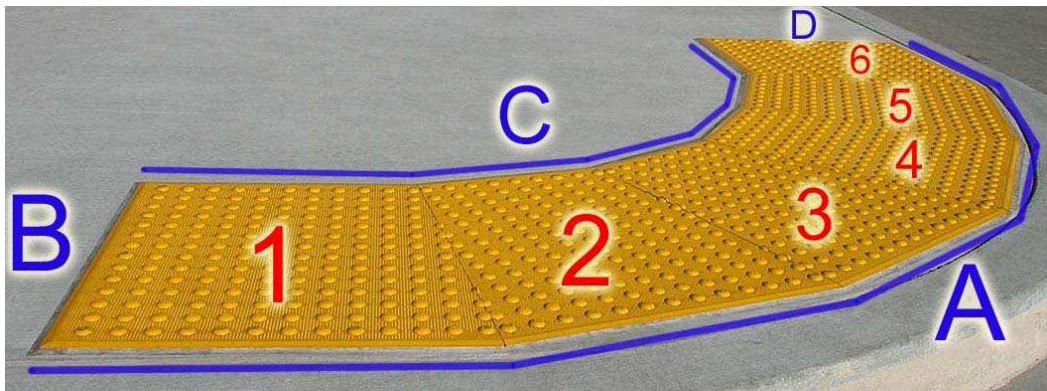
INSTALLATION PROCEDURE

FOR

SURFACE-APPLIED ARMOR-TILE

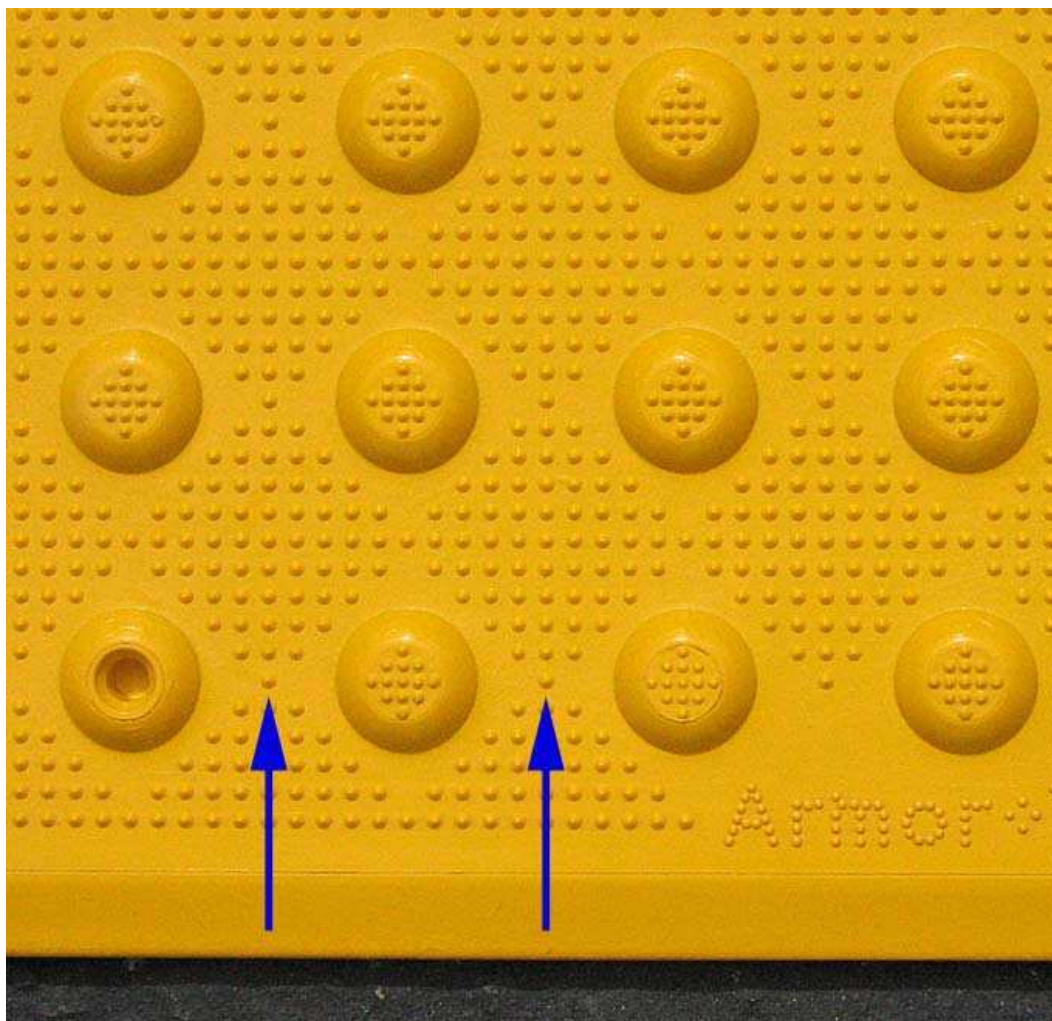
ON A RADIUS

- Installation instructions for single tile installations should be downloaded from our website at http://www.armor-tile.com/surface_applied_system.html. They are available in both English and Spanish. A video can be viewed at the same web page. Many of the installation procedures outlined there, apply here. It is important to become familiar with the essential steps of the installation procedure. This document does not detail all required installation procedures; it merely gives additional information which would be helpful for a radius installation.
- When cutting tiles for installation in a radius, the tapered edge of each tile should remain intact all along the outside perimeter. The tapered flanges will only be cut off, on the sides where the tiles will butt up against each other. In the attached photo called, “Numbered Radius”, note the factory tapered edge intact along the entire outside edges, labeled A, B, C, and D. Note that all of the butt-joints between tiles have all tapered edges removed. When removing the tapered edge between tiles, the cut should be made at the “common cone” as described below.



Surface Applied - Numbered Radius

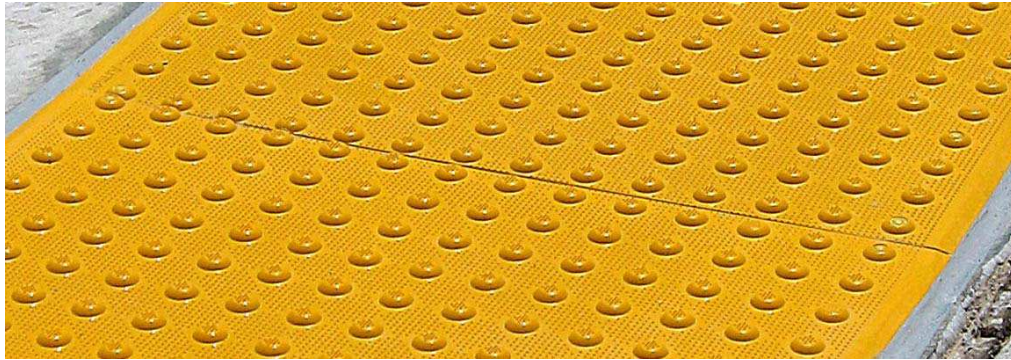
- When trying to determine the exact center between truncated domes, simply reference the tiny conical shapes in the background field of the tile. Notice the pattern of tiny cones form a diamond-shaped pattern in-between the truncated domes. The single tiny conical shape where adjacent diamond-shaped patterns meet, we will refer to as the “common cone”. Adjacent diamond-shaped patterns have this single cone in common. Note the reference arrows in the attached photo called, “close-up of conical shapes”. This common cone is the exact center between truncated domes. A straight cut can be made across an Armor-Tile by keeping the straight-edge which guides the blade, parallel to any row of the conical points.



Close-up of conical shapes

- The size, to which whole tiles should be cut in order to fit around a radius, depends on the tightness of the curve. A long gentle radius, where the detectable warning is to be 2-feet deep in the direction of travel, could be installed using whole 2'x4' tiles or perhaps whole 2'x3' tiles. If the curve is tighter, either of those tiles could be cut in half first, to yield segments which are only 2' wide, or even 1-1/2' wide. Obviously, the smaller the segments, the more exactly they will match the curve. In a situation where the detectable warning is to be 3-feet deep in the direction of travel, one might use whole 3'x4' tiles or perhaps whole 2'x3' tiles. For tighter curves, those tiles could be cut in half as previously outlined. All the procedures outlined herein would apply, no matter what size tiles were used.
- The tiles should be installed so that the edge nearest the curb is 6 inches minimum and 8 inches maximum from the curb line. When deciding what size to make each segment, some consideration should be given to achieving equal-sized tiles, and also to the fact that no tile should be narrower than about 10 inches.

- Armor-Tiles are easily cut with a continuous-rim diamond blade designed for concrete. The blade can be used in a circular saw or a mini-grinder, and should be guided by a straight-edge.
- As the tiles are cut, the pre-drilled recesses for the mechanical fasteners may be lost. New fastener holes can be drilled through any truncated dome. After drilling, a countersink bit should be used so that the fastener will be flush with the top of the truncated dome. A piece of Armor-Tile cut to 2x2 feet or 1-1/2x2 feet should contain at least 4 fasteners. If, during installation, the need is seen for an additional fastener, any dome can be drilled to accept one. The drill bit used may be the same masonry bit used to drill the holes in the concrete.
- The key to installing Armor-Tiles in a radius is simply to determine the amount by which each tile will overlap, and cut $\frac{1}{2}$ of the amount off each tile. In the attached photos called, "Joint Close-up" and "SA Radius", note that each joint between tiles is symmetrical. As truncated domes on one tile have been cut, the truncated domes on the opposing tile have been cut the same amount. When the tiles are brought together, there is no trip hazard.



Joint Close-up



SA Radius

- Two Armor-Tiles should be identified as those which will be placed at the two opposing ends of the radius. These tiles will retain their perimeter tapered flange and should be identified as different from the other tiles. The remainder of the tiles required for the radius can be cut in half or otherwise sized, and the tapered flange should be removed from the proper two sides, as described above. Layout of the radius can now begin. Some installers prefer to begin in the middle of the radius and work toward the ends. Sometimes the installation begins at one end and proceeds toward the other.



S A Radius

- The procedure for layout and determining the overlap to be removed is as follows:
 - Using a Sharpie marker, mark a line on the substrate which is parallel to the radius curb face. All tiles will be installed such that the corners of each piece of Armor-Tile touch it. This line should be no closer than 6 and no further than 8 inches from the curb line. This permanent marker will be covered later by caulking.

- From that radius layout line, determine and outline the full area which will be covered by Armor-Tiles. Use a grinding cup to scuff the entire area, as detailed in our written installation instructions.
- To avoid confusion later, it is helpful to take all pieces of tile which were cut to become pieces of the radius, and lay them out in the place they will hold in the final installation. Attention should be paid to the orientation of the “Armor-Tile” logo which is embossed at the perimeter of each tile. The tiles should be installed such that all the logos are on the same side. Some Armor-Tiles are intentionally not exactly symmetrical, and this procedure will assure that all truncated domes will line up. If both sides of the Armor-Tile contain the logo, this step can be disregarded. Place a piece of tape on the tapered flange at the “street side” of each tile, and mark each tile with a sequential number, representing the tile’s place in the string of tiles.
- Keep in mind that the tile numbered as 1 may or may not be the first tile installed. Installation may commence with the tile which is near the center of the radius, for example, 6, and proceed 7 through 12, followed by 5, then 4, etc. For this reason, these instructions will not refer to tiles by number.
- Place the first piece of tile to be installed, so that the corners touch the radius layout line and place a sandbag on it.
- When the adjacent piece of tile is placed, it will overlap the first tile somewhat. When this happens, it might be difficult to know where the corner of the first tile is. Therefore, before placing the second tile, use a straight-edge to make a pencil line on the substrate, which is an extension of the edge of the first tile. The line only needs to be long enough to be seen after the second tile is placed. Do not use a Sharpie, because it will mar the concrete.
- Place the second piece of tile so that the corner touches the radius layout line, making it coincide exactly with the corner of the first tile placed. Then shift the tile until the other corner now touches the radius line also. This will cause this tile to overlap the first tile. Verify that both corners of both tiles still touch the radius layout line.
- Measure the amount by which the two tiles overlap each other. The measurement can be taken from the corner of the tile just placed, along its edge, to the pencil line drawn as an extension of the tile beneath it. Exactly one half of that measurement should be noted and written down.
- Now all that is required is to cut a triangle off of each tile, removing half of the overlap. Using an extra fine point Sharpie, mark the edge of each tile, with the measurement just written down. Then make an accurate cut in the tile in a straight line, from that mark, to the other corner, where the amount to be removed is zero. As a double-check on accuracy, the triangles of scrap removed from each of these two tiles should be the same size when placed back-to-back.

- After making only these two cuts, replace the tiles on the substrate and verify that when the corners are touching the radius layout line, the tiles meet each other as planned. If the fit is good, place a 1/16" gap between the two tiles, put sandbags on both of these tiles and proceed to place the next tile, following the same procedure to find the amount of overlap and then remove the overlap as previously outlined. When each of those two cuts are made, the second tile in the sequence of three now has triangles of scrap removed from both sides. Continue to repeat the procedure until the third tile in the sequence has had both triangles of scrap removed.
- At this point, the second and third tiles in the sequence can be anchored with Armor-Bond and mechanical fasteners. Be certain to wipe the substrate with Acetone just prior to adhering the tiles. Leave a 1/16" gap between the tiles. The process can then be repeated. We DO NOT recommend cutting the overlap from all the tiles before beginning the process of anchoring them.
- When examining the back side of a Surface-Applied Armor-Tile, one will note embossed sections around the perimeter, and in a "+" pattern across the center of the tile. These are the only places where adhesive will be applied. These areas are roughened at the factory, so that the adhesive will achieve a better bond. It should be noted that if part or all of these embossed areas are cut off during this radius installation process, a new area about 2-1/2 inches wide should be scuffed with a grinding cup or diamond blade. Dust from this grinding must be removed as outlined in our detailed installation instructions, prior to applying the adhesive.
- A 1/16-inch gap should be left between each installed tile, to allow for expansion and contraction.
- When all the tiles have been installed, the entire perimeter should be caulked with Armor-Seal as detailed in our written instructions. Do not caulk between tiles.
- Some useful items for the radius layout and installation would include:
 - ✓ Fine point wood pencil
 - ✓ Extra fine point Sharpie marker
 - ✓ Fine point Sharpie marker
 - ✓ String or tool to mark radius layout line
 - ✓ Half a dozen sandbags
 - ✓ Straight-edge
 - ✓ Bar clamps to hold straight-edge to tiles during cuts
 - ✓ Continuous-rim diamond blade
 - ✓ Circular saw
 - ✓ Vacuum for dust control
 - ✓ Dust masks
 - ✓ Sawhorses with work surface
 - ✓ Hammer Drill
 - ✓ 1/4"x6" long masonry drill bit (or 3/16", depending on the fasteners supplied)
 - ✓ Caulking gun
 - ✓ Utility knife

- ✓ Countersink bit
- ✓ Leaf blower
- ✓ Grinding cup in minigrinder
- ✓ Acetone
- ✓ Rags
- ✓ Plastic-headed hammer
- ✓ Masking tape
- ✓ Safety glasses
- ✓ Caution tape or cones for wet caulking
- ✓ Printout of installation instructions from [Armor-Tile website](#)