Curved Walls

Add Interest and Eye Appeal

The creative use of curved walls can add visual interest to a building, as it does for this Texas professional building.

Whether it involves a slight arc or a serpentine pattern, curving exterior walls can add tremendous visual interest and appeal to a building. A departure from a common flat wall can add character to a building at very little extra cost. The proper stud spacing and installation techniques are very important to a curved wall installation because of the extra stress a curve puts on materials, especially the exterior sheathing. The following describes how to construct a curved wall using USC’s Durock-Cement Board System.

The first step is bending runner track to the required curvature. Steel top and bottom runner tracks should be cut through one leg and web at 2 in. on center intervals for the length of the arc. The track is then bent to the required curvature and attached to the structural elements with the appropriate fasteners located 2 in. from each end and spaced 12 in. o.c. Wood plates should be cut to the curve of the wall and then secured to the structure. The steel runner tracks and wood plates should not be attached to suspended ceiling systems unless those systems are specifically designed to support curved walls.

Next, the steel studs are positioned vertically with the open sides
facing in the same direction to engage the floor and ceiling runner tracks. Fasten the studs to the tracks with S-12 Pan Head screws. The studs should be positioned so that they support both the beginning and the end of the cement board panel.

Intermediate studs are positioned so they are equally spaced and measured along the outside of the arc. Likewise, back-to-back studs are installed at panel butt joints for radii less than 20 feet. An additional stud must be installed between the back-to-back studs and the adjacent stud to minimize flat spots for radii less than 12 feet. Stud spacing should adhere to the guidelines shown in Table 1.

Once the studs are in place, a water barrier membrane must be secured to the framing prior to the installation of the board. Attach the membrane to wood framing with staples and to metal studs with tape or adhesive.

The panels are applied perpendicular to the framing with the rough side out and with the ends over supports. When attached to the outside radius of the frame, panels should be attached at a butt end first and then screw-attached to the...
Ceramic tile is one of several finishes that can be applied over cement board on curved walls.

next stud as the panel is carefully worked around the framing.

When applying the board to the inside radius, support the panels at each end while fastening them to the framing at the center of the panel and then at the edges. Attach the panels so that the wrapped edges are perpendicular to the studs and the butt joints are staggered to a minimum of two stud spaces.

The panels are screw attached

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with fasteners spaced no more than 4 in. on center at the butt ends and 6 in. on center in the panel field. The panels must be in firm contact with the framing and the bottom of the screw heads must be flush with the panel surface. Perimeter fasteners should be at least 3/8 in. and less than 5/8 in. from ends and edges.

After the joints are treated with exterior tape and basecoat recommended by the exterior cement board manufacturer, a layer of basecoat and then exterior finish are troweled onto the surface to create a finished stucco appearance. Thin brick, ceramic tile, and thin-cut stone tile can also be applied. However, they can only be applied to curved walls where the radius can assure a full bond. This radius will vary with the physical size of the tile and/or thin brick.