Delta Tie Installation Information

How is Spacing Achieved in the Field?

Dayton Superior recommends 4'-0" wide x 8'-0" long sheets of extruded insulation foam when using the P24 Delta Tie. This allows the contractor to space ties at 4'-0" centers across the width of the panel and then vary the vertical spacing depending on percentage of composite action desired. Sheets, 2'-0" x 8'-0", can be utilized for other spacing.

What are the Installation Steps for the Delta Tie?

1. Install the required reinforcing, then place and screed the concrete for the outer wythe to its designed thickness.
2. Cut the first strip of foam to a width not exceeding 12" and place it tightly against the side of the form and on top of the just placed concrete while concrete is still in its wet or plastic state.
3. Insert the first row of Delta Ties tight against the edge of the foam, spaced vertically from top to bottom of panel. Minimum tie embedment into the fresh concrete is 1-1/2".
   If the tie hits the reinforcing mesh prior to reaching its minimum embedment depth, move the tie slightly so that the reinforcing mesh sits in the depressed "V" section of the tie.
4. Place a full 4'-0" wide section of foam tight against the first row of P24 ties, then insert the second row of Delta Ties from top to bottom of panel.
5. Repeat the process across the width of the panel until there is 12" or less between the last full sheet of foam and the side form.
6. Install the last strip of foam cut to size in width, and force it between the last row of Delta Ties and the side form.
7. Once the concrete in the bottom wythe has stiffened, complete the balance of the panel by installing the required reinforcing steel, embeds and concrete. Finish and cure the backside of the panel per the project's specifications.

It is critical and required that Steps #1 through #6 above be completed immediately after the bottom wythe has been consolidated and leveled to required thickness. This is to ensure that the concrete mix is in a wet or plastic state and workable to be able to embed the Delta Tie properly. If the Delta Tie is not embedded into the concrete while the concrete is still plastic, the concrete will not properly flow through the openings in the tie, which "locks" and holds the tie into the concrete. This could result in failure of the panel.

Important Installation Notes:

1. The person that is installing the foam insulation and Delta Ties should lightly step several times on the foam immediately adjacent to and surrounding the tie to make certain concrete is consolidated around the tie and flows in and around the "anchoring" holes in the tie.
2. Set time of concrete varies as a function of many factors, including (but not limited to): mix design, concrete temperature, ambient temperature and mix time. The installer must ensure that the concrete has not reached initial set before ties are installed.
3. As the P24 Delta Tie is a one-way shear connector, meaning it is stronger in one direction than it is in the other direction, care must be taken to make certain it is installed in its intended orientation in the panel.
4. With the Delta Tie visible above the foam, it is easy to verify if the Delta Tie is set at its proper depth. Utilize a tape measure to randomly check that the ties have a minimum of 1-1/2" above the foam.

What Criteria Determines What Direction the Delta Tie Should be Placed (5" or 7" Vertical) with Different Foam Thicknesses?

Delta Ties are installed to achieve a minimum of 1-1/2" in each concrete wythe. The tie is rotated using either the 5" or 7" dimension to achieve this minimum concrete depth. The chart below details the correct direction of the Delta Tie based on insulation thickness:

Insulation Thickness	Horizontal Dimension of Tie to Panel Face
1"	7"
1-1/2"	7"
2"	7"
2-1/2"	5"
3"	5"
3-1/2"	5"
4"	5"

What is the Learning Curve on Installing Delta Ties?

Contractors have been able to learn quickly how to efficiently install the Delta Tie. In fact, at one jobsite, the crew was able to install the ties so quickly that it was estimated they had reduced the time to install the ties and insulation by almost 50% over the time it took to install a competitive system.