Installing Ties and Connector Pins

Ties

The Ties are installed into fresh concrete in turns with insulation panels. This ensures that the correct required anchoring of the tie occurs in the lower concrete panel. Ties must not be inserted through the insulation. The designed anchoring depth (see *Table 1*) of the Ties must stay above the insulation. The insulation panel is installed tightly against the tie so that there is no gap around the tie. If hard insulation materials are being used, diagonals create a gap between the insulation panels. The gap must be filled with a material such as PU foam before the top concrete layer is cast (see *Figure 22*). The fill material cannot be of an expanding type. Thin plates of soft thermal insulation (20mm) could be placed between hard insulation plates and ties instead of PU foam (see *Figure 20*). The standard length of Diagonal Ties is 2400mm. Multiple Diagonal Ties may be placed in one row without splicing (see *Figure 21*).

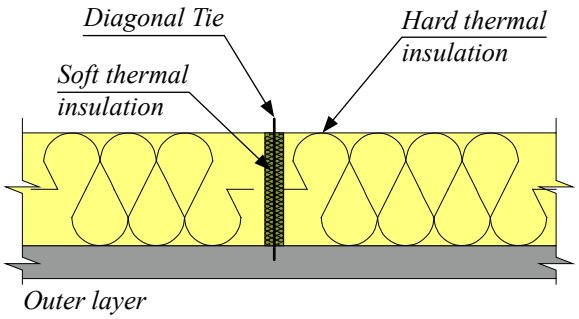

Figure 20. Soft thermal insulation between hard thermal insulation.

Figure 21. Installation of Diagonal Ties.

Figure 22. Filling the gaps of hard insulation.

Connector Pins

The waved end of PPI Connector Pins is pushed straight through the insulation into the fresh concrete layer. During installation, the pin is moved back and forth to cause the concrete to compact around the pin. The hooked loop of the pin is installed so that the mesh reinforcement bar will be in the pin's loop.

The PDQ Connector Pin is hung on the reinforcing mesh of the outer layer (see *Figure 24*). During installation of the thermal insulation, it is advisable to cut insulation at the position of the pins. The waved end is anchored to the inner layer by the minimum anchorage length (see *Table 1*).

The Pin is installed in the inclined direction with an installing jig (wooden block with 45° angle cut) to ensure the correct installation angle (see *Figure 25*).

Figure 23. Concrete cover of Diagonal Ties in the inner layer.

If hard insulation material and greater thicknesses make it difficult to install the Pins, pre-drilling small holes for the Pins is recommended.

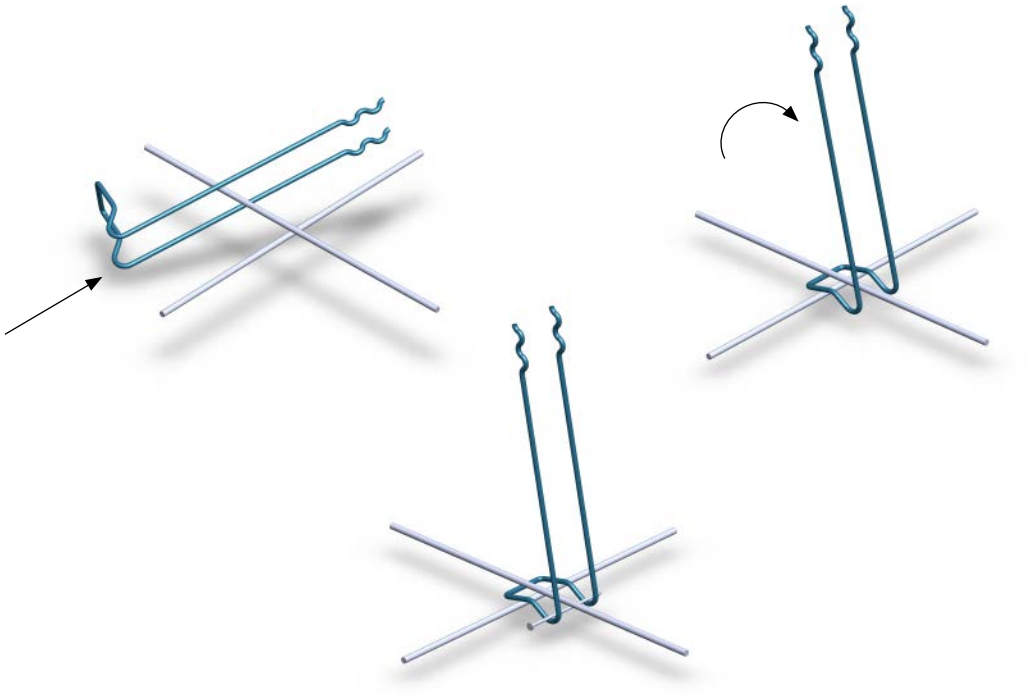

Figure 24. Installing of PDQ Connector Pin.

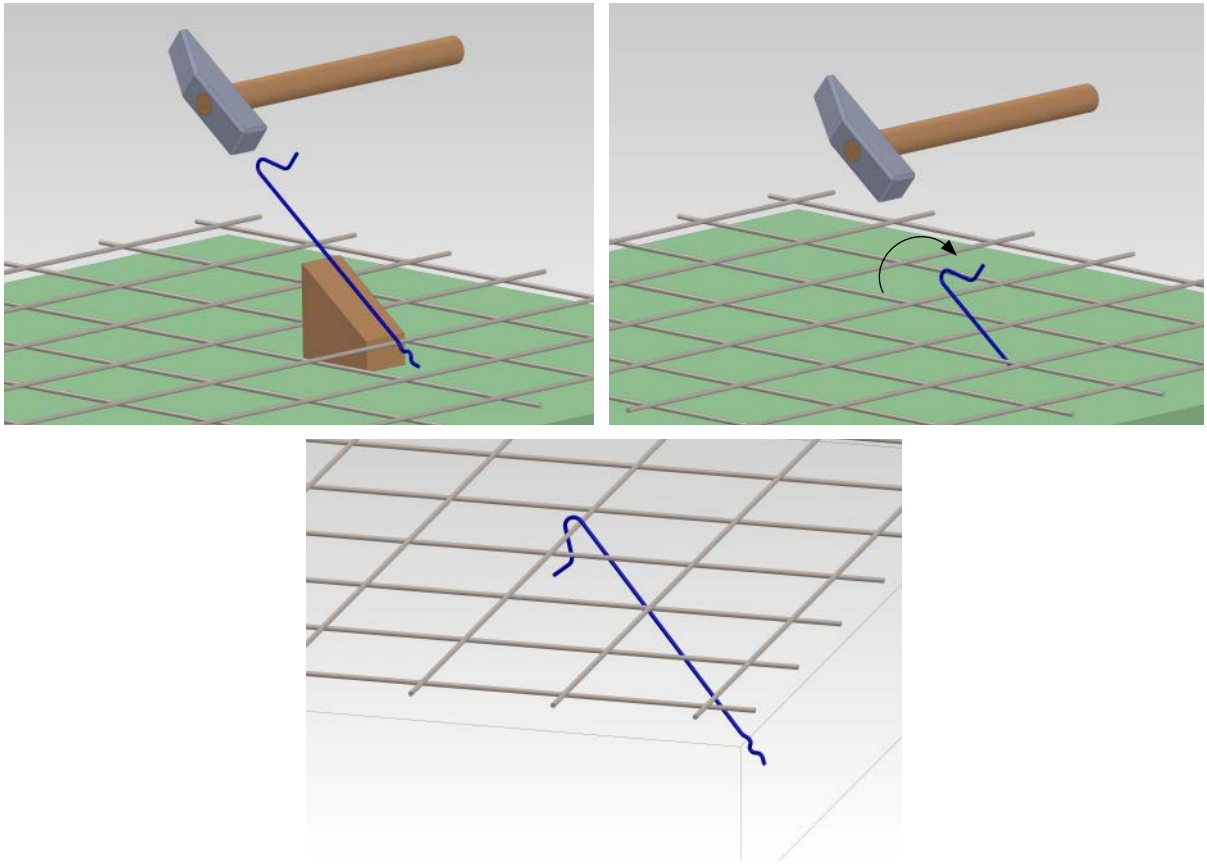

Figure 25. Installation of incline Connector Pin.