



Thor Helical ties are particularly useful for tying rubble filled walls. The helical wall tie bars connect the inner and outer layers of old stone walls in situations where the core between them is filled with rubble or other infill.

Old rubble-filled walls sometimes develop defects which appear as bows or bulges in one or both leaves. Common causes of such defects are; rainwater penetration, repetitive cycles of freezing and thawing and settlement of the infill. The mechanism for this is that over the years the water penetration washes the fine material out of the core infill, allowing the fine materials and the loose infill to drop down the wall. This causes areas of localised pressure which can result in bulging as the walls are forced apart.

There are two methods of re-tying rubble filled walls. The first is method utilises a bonded connection and the other relies on a mechanical connection to secure inner and outer layers of stonework.

Tying Rubble Filled Walls with Cement-Bonded Tie Bars

When using the bonded method, a large hole is drilled from one side of the wall, across the rubble infill and into the remote wall. The walls are thoroughly wetted to limit suction and polymer modified cement-based grout is injected via a long nozzle to fill the bore in each stone before a helical bar is pushed into the unset grout. Once cured the bar is bonded to both stone layers creating a tension tie strap that provides resilience against further bulging pressures.

There are sometime some difficulties in installing bonding ties as it is often the case that settlement of the infill blocks full insertion of wetting or injection nozzles. This prevents grout from being pumped into

the remote leaf until the hole has been re-drilled and cleared. Other limitations in using bonded ties include material incompatibility issues of using cement grout in old buildings and using cement grout in cold temperatures.

Tying Rubble Filled Walls with Mechanical Fix Ties

When using the mechanical method to tie thick rubble-filled walls, a small and discrete pilot hole is drilled from the near-side wall, across the rubble infill and into the remote layer of wall. Using a the hammer action of an SDS drill with an SDS setting tool, a heavy duty helical tie is driven into the walls to provide an undercut connection in each layer.

The corkscrew action of the mechanical helical ties allows it to wind through any loose infill. Having no chemicals this technique of securing old rubble-filled stone walls overcomes issues of using dissimilar materials and eliminates installation limitations in cold climates.

