

STANDARD SLAB SYSTEM HELICAL ANCHORAGE REINFORCEMENT

Post-tensioning of concrete relies on the transfer of the stressing force from the high tensile steel tendons to the surrounding concrete. This is achieved by the use of post-tensioning anchorages. For live ends (or stressing ends) this force is transferred mainly by direct bearing of a cast iron anchorage on the concrete, while a dead end (non-stressing end) relies primarily on the development of bond stresses along the length of exposed strand

This transfer of force leads to both tensile and compressive stresses directly around the anchorage zone. The tensile stresses have been termed 'bursting' stresses and this leads to the term 'anti-burst' reinforcement to describe the reinforcement cage surrounding the anchorages.

The PTIA member companies have had their anchorage testing verified by an external auditor to confirm compliance to Australian Standards. The Technical Committee of the PTIA have been able to standardize the helical anti-burst reinforcement for the two main anchorage types. This reinforcement is noted in table 1 below. It has been found that helical reinforcement leads to the objective of having sufficient strength and yet it is simple to construct and as economical as possible.

It is important to recognize that this reinforcement is for the primary bursting stresses and must be supplemented with other edge reinforcement and/or additional shear ties within a beam. Along the edge of the slab it is always recommended to detail U-bars / L-bars plus longitudinal reinforcement to control tensile spalling stresses between the anchorages and to adequately reinforce the un-tensioned zone which occurs between anchorages. The detailing of additional reinforcement is critical and should always be checked with a PTIA member company or the project's structural engineer.

For thin slabs where cover will not allow the use of a helical cage (such as slabs less than 160mm thick in external environments), it is usual to detail specific reinforcement for the particular situation. Anchorage reinforcement for other types of stressing ends such as couplers and short terminated strands should follow the same principle. These should be calculated by the project's structural engineer together with a PTIA member company.

System	Bar	Pitch(mm)	No. turns	Dim. X(mm)	Dim. Y(mm)
Up to 5 x 12.7 ϕ	R10	60	5	260	100
Up to 5 x 15.2 ϕ	N10	60	7	300	110

Table 1.

