Future openings

BONDED TENDONS

Bonded tendons are located within oval shaped galvanized ducts which are injected with cement grout following the posttensioning procedure. Consequently when such a tendon is severed, the free end will become de-tensioned but after a short transmission length the full tendon force will be effective. This distance is in the order of 800 to 1000 mm.

Present quality assurance methods and supervision ensure that the tendons have been adequately grouted after the application of pre-stress.

If a penetration is required that will need the termination of a bonded tendon, then the procedure follows that for a fully reinforced structure.

Cutting a bonded post-tensioned tendon is, structurally, the same as cutting through conventional reinforcement. The tendon, however, needs to be `terminated` in order to give full corrosion protection (as does conventional reinforcement).
Tendons are easy to cut using a disc cutter.In fact, cutting tendons requires less effort than for a fully reinforced slab due to the relative amount of reinforcing material to be cut.

UN-BONDED TENDONS

These tendons come individually greased and plastic coated and are therefore permanently de-bonded from the slab.

When unbonded tendons are severed, the prestressing force will be lost for the full length of the tendon. When contemplating the cutting of an unbonded tendon it is therefore necessary to consider the aspects as noted below.

The strand is packed with grease which prevents an explosive release of energy when the tendon is severed. Even so a gradual release of force is recommended.

This can be achieved by using two open throat jacks back to back. After cutting the strand the force can be gently released by closing the jacks.

Adjacent spans may require temporary propping depending upon the number of tendons severed at one time. It is rare for a slab to carry its full design load. A design check based on actual loading at the time of the modification may show props to be unnecessary.

When the edge of the slab is re-concreted new anchors are cast in to enable the remaining lengths of tendon to be Prestressed, thus restoring full structural integrity. The above operations are not difficult but will require the expertise of a post-tensioning sub-contractor.