

## CODE

**25.8.2** Anchorages and couplers for bonded tendons shall be located so that 100 percent of  $f_{pu}$  shall be developed at critical sections after the post-tensioned reinforcement is bonded in the member.

**25.8.3** In unbonded construction subject to repetitive loads, the possibility of fatigue of prestressed reinforcement in anchorages and couplers shall be considered.

**25.8.4** Couplers shall be placed at locations approved by the licensed design professional and enclosed in housings long enough to permit necessary movements.

## 25.9—Anchorage zones for post-tensioned tendons

### 25.9.1 General

**25.9.1.1** Anchorage regions of post-tensioned tendons shall consist of two zones, (a) and (b):

- (a) The local zone shall be assumed to be a rectangular prism (or equivalent rectangular prism for circular or oval anchorages) of concrete immediately surrounding the anchorage device and any confining reinforcement
- (b) The general zone includes the local zone and shall be assumed to be the portion of the member through which the concentrated prestressing force is transferred to the concrete and distributed more uniformly across the section

## COMMENTARY

**R25.8.2** Anchorages and couplers for bonded tendons that develop less than 100 percent of the specified tensile strength of the prestressing reinforcement should be used only where the bond transfer length between the anchorage or coupler and critical sections equals or exceeds that required to develop the prestressed reinforcement strength. This bond length may be calculated based on the results of tests of bond characteristics of non-tensioned prestressing strand (Salmons and McCrate 1977; PCA 1980), or bond tests on other prestressing reinforcement, as appropriate.

**R25.8.3** A discussion on fatigue loading is provided in **ACI 215R**.

Detailed recommendations on tests for static and cyclic loading conditions for tendons and anchorage fittings of unbonded tendons are provided in **ACI 423.3R** (Section 4.1.3) and **ACI 301M** (Section 15.2.2).

## R25.9—Anchorage zones for post-tensioned tendons

### R25.9.1 General

The detailed provisions in the AASHTO LRFD Bridge Design Specifications (**AASHTO LRFDUS**) for analysis and reinforcement detailing of post-tensioned anchorage zones are considered to satisfy the more general requirements of this Code. In the specific areas of anchorage device evaluation and acceptance testing, this Code references the detailed AASHTO provisions.

**R25.9.1.1** Based on St. Venant's principle, the extent of the anchorage zone may be estimated as approximately equal to the largest dimension of the cross section. Local zones and general zones are shown in Fig. R25.9.1.1a.

When anchorage devices located away from the end of the member are tensioned, large local tensile stresses are generated ahead of and behind the device. These tensile stresses are induced by incompatibility of deformations. The entire shaded region shown in Fig. R25.9.1.1b should be considered in the design of the general zone.