



5.2 CAST-IN-PLACE POST-TENSIONED CONCRETE BOX GIRDERS

5.2.1 GENERAL

This policy addresses specific requirements for cast-in-place post-tensioned concrete box girders.

5.2.2 REQUIREMENTS

5.2.2.1 Concrete Strength

The design concrete compressive strength at time of stressing, f'_{ci} , must be at least 3.5 ksi.

5.2.2.2 In-Span Hinges

The unfactored dead load hinge reaction and unfactored prestress hinge reaction must be tabulated in the contract plans on the hinge detail sheets.

The camber diagram shown on the contract plans must consider the time-dependent deflections related to the duration of time between stressing the short cantilever and loading the short cantilever with the long cantilever.

One inch of additional concrete cover to the top deck reinforcement must be provided so that grinding can be performed if necessary. The additional cover must extend over a distance no less than the full length of the hinge diaphragm. This additional cover must be shown on the plans.

5.2.2.3 Girder Stirrups

At bridge supports and prestress anchors, girder stirrups must be spaced at 12 inches or less for a minimum length of 8 feet.

5.2.2.4 Standard Plans

The details shown on the latest versions of Standard Plans B7-1 Box Girder Details and B8-5 Cast-in-Place Post-Tensioned Girder Details must be used as a minimum.



5.2.2.5 Prestressing Notes

Prestressing notes must be shown in the contract plans on the girder layout sheets and include the following design information:

- P_{jack} (kips)
- Anchor set (in)
- Friction curvature coefficient (1/rad)
- Friction wobble coefficient (1/ft)
- Assumed long-term losses (ksi)
- Total number of girders to which P_{jack} is to be applied
- Maximum final force ratio between any two girders
- f'_c at 28 days (ksi)
- f'_{ci} at time of stressing (ksi)
- Initial force coefficient at the point of no movement for the post-tensioning
- Stressing location(s)

5.2.2.6 Prestressing Path

The path of the center of gravity of the prestressing force and the point of no movement for the post-tensioning must be shown on the plans.

5.2.2.7 Stressing Incomplete Bridges

Stressing must be performed only after the deck concrete has been placed and the minimum time and strength provisions of the Standard Specifications have been met unless one of the following emergency situations occurs:

- The falsework is damaged and cannot be safely repaired, and there is danger of collapse.
- For a bridge crossing a waterway, access to the falsework is cut off by high water, and there is danger of collapse.

For the above emergency situations, the following requirements apply:

1. Partial prestressing with at least 15% of P_{jack} is allowed before the deck concrete is placed if the partial prestressing force and jacking sequence is authorized by the Engineer of Record. Any damaged falsework must be replaced, and the partial prestressing must be detensioned before the deck concrete is placed.
2. Early stressing of a bridge after the deck concrete has been placed but before the minimum time and strength provisions have been met may be allowed if authorized by the Engineer of Record.