



Section 1 - Bridge Superstructure PC/Pretensioned I Girder (Harped Strands)

XS Sheet Numbers:

XS 1-120-2

Description of Component:

Precast Pretensioned I-Girder with Harped Strands

Standard Drawing Features:

1) Elevation:

- Girder Length “L” needs to be provided. If different girder lengths are used, fill out the table.
- Shear stirrups spacing shall be provided and #5 stirrups are preferred. Three types of stirrup shapes are allowed.
- “Y” dimension shall be provided in the table. Manufacturers prefer “Y” dimension as small as possible. But designer needs to calculate the tensile stress at girder top to meet the allowable stress requirements. Variation of 3 inches for “Y” should be considered in the calculations.
- Number of Intermediate diaphragms should be designed based on MTD 11-8 and detailed accordingly.
- Special details shall be provided if girder ends are not level.

2) Typical Girder Section:

- Girder Depth “D” shall be provided and may be shown on the table.
- The spacing for confinement reinforcement is as same as stirrup spacing, but not less than 6 inches per design code.

3) Section A-A:

- The stirrups for splitting resistance should be verified based on AASHTO LRFD 5.9.4.4 (8th Edition) - Pretensioned Anchorage Zone. Other standard confinement details are provided. End blocks are normally not needed unless design requires.

4) Clearances for Pretension Strands:

- This detail shows bundled strands at mid-span location.

5) Girder Table:

- The table shall be used for specifying girder length, girder depth, jacking forces at 4 inches and 6 inches of “X”, areas of strands, “Y” dimension, concrete strength, mid-span deflections due to deck dead load and mid-span deflections due to composite section load, such as barrier railing. If different girders exist, Girder A, B, C, symbols may be used to identify each of them. In some cases, especially for long-span girders, the required area of prestressing steel may be controlled by the strength limit state. If this is the case, the designer should consider using an initial jacking force less than 75% of f_{pu} in order to reduce the required initial concrete strength.

6) Strand Extension Hook Detail (At Bent):



Caltrans® User Guide to Bridge Standard Detail Sheets

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- Per Caltrans EQ Committee's request and SDC 2.0, the details have been added and the designer shall determine numbers of required strands hooked according to the requirements of seismic design of precast bridge systems.

Design/General Notes:

One design option is to add temporary top prestressing strands, which allows the concrete strength at release to be reduced if it is needed.

Additional Drawings Needed to Complete PS&E:

This sheet works with XS 1-120-3

Contract Specifications:

Standard Specifications 2018

Restrictions on Use of Standard Drawings:

The project designer and project engineer are responsible for designing this sheet and stamping this sheet.

Special Considerations:

The project designer and project engineer may modify this sheet based on project needs. Caltrans designers are urged to consult with the Concrete Design Committee on any design change to the girder cross-section. Consultant designers may check with the precast industry (PCI West).