



MEMORANDUM

TO: District Engineers

DATE: June 20, 2007

FROM: William R. Cox, P.E.

SUBJECT: New Prestressed Concrete I-Girder Standard Drawings

New prestressed concrete I-girder standard drawings with an issue date of June 2007 are posted on the TxDOT web site and are available for immediate use. The designs reflected by these standard drawings are based on HL93 live loading as required by the AASHTO *LRFD Bridge Design Specifications*.

Prestressed concrete I-girders were developed with input from the precast industry to exceed the performance characteristics of prestressed concrete I-beams—span length, girder spacing, stability, and durability—and to provide more beam depth options for design optimization. For these reasons, prestressed concrete I-girders will replace prestressed concrete I-beams (Types A, B, C, IV, and VI) in future TxDOT bridges.

To lessen the impact on prestressed beam producers, prestressed concrete I-girders will be implemented in phases. The implementation plan is outlined in the table below:

| Prestressed Concrete I-Girder Implementation Schedule | |
|--|---------------------------------------|
| Girder Type | Initial Letting Month and Year |
| Tx46 and Tx62 | December 2007 |
| Tx28, Tx34, and Tx70 | September 2008 |
| Tx40 and Tx54 | September 2010 |

Exceptions to this plan may be accepted if a significant volume of girders, larger than 10,000 linear feet, is needed for a project.

Standard drawings for Types A, B, C, IV, and VI beam bridges will be removed in phases, remaining available on the TxDOT web site for at least one year after an I-girder alternative exists. After their removal, these standard drawings will be available upon request only.

Prestressed concrete I-girders do not need to be used for bridge plans already completed nor for bridges currently being designed. However, prestressed concrete I-girders should be used for bridge projects where beam type selection has not been made and the girder type and letting date is not in conflict with the implementation plan outlined above.

Key features of these standard drawings include the following:

- 24-, 28-, 30-, 38-, and 44-foot roadway widths are accommodated.
- 0-, 15-, 30-, and 45-degree skews are accommodated.
- Span lengths of 40 feet to 125 feet.
- 2- and 3-span units can be formed with details provided on standard drawing IGCS.
- Girder depths of 28-, 34-, 40-, 46-, and 54-inches (refer to implementation plan for approved letting date based on girder depth).

New standard drawings supporting prestressed I-girder construction are:

- IGD—girder details
- IGEB—girder end and bearing details
- IGMS—miscellaneous slab details
- IGND—girder design information table for custom bridge designs
- IGTS—thickened slab end details
- MEBR(C)—minimum erection and bracing requirements, revised to accommodate prestressed concrete I-girders

Revised miscellaneous standard drawings, accommodating prestressed concrete I-girders, will be posted to the TxDOT web site in July 2007.

Bid codes for prestressed concrete I-girders are prepared and payment will be by the linear foot for “PRESTR CONC GIRDER” of the type specified (TX28, TX34, etc.) under Item 425, “Precast Prestressed Concrete Structural Members.”

Please see attachment for design and detailing information to be considered when developing bridge designs with prestressed concrete I-girders.

These and other bridge standard drawings are available on the Bridge Standards web pages in MicroStation® “dgn” and Adobe® Acrobat® “pdf” formats. See <http://www.dot.state.tx.us/business/standardplanfiles.htm> .

If you have questions or comments concerning these standard drawings, please contact John M. Holt, P.E., at (512) 416-2212, or Jon T. Ries at (512) 416-2191.

Attachment

Note: Original Signed By William R. Cox

cc: Federal Highway Administration
Bridge Design Consultants
Administration
Division and Office Directors
Directors of Transportation Planning and Development
District Bridge Engineers
Bridge Division Employees

Prestressed Concrete I-Girder Bridge Design and Detailing Information, June 2007

Deck Slabs

Slab overhang limits with a standard 8-inch thick deck, measured from girder centerline, are provided in the table below:

| Slab Overhang Limits, Slab Edge to CL Exterior Girder | | | | |
|--|----------------|------------------|------------------|------------|
| Girder Type | Usual Overhang | Minimum Overhang | Maximum Overhang | |
| | | | at Span Ends | at Midspan |
| Tx28 | 3' | 2' | 4' | 4' |
| Tx34 | 3' | 2' | 4' | 4.67' |
| Tx40, Tx46, and Tx54 | 3' | 2' | 4' | 4.75' |
| Tx62 and Tx70 | 3.5' | 2.25' | 4.25' | 5' |

Girders

Maximum girder spacing is 10 feet.

Distance to centerline of bearing is shown on standard IGEB.

Minimum haunch at centerline of bearing is 2 inches.

Define girders in Prestress14 software as non-standard sections.

Interior Bents

Minimum cap and inverted tee corbel widths are shown on standard IGEB.

Minimum cap depth is equal to minimum cap width.

Minimum column diameter is 3-ft for Types Tx28 through Tx54 girders and 3.5-ft for Types Tx62 and Tx70 girders.

Bearing seat width is 3 feet.

Abutments

Minimum cap width is shown on standard IGEB.

Maximum foundation spacing (drilled shafts or battered pile groups) is 11 feet.

Cap stirrup reinforcement is No. 5 bars at 12-inch maximum spacing.

Cap main reinforcement is four No. 11 bars top, four No. 11 bars bottom, and one No. 11 bar on each side face, for a total of ten No. 11 bars per abutment cap.

Bearing seat width is 3 feet.