



# MEMO

October 18, 2019

**To:** District Engineers

**From:** Graham Bettis, P.E.  
Division Director, Bridge Division

**Subject:** Revised Prestressed Concrete I-Girder Standard Drawings

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Revised prestressed concrete I-girder standard drawings, with a revision date of October 2019, are posted on the TxDOT web site and available for immediate use.

Notable revisions to the standard drawings include the following:

- Updated standard designs to reflect the single-tiered (harped) design approach for prestressed I-Girders with 0.6" diameter strand, in accordance with the October 2019 memo, New Design Procedures for Prestressed Concrete Girders (TxGirders), from Graham Bettis, P.E.
  - Prestressed Concrete I-Girder Non-Standard Designs (**IGND**) – Updated table and added instructions
  - All Prestressed Concrete I-Girder Standard Designs (**IGSD**)– Updated table and strand design
  - All Prestressed Concrete I-Girder Spans (**SIG**)– Increased haunch depth
- **IGD** – In order to improve performance when impacted, added Bars C and CH over full length when VC (bridge vertical clearance) is less than or equal to 20'-0".
- **IGFRP** – Updated design based on the AASHTO LRFD Bridge Design Guide Specifications for GFRP-Reinforced Concrete, 2nd Edition.
- **IGMS** – Altered notes to make Type A joint payable. Use bid code 0454 6021 TYPE A JOINT, LF.
- **IGCS** – Added note 6, which provides the temperature range associated with the allowable unit lengths.

These revised standard drawings apply to designs initiated on February 1, 2020 and beyond. Prior use is at the option of each District.

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

For questions or comments concerning these standard drawings, please contact Taya A. Retterer, P.E. at 512/416-2719 or Jon T. Ries, at 512/416-2191.

Note the Original Signed By Graham Bettis

**CC:** Federal Highway Administration  
Bridge Design Consultants  
Engineering Operations  
Directors of Transportation Planning and Development

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District Design Engineers  
District Bridge Engineers  
District Bridge Coordinators  
Bridge Division



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**To:** District Engineers

**From:** Graham Bettis, P.E.  
Division Director, Bridge Division

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*Graham Bettis*  
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**Subject:** New Design Procedures for Prestressed Concrete Girders (TxGirders)

The Bridge Division would like to make all designers that prepare bridge plans for TxDOT aware of two design changes for Prestressed Concrete Girders.

## Updated Design Procedure for Prestressed Concrete I-Girders

In December 2015, TxDOT adopted a design approach that permitted predominantly straight strand designs (non-harped) for I-Girders. This was done at the request of the Precast Concrete Manufacturers' Association of Texas (PCMA) because the girder producers felt that the straight strand designs would allow for more efficient fabrication.

In March of 2019, PCMA asked Bridge Division to reevaluate the design approach. An unintended consequence of the straight-strand design was that, in some cases, it only allowed for a single pick-point at each girder end. To allow for greater stability during erection, fabricators and contractors would like to have additional pick-points located further from the girder ends. To accommodate this request, TxDOT is reverting back to the harped strand design approach for I-Girders.

The Bridge Division is updating the library and templates for BridgeLink (PGSuper) for the harped design approach. To incorporate the change, users will need to download the latest library and templates. To download the library and templates, use the Configure BridgeLink function under File.

Standard designs for I-Girders, provided on the Bridge Standards webpage, have been revised to reflect the harped design approach.

## Use of Additional Confinement Bars in Girders over Roadways

Over the years, the Bridge Division has observed the performance of Prestressed Concrete I-Girders when impacted by an over height vehicle. In an effort to improve this performance, the Prestressed Concrete I-Girder Details (IGD) standard is being updated to require the confinement bars (Bars C and CH) to extend the full length of the girder when the vertical clearance over the lower roadway is less than or equal to 20 feet.

If the vertical clearance over a roadway is less than or equal to 20 feet, add the following to the General Notes Item 425, "Vertical clearance is less than or equal to 20 feet, provide Bars C and CH for the full length of the girder per the IGD standard."

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For questions or comments concerning this guidance, please contact Curtis Rokicki, P.E. at 512/416-2212.

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Directors of Transportation Planning and Development  
District Design Engineers  
District Bridge Engineers  
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