

Memorandum

TO: All Design Section Staff
 FROM: Bijan Khaleghi
 DATE: October 28, 2009
 SUBJECT: Prestressed Girder Dimensions and Allowable Concrete Compressive Stress

This design memorandum supersedes the memorandum issued on October 16, 2008. This memorandum incorporates the newly developed WF36G girder to the list of wide flange prestressed girders and revises the allowable temporary concrete compressive stress.

- The top and bottom flange dimensions remain unchanged and the depth of the girder matches the girder designation. The following Table and the attached detail show the revised cross sectional dimensions for all wide flange prestressed girders.

Girder Types	Depth
WF36G	3'-0"
WF42G	3'-6"
WF50G	4'-2"
WF58G	4'-10"
WF66G & WF66PTG	5'-6"
WF74G & WF74PTG	6'-2"
WF83G & WF83PTG	6'-10 5/8"
WF95G & WF95PTG	7'-10 1/2"
WF100G & WF100PTG	8'-4"

- The temporary concrete compressive stresses from transfer of prestress to casting of the bridge deck, including shipping and erection of precast girders shall be limited to $0.65f_{ci}$ (at transfer and handling in the casting yard) and $0.65f_c$ (shipping and erection on the jobsite) for all precast prestressed members. Table 5.2.3-1 of Bridge Design Manual will be updated to reflect this change.

The PGSuper program, Bridge Design Manual, and standard drawings are being modified to incorporate these revisions

Background:

The wide flange prestressed girders apply to all designs and projects. However, the suitability of long span girders for shipping and handling should be evaluated on a job-by-job basis.

The following information on shipping weight is provided by the trucking company.

- 170 kip max girder weight for OLD equipment at leading end & OLD equipment at trailing end.
- 210 kip max girder weight for OLD equipment at leading end & NEW equipment at trailing end.
- 252 kip max girder weight for NEW equipment at leading end & NEW equipment at trailing end.

The shipping weight limits shown above are for a single girder segment and do not include the weight of the hauler. These limits are conservative and are set low to ensure that all girders can be trucked to all jobsites. Girders of 270+ kips could be shipped to some specific projects such as the Alaskan Way Viaduct or Puyallup River Bridge.

All of the research done to date, including a recent project at the University of Texas at Austin (Ozzie Bayrak), indicates that the use of $0.65f_{ci}$ (at transfer and handling in the casting yard) and $0.65f_c$ (shipping and erection on the jobsite) is fine across the board.

If you have any questions regarding these issues, please contact Brian Aldrich at 705-7224, Rick Brice at 705-7174, or Bijan Khaleghi at 705-7181.

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