



Erection Bracing for Prestressed Concrete Girders

Erection bracing is an important safety practice that is often neglected on bridge construction projects. Inadequate bracing during girder erection has contributed to several deaths over the years. Additionally, many projects have been delayed when a girder or group of girders fell and were destroyed after being improperly braced.

Girder bracing requirements are cited in Item 425, Prestressed Concrete Structural Members, which references TxDOT's minimum erection and bracing standards, details for which are included in every set of plans that require prestressed concrete girders.

Prestressed concrete girders have two standard sheets:

- MEBR(C)-1 -- Requirements for Types A, B, C, III, IV, & V girders
- MEBR(C)-2 -- Requirements for Types 48, 54, 60, 66, and 72 girders.

View these standards online at:

<http://www.dot.state.tx.us/insdot/orgchart/cmd/cserve/standard/bridge-e.htm>.

(Use your browser's Edit→Find menu to locate a specific standard.)

Two types of bracing requirements will be shown on these standards drawings:

- Erection bracing - minimum bracing required to maintain the stability of erected girders. Even though these massive girders may appear stable, they can often become unstable when set on neoprene pads.
- Slab placement bracing - necessary to keep the outside girders from twisting or rolling due to the weight of the screed and wet concrete on the overhang brackets. The bracing details call for "X" bracing with 4 x 4 timbers connected at the middle of the "X" with a bolt. This connection is critical to the performance of the brace. Several contractors have asked to use landscape timbers or 2 x 4's for this bracing. TxDOT does not recommend the use of landscape timbers or any pressure-treated lumber for this bracing. Because they are pressure-treated, landscape timbers tend to warp, bow, or twist when they dry out, which makes them less effective as a brace, and 2 x 4's do not have sufficient stiffness to perform as a proper brace.

Bracing details are minimum requirements and certain projects may require additional bracing to maintain an adequate level of safety. For more information or for assistance in reviewing a contractor-proposed bracing method, contact Brian D. Merrill, P.E., of the Bridge Construction and Maintenance Branch, at 512-416-2232, or by email at bmerrill@dot.state.tx.us.