

Bridges and Structures

January 19, 2001

All Employees

521.3

Bridges and Structures

Gary Novey

Subject: Substructure Design-MM No. 4 (Individual Punching Shear and Beam Shear).

Questions have been brought up about whether punching shear of individual piles need to be checked in the footing design of piers. After reviewing the calculations done by the Methods Section (See attached sheets), the following comments can be made:

1. Corner piles are the only piles that need to be checked individually for punching shear and beam shear.
2. Beam shear controls the design.
3. For piling using 55 tons of bearing a minimum footing thickness of 32 inches is required.
4. For piling using 37 tons of bearing a minimum footing thickness of 28 inches is required.

Based on the analysis, if your footing depth is over 32 inches then individual piling shear does not need to be checked. This analysis was based on a rectangular footing with the center of the corner piles placed 1.5 ft. from the edge of the footing. For special situations, individual punching shear may still have to be checked.