Best Bridge with Spans Greater Than 135 Feet (Co-Winner)

204th Street Bridge
Omaha, Neb.

PRECAST SOLUTION:
NU2000-PT spliced, post-tensioned girders, with a web one inch wider than the standard NU2000 girder, were specified with a 10,000-psi concrete mix. An additional 2-inch thickness was added to the top flange during the early stages of design, but this was found to be unnecessary in the final design. The bridge’s main 206-foot span features three girder segments per girder line with two cast-in-place concrete splice joints. The bridge’s cross section consists of seven girders spaced at 8.37 feet with an 8-inch cast-in-place concrete slab. Each girder line includes two 29.71-foot end segments and a 149.27-foot center segment.

The span length of the bridge makes it the longest precast concrete girder span ever built in the state. It also is thought to be the longest simple span with the greatest girder span-to-depth ratio of any bridge in the country.

The bridge features optimized post-tensioning end blocks that are only 29.6 inches wide, tapering to the standard 6.9-inch web width at a distance of 39.4 inches. The weight of the blocks is only 20 percent of the weight of a standard post-tensioning end block as specified by the AASHTO Standard Bridge Design Specifications. The dimensions were based on allowing housing of 15' 0.6" tendon post-tensioning anchorage hardware.

Judges’ Comments:
“This very innovative project uses spliced-girder technology to create span lengths of more than 200 feet with a span-to-depth ratio of 31.5. It pushes precast concrete girder construction to another level. It is a strong example of how to extend the adaptability of precast, prestressed concrete girders to longer spans in competition with other materials. The cost was only $58 per square foot.”