

IOWA DEPARTMENT OF TRANSPORTATION

To Office Bridges and Structures

Date April 6, 2007

Attention All Employees

Ref No. 521.1

From Gary Novey

Office Bridges and Structures

Subject: Method's Memo No. 153 (Pile Driving Over Waterways)

When designing piers supporting bridges over waterways, current design practice is not to count skin friction through layers above the computed 100 year scour elevation, and to develop the required design bearing for the piles below this elevation. Currently, no mention is made in the substructure notes of the driving resistance that will be encountered in these scourable layers at the time the piles are driven. According to Kyle Frame in the construction office, he is taking this additional driving resistance into account when he makes the driving charts for projects over waterways.

To clarify the intentions of our design for the field and to alleviate the need for the construction office to adjust the design bearing value given in our plans, we will now be including the driving resistance through the scourable soil layers on our plans in a fashion similar to the driving resistance listed for abutment piles with downdrag by using the following note:

E834/M834: Pile Driving Note Over Waterways

PIER PILES ARE DESIGNED TO ACCOMMODATE THE ABSENCE OF SCOURABLE SOILS ABOVE THE 100 YEAR SCOUR ELEVATION SHOWN IN THESE PLANS. PILES SHALL BE DRIVEN TO ?? TONS BASED ON THEORETICAL DRIVING RESISTANCE. THIS INCLUDES ?? TONS OF RESISTANCE IN THE SCOURABLE LAYERS, AND ?? TONS RESISTANCE FOR DEAD AND LIVE LOAD BEARING CAPACITY.

For example: If a bridge requires 47 tons of resistance for dead and live load bearing capacity, and has to be driven through scourable soils that will provide 10 tons of driving resistance, the following note would be included in the substructure notes on the plans:

“PIER PILES ARE DESIGNED TO ACCOMMODATE THE ABSENCE OF SCOURABLE SOILS ABOVE THE 100 YEAR SCOUR ELEVATION SHOWN IN THESE PLANS. PILES SHALL BE DRIVEN TO 57 TONS BASED ON THEORETICAL DRIVING RESISTANCE. THIS INCLUDES 10 TONS OF RESISTANCE IN THE SCOURABLE LAYERS, AND 47 TONS RESISTANCE FOR DEAD AND LIVE LOAD BEARING CAPACITY.”

GAN/rr/bj