(Sample Bridge Office LRFD Pile Loads Letter)

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STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE READING FILE

OFFICE Atlanta, GA

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FROM Benjamin F. Rabun, III, P.E, State Bridge Engineer

TO Charles A. Hasty, P. E., State Materials Engineer
Attn: Glen Foster

SUBJECT **LRFD MAXIMUM FACTORED STRUCTURAL RESISTANCES AND DRIVABILITY STRESS LIMITS FOR PILES**

Below are the calculated maximum factored structural resistances and drivability stress limits for the specified pile types in accordance with the AASTHO LRFD Bridge Design Specifications, 5th Edition 2010. Please use this information for the Drivability Stresses and Maximum Factored Structural Resistances for piles, in lieu of requesting the information in the Foundation Recommendation Letter, to assist in completing BFIs in accordance with the LRFD Specifications.

Steel H-Piles

Grade 36

Pile Size	Stress Limits		Max. Factored Structural Resistance, P_R (kips)
	Compression (ksi)	Tension (ksi)	
HP 10x42 (36 ksi)	32.4	32.4	223
HP 12x53 (36 ksi)	32.4	32.4	279
HP 14x73 (36 ksi)	32.4	32.4	385
HP 14x89 (36 ksi)	32.4	32.4	470
HP 14x102 (36 ksi)	32.4	32.4	540
HP 14x117 (36 ksi)	32.4	32.4	619

Grade 50

Pile Size	Stress Limits		Max. Factored Structural Resistance, P_R (kips)
	Compression (ksi)	Tension (ksi)	
HP 10x42 (50 ksi)	45.0	45.0	310
HP 12x53 (50 ksi)	45.0	45.0	384*
HP 14x73 (50 ksi)	45.0	45.0	520*
HP 14x89 (50 ksi)	45.0	45.0	653
HP 14x102 (50 ksi)	45.0	45.0	750
HP 14x117 (50 ksi)	45.0	45.0	860

*12x53 and 14x73 H-Pile sections are slender elements for Grade 50 steel and a reduction has been applied in accordance with LRFD 6.9.4.2.

PSC Piles

f'c = 5.0 ksi, piles fabricated in accordance with GA STD. 3215

Pile Size	Stress Limits			Max. Factored Structural Resistance, P_R (kips)
	Compression (ksi)	Tension (ksi)		
		Normal	Severe	
12" SQ. PSC	3.310	1.152	0.940	352
14" SQ. PSC	3.214	1.248	1.036	473
16" SQ. PSC	3.457	1.005	0.793	636
18" SQ. PSC	3.623	0.839	0.627	820
20" SQ. PSC	3.573	0.889	0.677	1006
24" SQ. PSC, void	3.519	0.943	0.731	1158
24" SQ. PSC	3.662	0.800	0.588	1464
30" SQ. PSC, void	3.553	0.909	0.697	1706
36" SQ. PSC, void	3.561	0.901	0.689	2224

Metal Shell Piles

Grade 3, f_y = 45 ksi

Pile Size	Shell Thickness (in)	Stress Limits		Max. Factored Structural Resistance, P_R (kips)
		Compression (ksi)	Tension (ksi)	
14" Diameter	0.2500	40.5	40.5	-
14" Diameter	0.3125	40.5	40.5	-
16" Diameter	0.2500	40.5	40.5	-
16" Diameter	0.3125	40.5	40.5	-
18" Diameter	0.3125	40.5	40.5	-
20" Diameter	0.3125	40.5	40.5	-

NOTE: The limiting load for a metal shell pile is based on the drivability limit of installing the pile. The factored structural resistance, accounting for the reinforced concrete inserted inside the shell after driving, should far exceed the drivability limitation.

If you have any questions, please contact Steve Gaston at 404-631-1881 or sgaston@dot.ga.gov.

BFR:DLC/WMD:skg

cc: Lyn Clements, Assistant State Bridge Engineer
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