

20" Prestressed Concrete Pile Bent

Controlling Pile Factored Loads

For bridge width 27', 30', 33', 36' and 39'

Average CS Unit Length on Cap	Max. Axial Load $F_Y = \text{Kips}$	Long. Shear $F_Z = \text{Kips}$	Long. Mom. $M_X = \text{Kips-ft.}$	Max. Long. Shear $F_Z = \text{Kips}$	Axial Load $F_Y = \text{Kips}$	Long. Mom. $M_X = \text{Kips-ft.}$	Max. Trans. Shear $F_X = \text{Kips}$	Axial Load $F_Y = \text{Kips}$	Trans. Moment $M_Z = \text{Kips-ft.}$
≤ 40'	-185	-2	-20	3	-100	5	4	-95	350
>40' and ≤ 45'	-210	-2	-20	4	-125	5	5	-120	365
>45' and ≤ 55'	-245	-2	-25	5	-145	5	5	-145	390
>55' and ≤ 60'	-265	-2	-25	5	-160	5	6	-155	400
>60' and ≤ 70'	-295	-2	-25	5	-180	5	7	-180	425

$$\text{Average CS Unit Length on Cap} = \frac{\text{CS Unit Length Before Cap} + \text{CS Unit Length After Cap}}{2}$$

Notes:

- Unbraced pile length has to be ≤ 35'
- Pile length from BOC to POF has to be ≤ 60'

Bent Geometry

Bridge Width	Skew	Cap Length	No. of Piles	Pile's Spa.
27'	60/120	35'-10"	6	6'-3"
	75/105	31'-6"	6	5'-6"
	90	29'-6"	6	5'-3"
30'	60/120	39'-4"	7	6'-0"
	75/105	34'-8"	7	5'-3"
	90	32'-6"	7	4'-10"
33'	60/120	42'-10"	7	6'-5"
	75/105	37'-8"	7	5'-6"
	90	35'-6"	7	5'-3"
36'	60/120	46'-2"	8	6'-0"
	75/105	40'-10"	8	5'-2"
	90	38'-6"	8	5'-0"
39'	60/120	49'-8"	8	6'-6"
	75/105	43'-10"	8	5'-9"
	90	41'-6"	8	5'-4"

