



## INDUSTRIAL CONCRETE PRODUCTS BERHAD

Pile Properties For Ø 27.56" x 4.33" Spun Pile - ACI Design

Nominal pile diameter	D	<b>700</b> mm 27.56 in
Nominal pile wall thickness	t	<b>110</b> mm 4.33 in
PCD		<b>585</b> mm 23.03 in
Area of concrete	$A_g$	316.03 in <sup>2</sup>
Diameter of PC bars	d	<b>10.7</b> mm 0.42 in
Number of PC bars	n	<b>20</b>
Total area of steel	$A_{ps}$	2.79 in <sup>2</sup>
Section modulus	$S_b$	1,678.00 in <sup>3</sup>

### Concrete Properties

Concrete cylinder strength	$f'_c$	<b>10,152</b> psi
Unit weight of concrete	$w_c$	<b>150</b> pcf
Modulus of elasticity of concrete	$E_c$	5,292,703 psi
Compressive stress in concrete due to effective prestress	$f_{pc}$	1,088 psi
Constant for stiffness	K	<b>7.50</b>
Constant for nominal concrete	$\lambda$	<b>1.00</b>
Modulus of rupture of concrete, $K \lambda (f'_c)^{0.5}$	$f_r$	756 psi
Concrete stress block factor	$\beta_1$	<b>0.65</b>

### PC Bars Properties

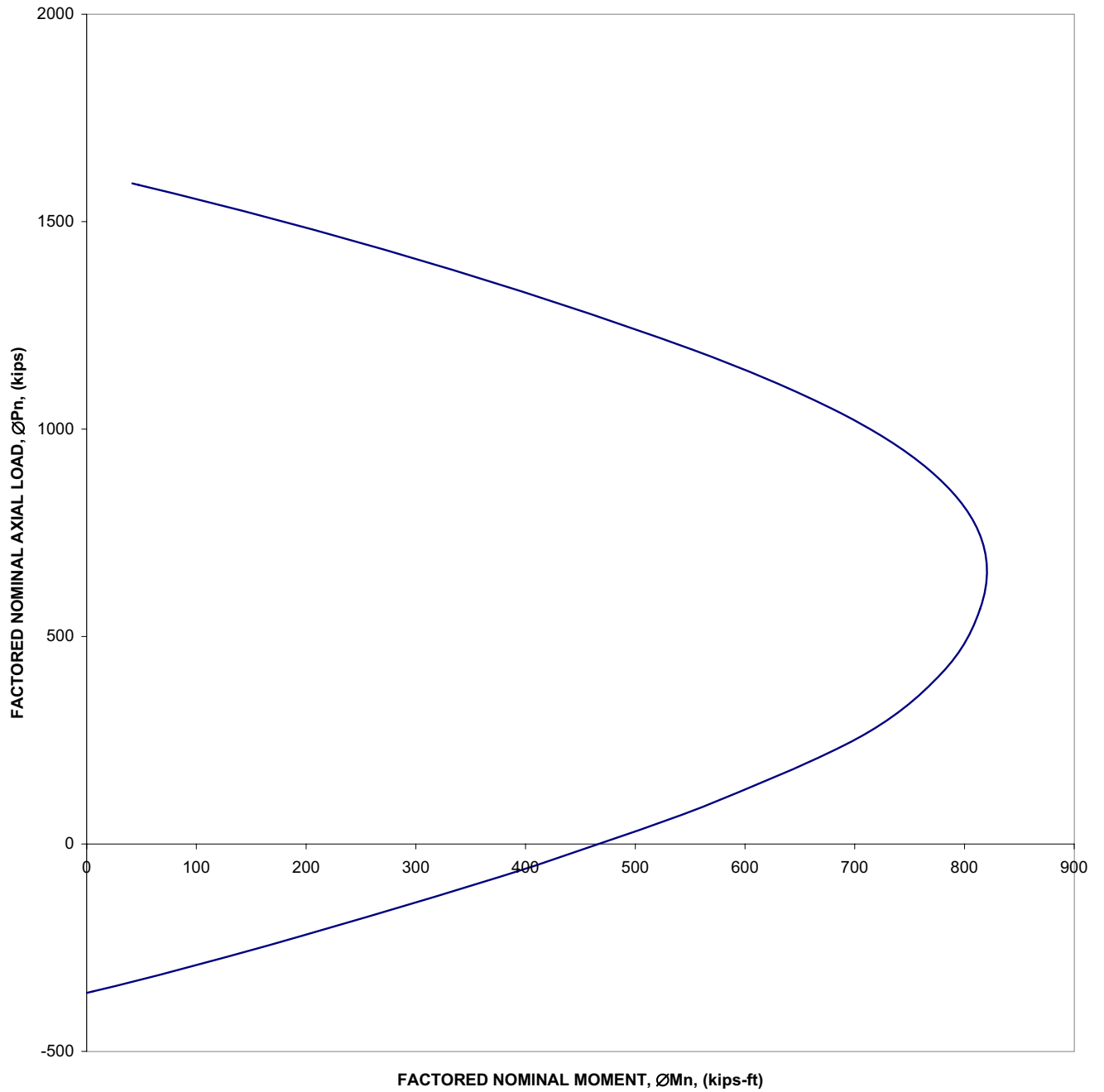
Modulus of elasticity of prestressing reinforcement	$E_{ps}$	<b>27,557,170</b> psi
Tensile strength of prestressing reinforcement	$f_{pu}$	<b>205,954</b> psi
Effective stress in prestressing reinforcement, $0.6 f_{pu}$	$f_{se}$	123,572 psi

Service axial load, $(0.33f'_c - 0.27f_{pc}) A_g$	N	<b>966</b> kips
Nominal axial load, $0.85 f'_c (A_g - A_{ps}) - A_{ps}(f_{se} - 0.003 E_{ps})$	$P_n$	2,589 kips
Factored nominal axial load, $0.85 \times 0.75 P_n$	$\phi P_n$	<b>1,650</b> kips
Cracking moment capacity, $[(f_{se} A_{ps}/A_g) + f_r] S_b$	$M_{cr}$	<b>259</b> kips-ft
Nominal moment capacity, $0.85 f'_c A^* c (y_t - y') - \Sigma[A_{ps} f_{ps} (d - y_t)]$	$M_n$	520 kips-ft
Factored nominal moment capacity, $0.9 M_n$	$\phi M_n$	<b>468</b> kips-ft
Unit weight of pile		530.11 kg/m



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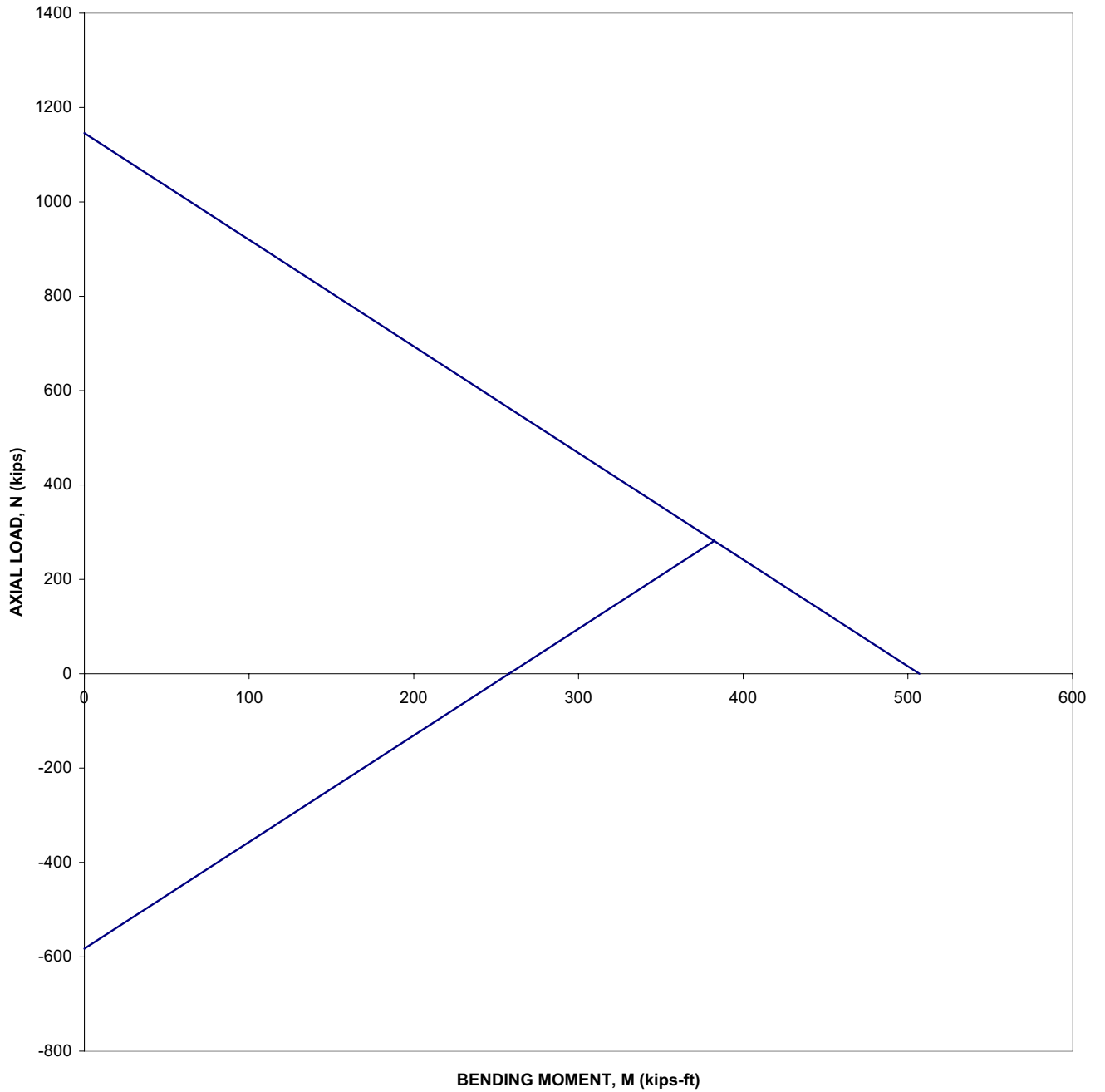
INTERACTION CURVE FOR 27.56" x 4.33" ICP PILE

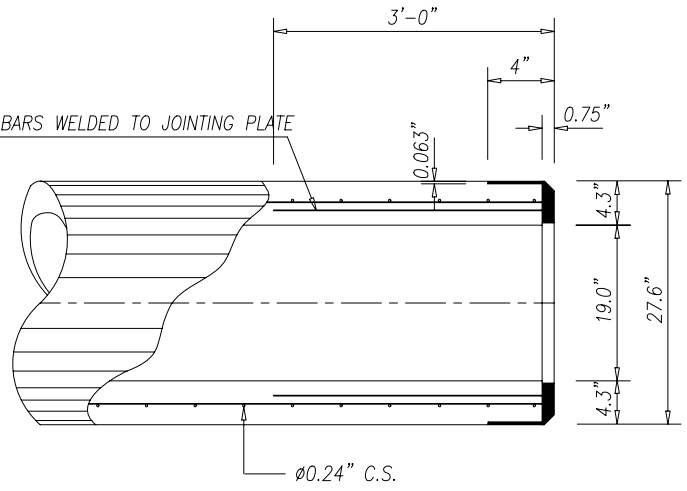
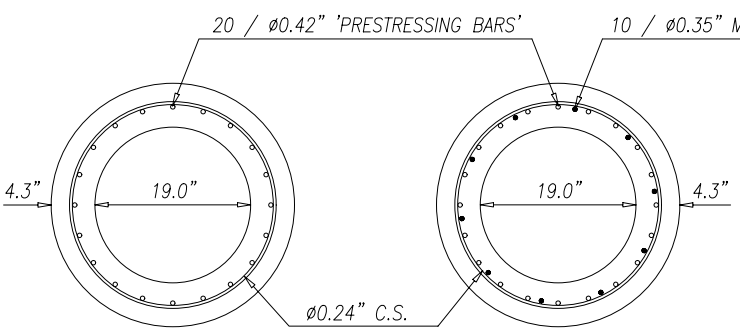
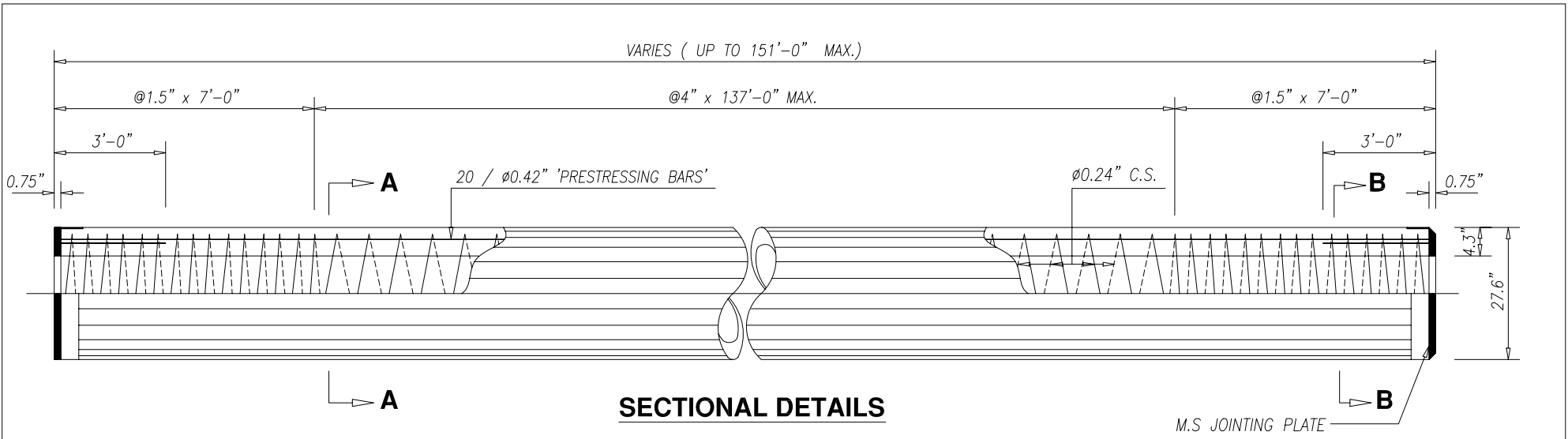




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INTERACTION GRAPH FOR 27.56" x 4.33" ICP PILE





- NOTES :-**
1. PRESTRESSING BAR COMPLY TO JIS G 3109 OR EQUIVALENT
  2. CONFINEMENT STEEL (C.S.) SHALL BE HARD DRAWN TO ASTM A82-97A.
  3. OTHER REINFORCEMENTS TO BE M.S OR H.T BARS TO B.S 4449 : 1978 OR ASTM A615
  4. EQUIVALENT CYLINDER STRENGTH :  
a) AT TRANSFER 4,000 psi.  
b) AT 28 DAYS 10,152 psi.
  5. ALL PILES WILL BE SUPPLIED WITH MILD STEEL EXTENSION PLATES FOR SPLICING.
  6. ALL WELDING SHALL BE IN ACCORDANCE TO B.S 5135 OR AWS D1.4
  7. ORDINARY PORTLAND CEMENT M.S 522 OR ASTM C150-72 SHALL BE USED.
  8. ALL DIMENSIONS IN IMPERIAL UNIT.

PROJECT TITLE :  
**PILE SIZE 27.6"x4.3"**

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CHECKED BY :		APPROVED BY :	
SCALE	N.T.S	DRAWN BY	MN02
DATE	04/10/2002	FILENAME	27.6"x4.3" (700mm)
REVISION	1	DWG. NO.	ICP/27.6"x4.3"/001