



INDUSTRIAL CONCRETE PRODUCTS BERHAD

Pile Properties For Ø 23.62" x 3.94" Spun Pile - ACI Design

Nominal pile diameter	D	600 mm 23.62 in
Nominal pile wall thickness	t	100 mm 3.94 in
PCD		498 mm 19.61 in
Area of concrete	A_g	243.47 in ²
Diameter of PC bars	d	10.7 mm 0.42 in
Number of PC bars	n	14
Total area of steel	A_{ps}	1.95 in ²
Section modulus	S_b	1,083.80 in ³

Concrete Properties

Concrete cylinder strength	f'_c	10,152 psi
Unit weight of concrete	w_c	150 pcf
Modulus of elasticity of concrete	E_c	5,292,703 psi
Compressive stress in concrete due to effective prestress	f_{pc}	1,030 psi
Constant for stiffness	K	7.50
Constant for nominal concrete	λ	1.00
Modulus of rupture of concrete, $K \lambda (f'_c)^{0.5}$	f_r	756 psi
Concrete stress block factor	β_1	0.65

PC Bars Properties

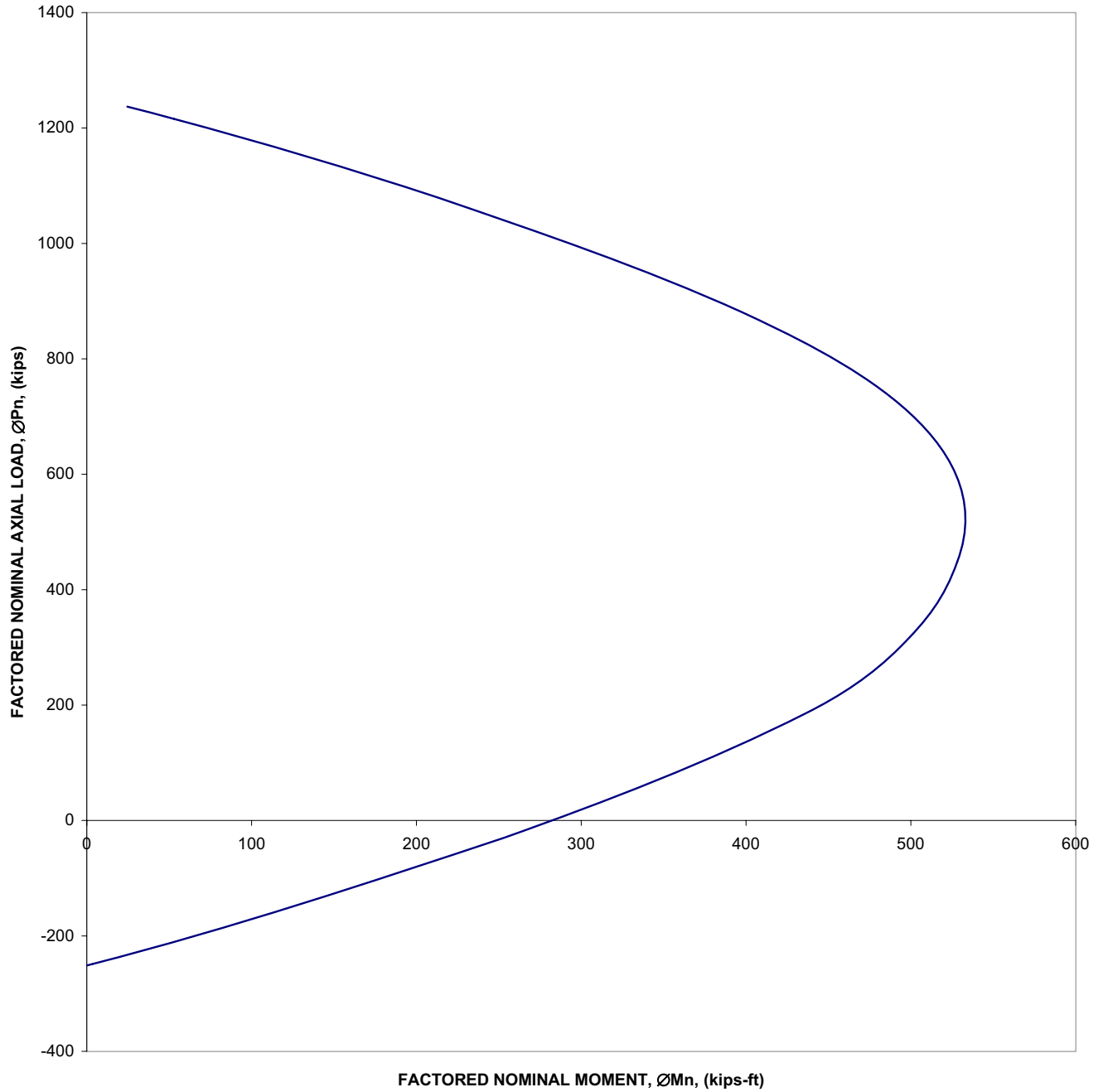
Modulus of elasticity of prestressing reinforcement	E_{ps}	27,557,170 psi
Tensile strength of prestressing reinforcement	f_{pu}	205,954 psi
Effective stress in prestressing reinforcement, $0.6 f_{pu}$	f_{se}	123,572 psi

Service axial load, $(0.33f'_c - 0.27f_{pc}) A_g$	N	751 kips
Nominal axial load, $0.85 f'_c (A_g - A_{ps}) - A_{ps}(f_{se} - 0.003 E_{ps})$	P_n	2,004 kips
Factored nominal axial load, $0.85 \times 0.75 P_n$	ϕP_n	1,278 kips
Cracking moment capacity, $[(f_{se} A_{ps}/A_g) + f_r] S_b$	M_{cr}	158 kips-ft
Nominal moment capacity, $0.85 f'_c A^* c (y_t - y') - \Sigma[A_{ps} f_{ps} (d - y_t)]$	M_n	312 kips-ft
Factored nominal moment capacity, $0.9 M_n$	ϕM_n	281 kips-ft
Unit weight of pile		408.41 kg/m



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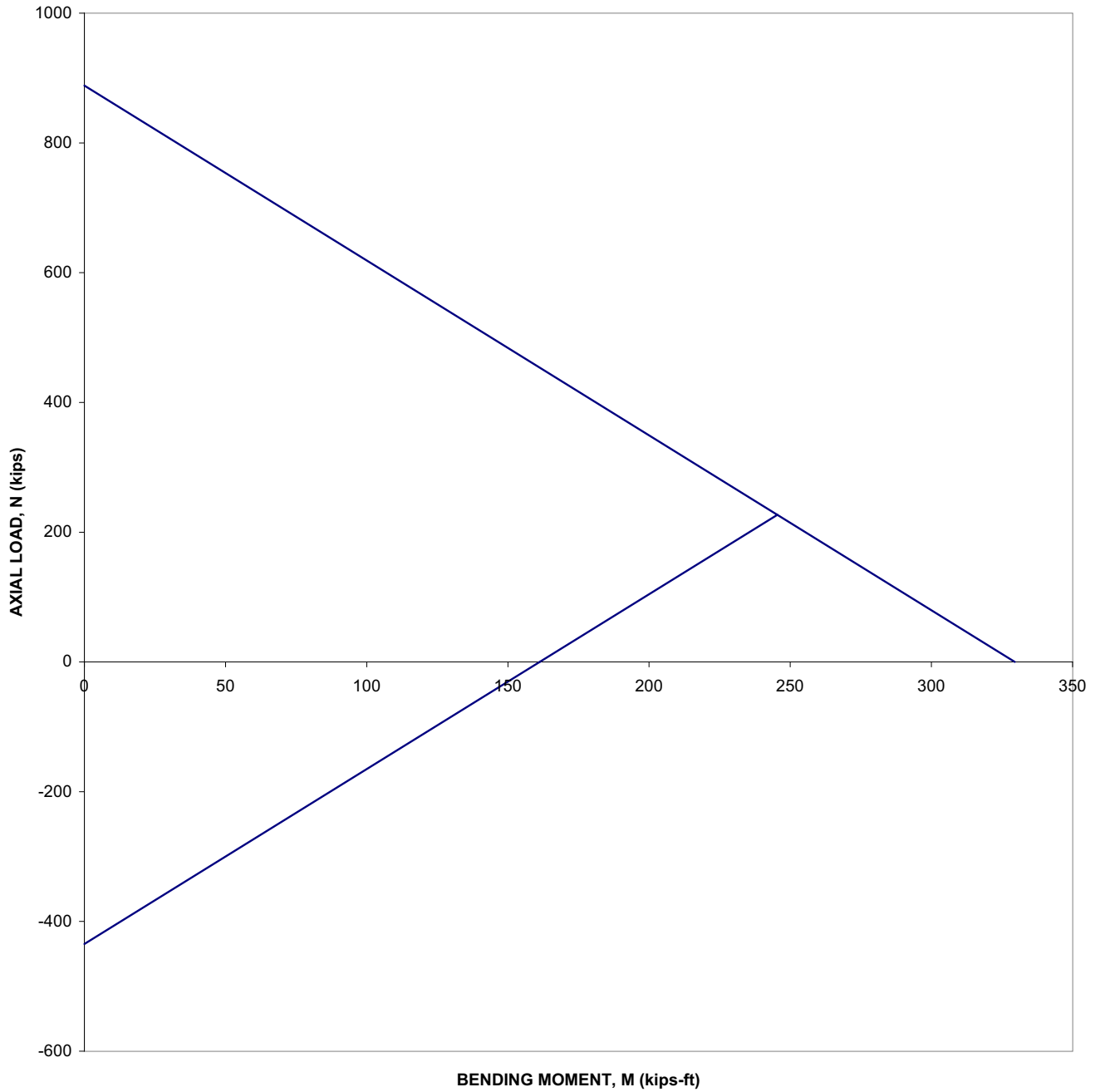
INTERACTION CURVE FOR 23.62" x 3.94" ICP PILE

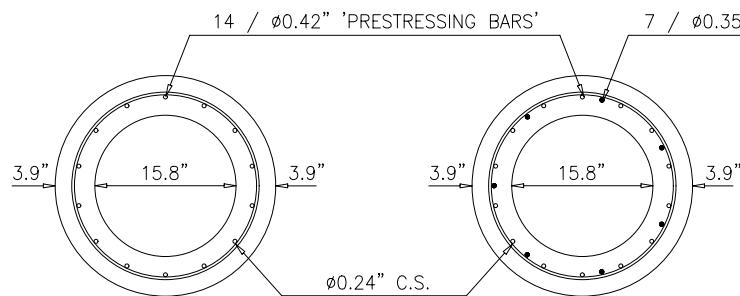
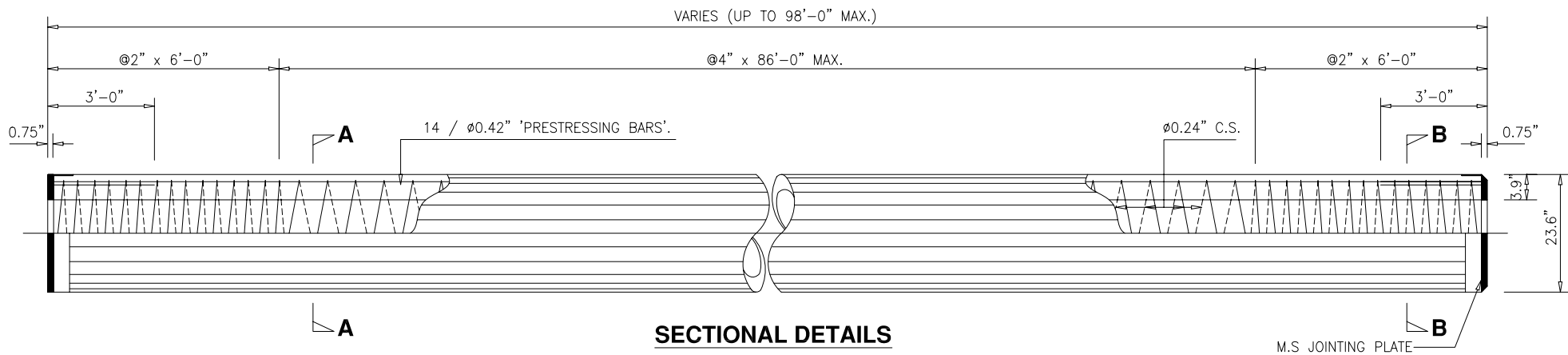




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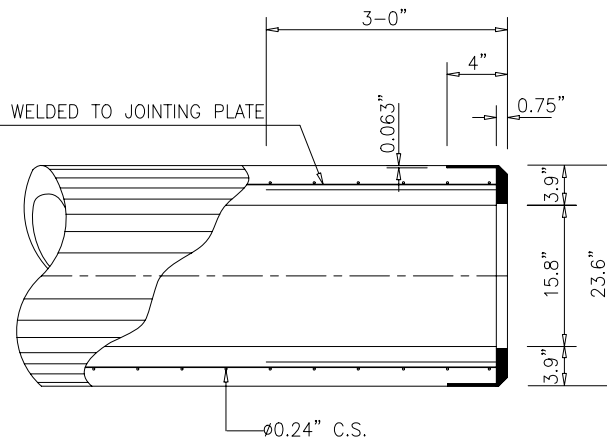
INTERACTION GRAPH FOR 23.62" x 3.94" ICP PILE





SECTION A-A

SECTION B-B



DETAILS OF JOINTING PLATE

NOTES :-

1. PRESTRESSING BAR COMPLY TO JIS G 3137:1994 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 ARE IN IMPERIAL UNIT.

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PROJECT TITLE :

PILE SIZE Ø23.6"x3.9"



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SCALE

N.T.S

DATE

07/04/2006

REVISION

APPROVED BY :

DRAWN BY

MN04

FILENAME

23.6"x3.9" (Ø600mm)

DWG. NO.

ICP/23.6"x3.9"-06/001