

**HAYWARD
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A Keller Company

MACROPILES™: Ultra-High-Capacity Micropiles for Foundation Support

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Hayward Baker Inc., Atlanta, Georgia USA

ISM – International Society for Micropiles

May 4, 2006

Schrobenhausen, Germany



Atlanta Hartsfield International Airport 1000 Ton Load Test



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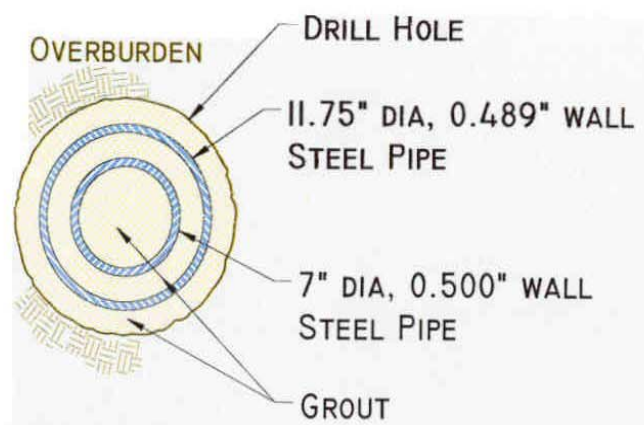


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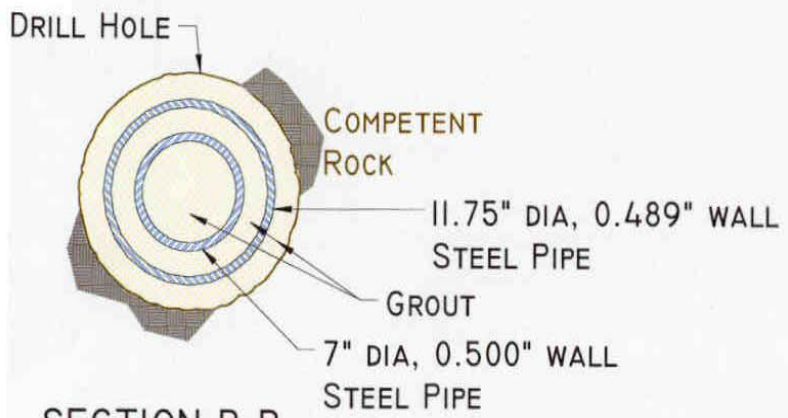
12 inch Diameter Outer Pipe

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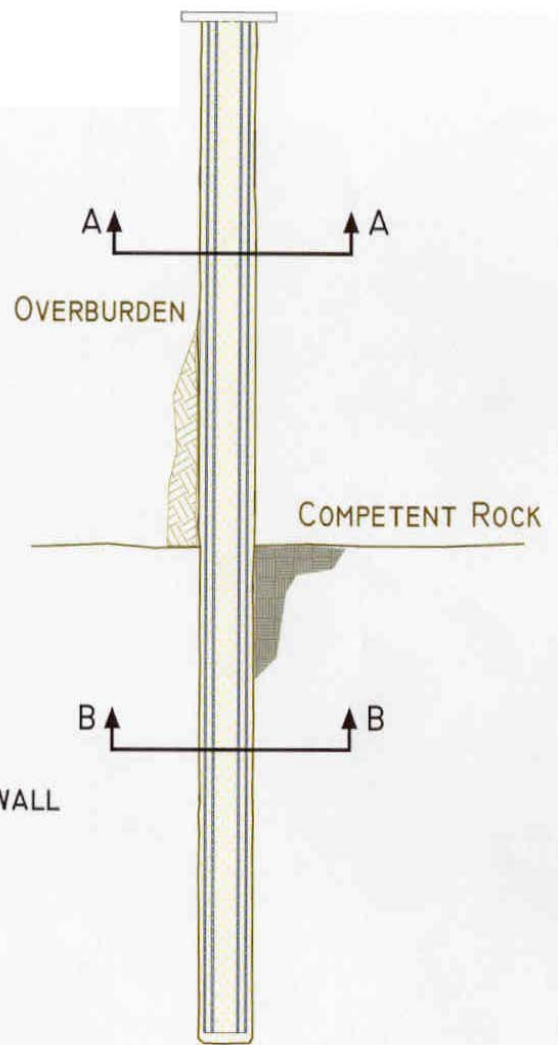




SECTION A-A



SECTION B-B



AIRPORT TEST PILE



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Double Reaction Beam Set-Up

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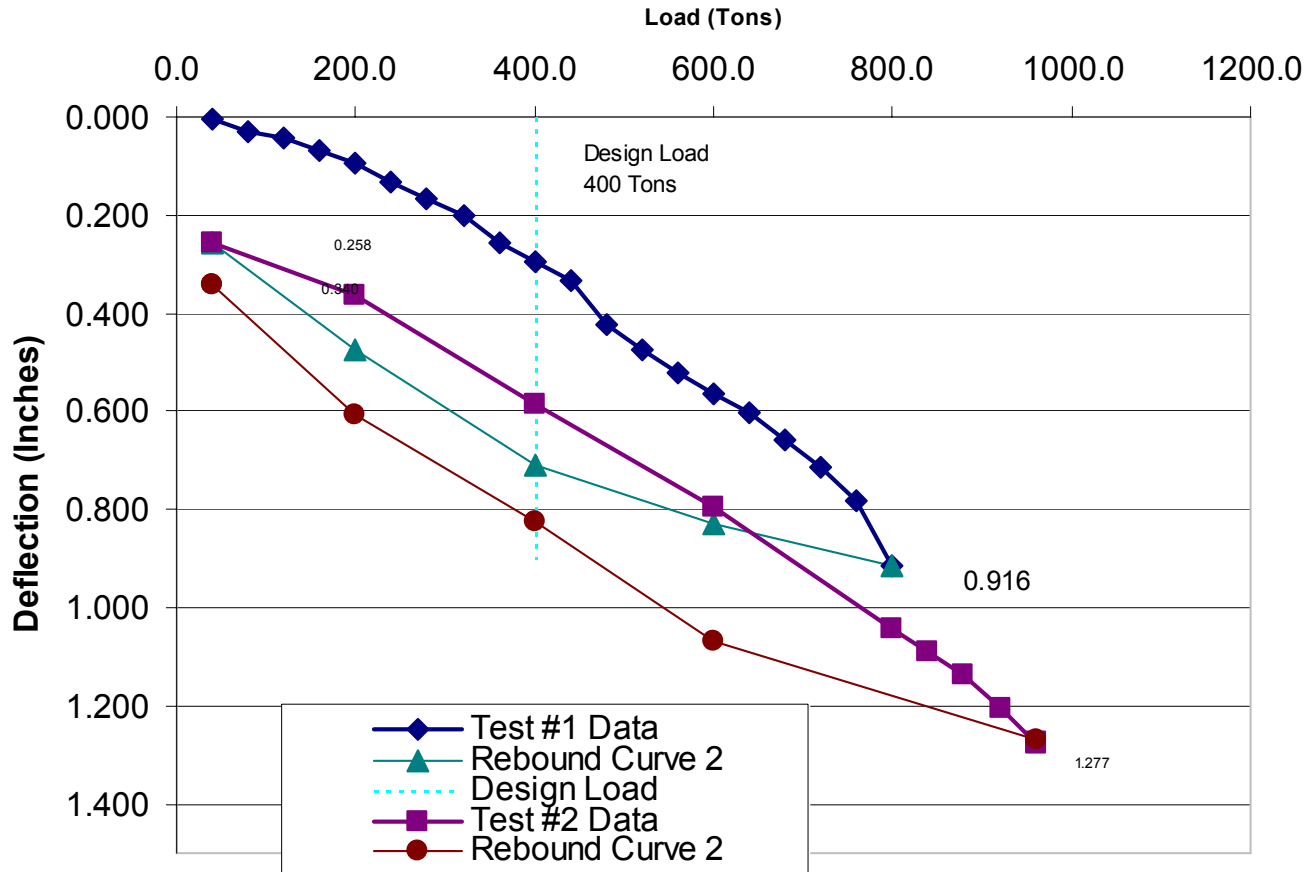



Independent Reference Frame

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FHWA Minipile Load Test

Hartsfield Int'l Airport Atlanta, GA





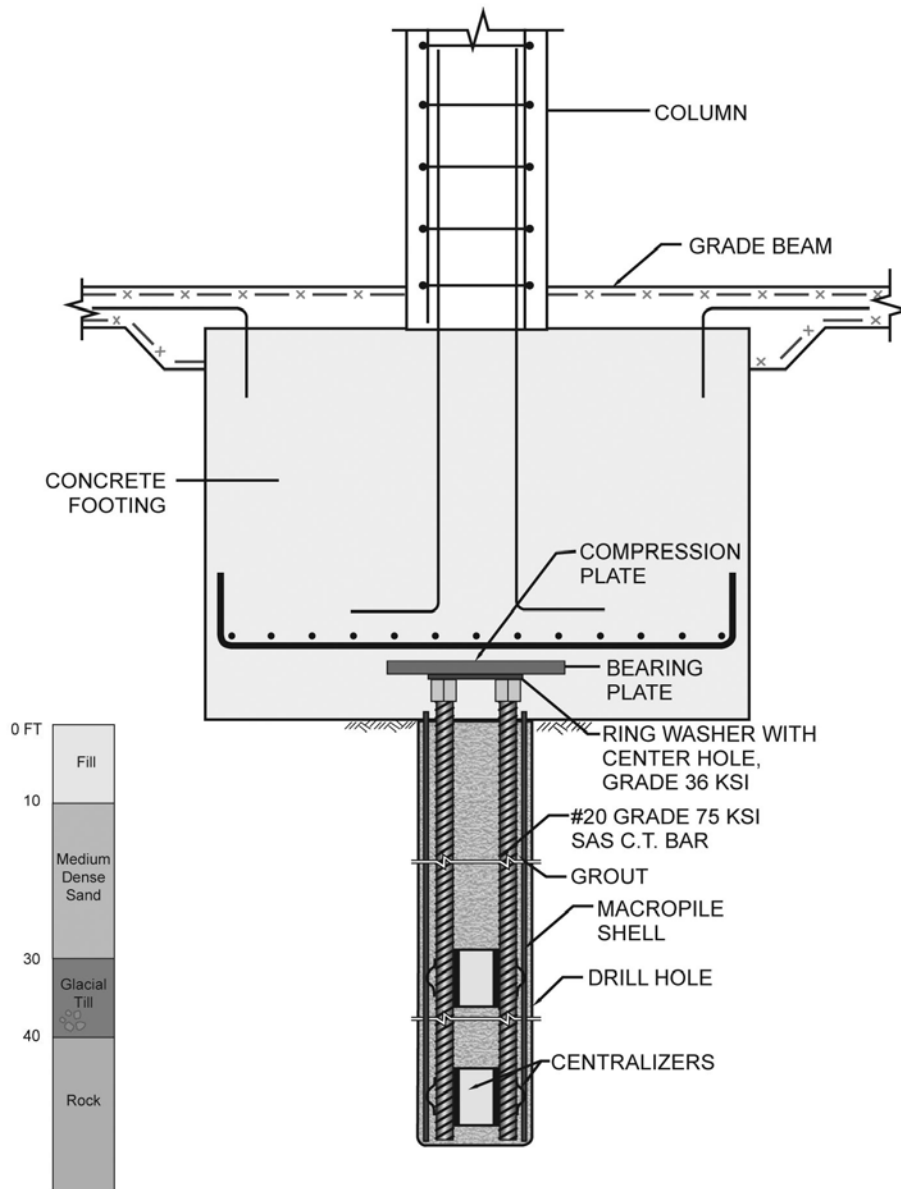
Jackson Avenue & 47th Avenue Long Island City, Queens, NY August, 2005

**Installation of 29 Macropiles reduced foundation
installation from 100 Micropiles**

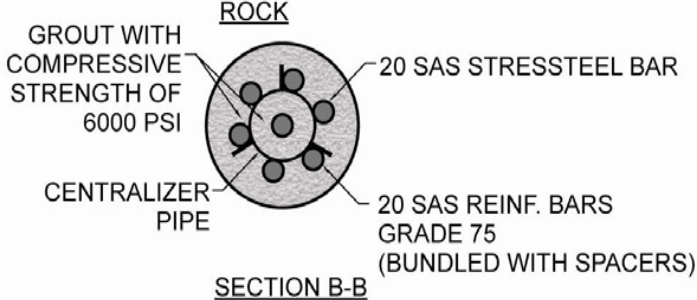
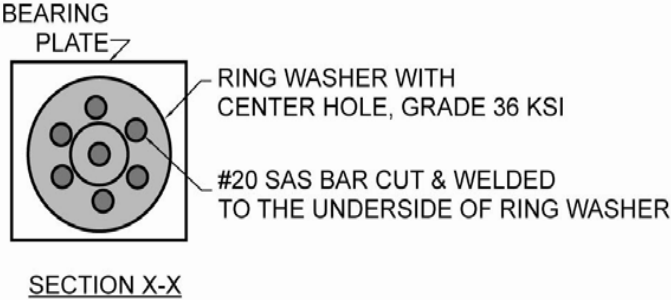
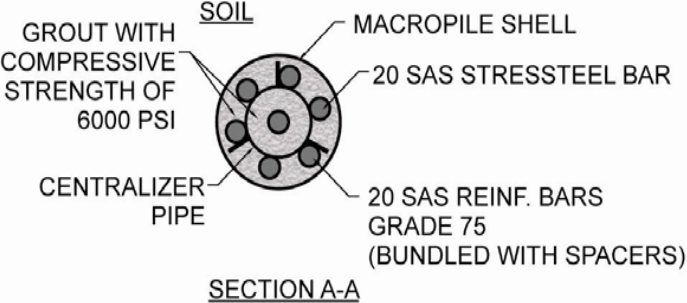
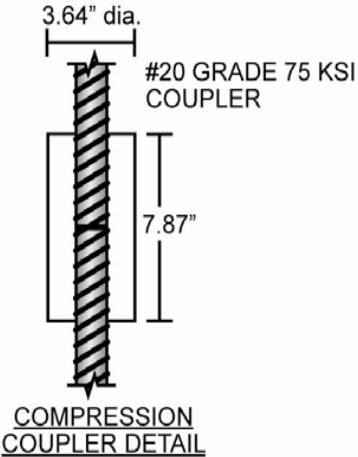
750 Ton working axial capacity

**18 inch (450 mm) OD steel pipe, 6 #20 (64 mm)
Grade 80 Steel bars, 6000 psi (41,350 kPa) cement
grout**

Section View of Macropiles and Pile Cap



Section View of Macropile Reinforcement



High Strength Cages with Tremie Tubes



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Reinforcing Cage and Tremie Details





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Setting Reinforcing Cage with Crane





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Reinforcing Cage within Casing





**Bearing
Plates:
30 inch x
30 inch
(760 mm x
760 mm)**



Chelsea Arts Tower New York, NY February, 2005

22 Story Condominium Structure

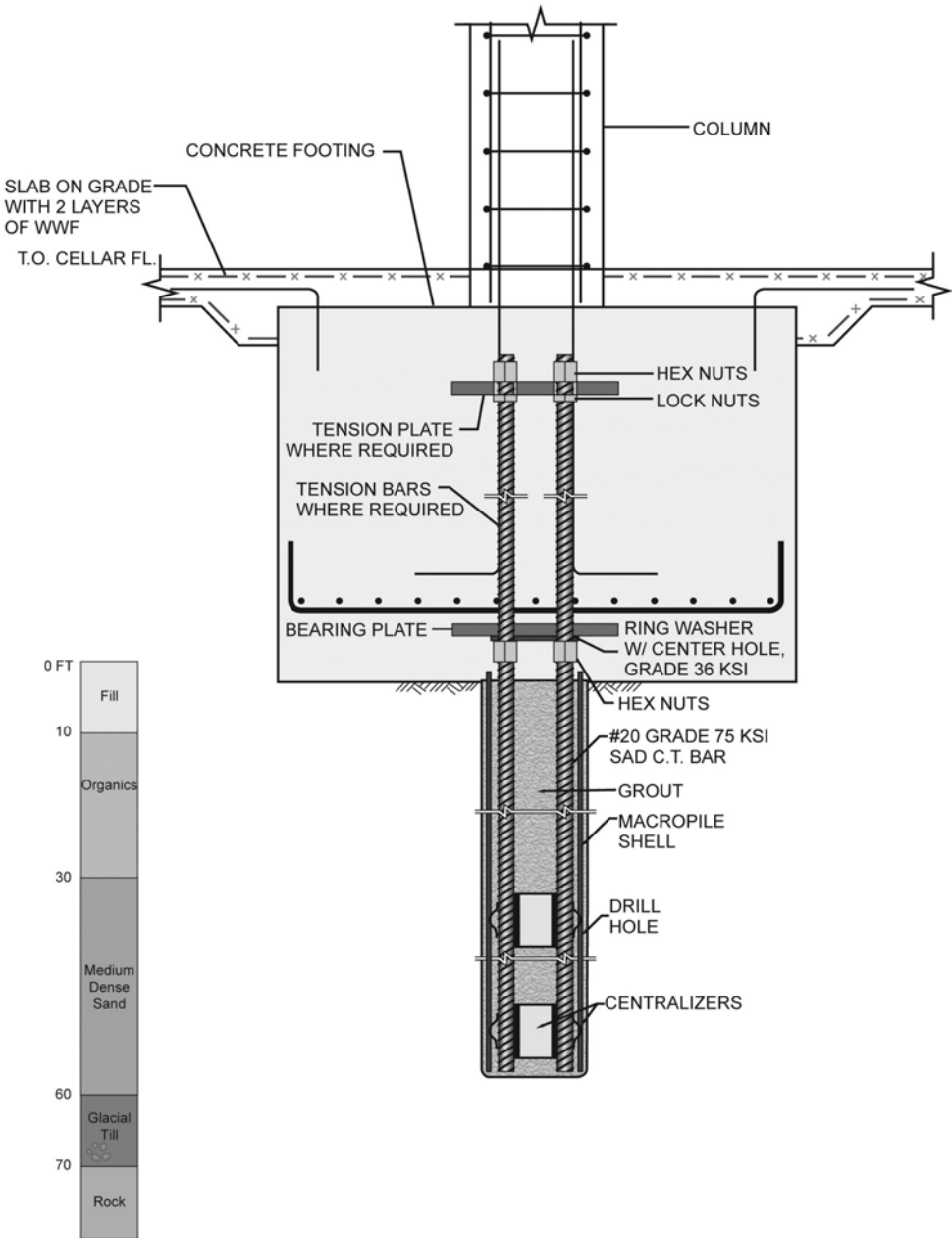
27 Macropiles installed

Diameters were 12, 18, 24 inch (305, 450, 610 mm)

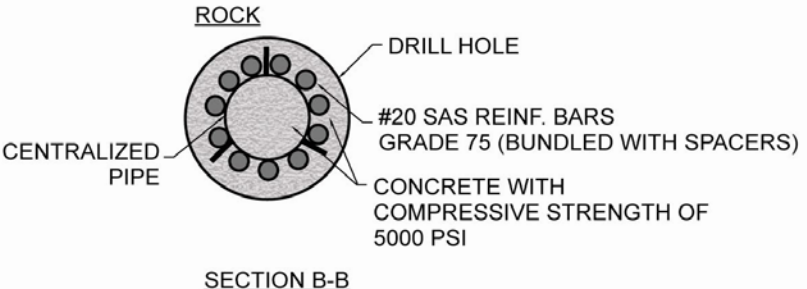
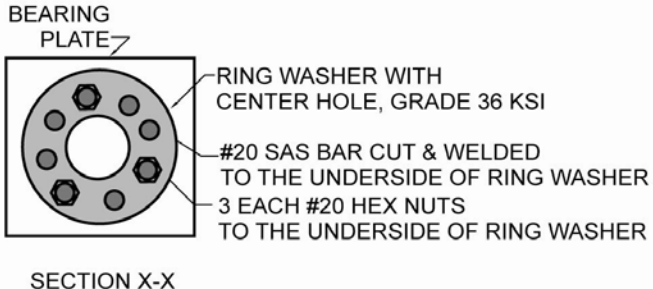
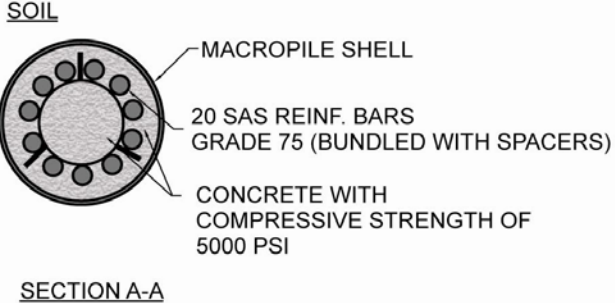
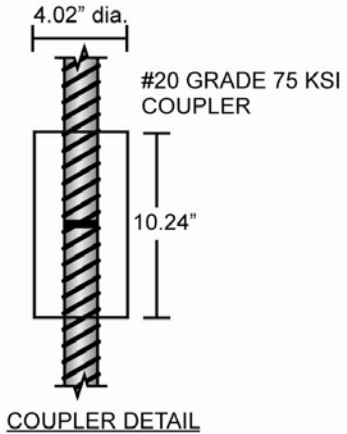
**Design (Working) Loadings were up to 1400 Tons
compression and 225 Tons tension!**



Section View of Macropiles and Pile Cap



Section View of Macropile Reinforcement



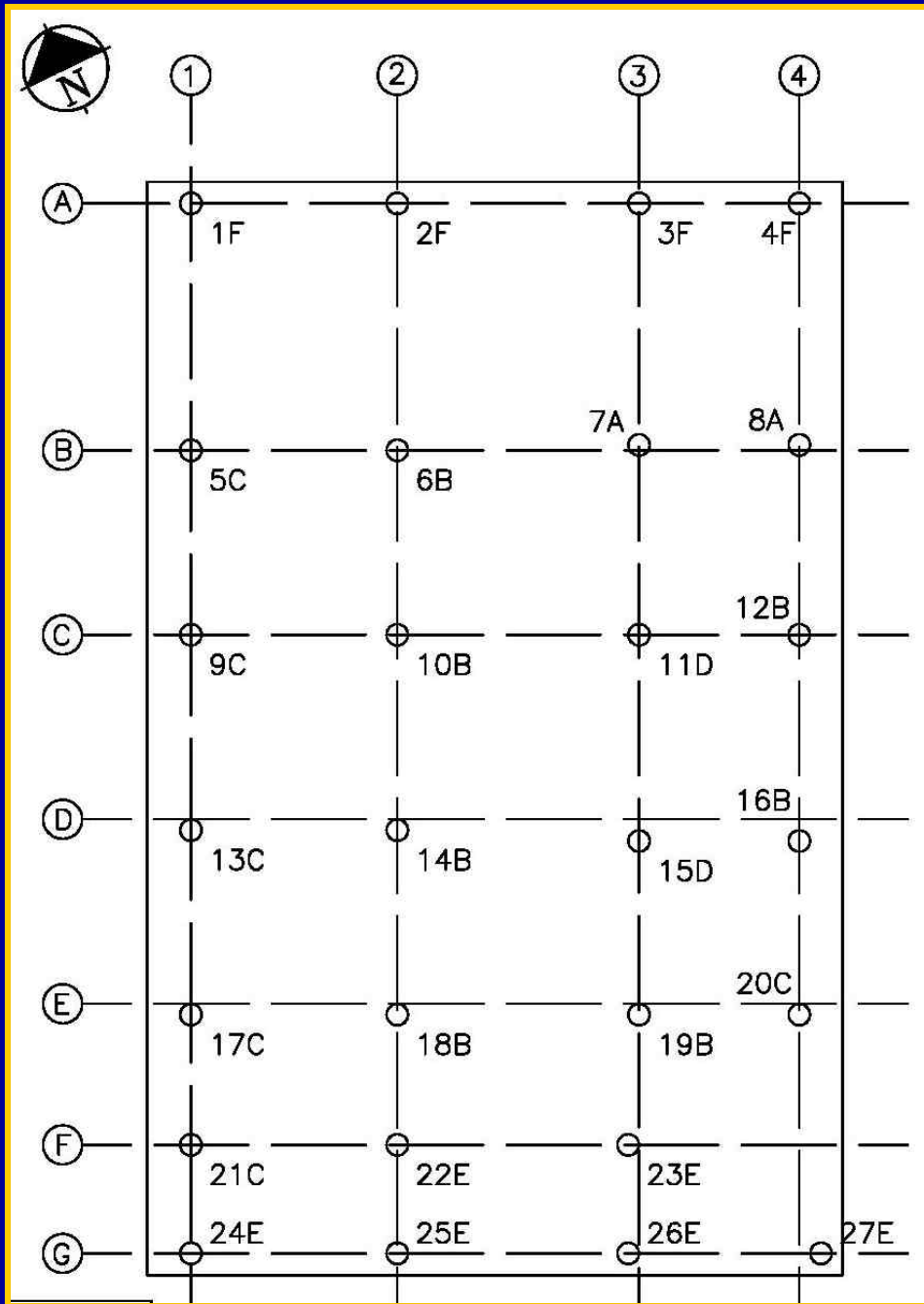
MACROPILE DESIGN LOADS

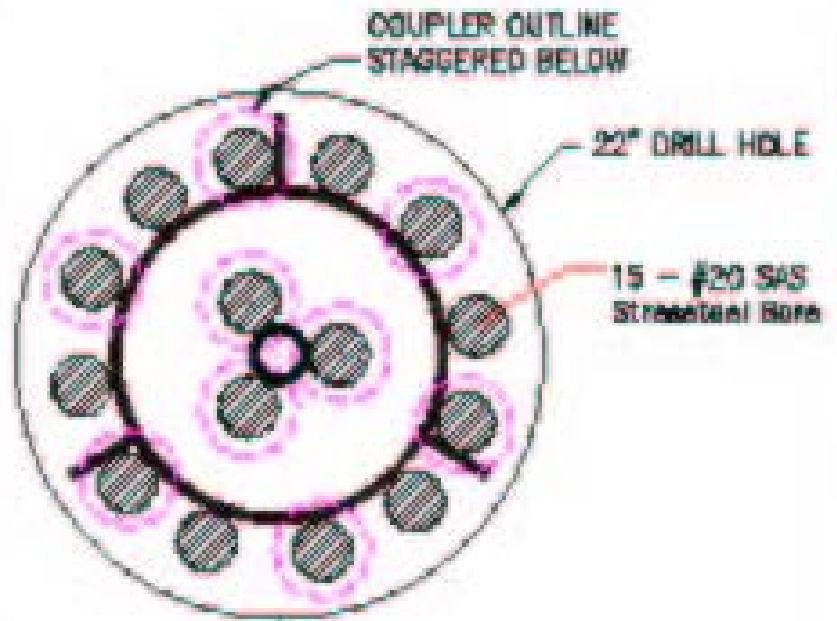
STEEL PILES - EMBEDDED IN SOIL - WITH OR WITHOUT CONNECTIONS

TYPE \ LOAD	COMPRESSION (TONS)	TENSION (TONS)
A	1400	-225
B	900	-
C	820	-100
D	700	-50
E	350	-
F	80	-



Macropile Layout



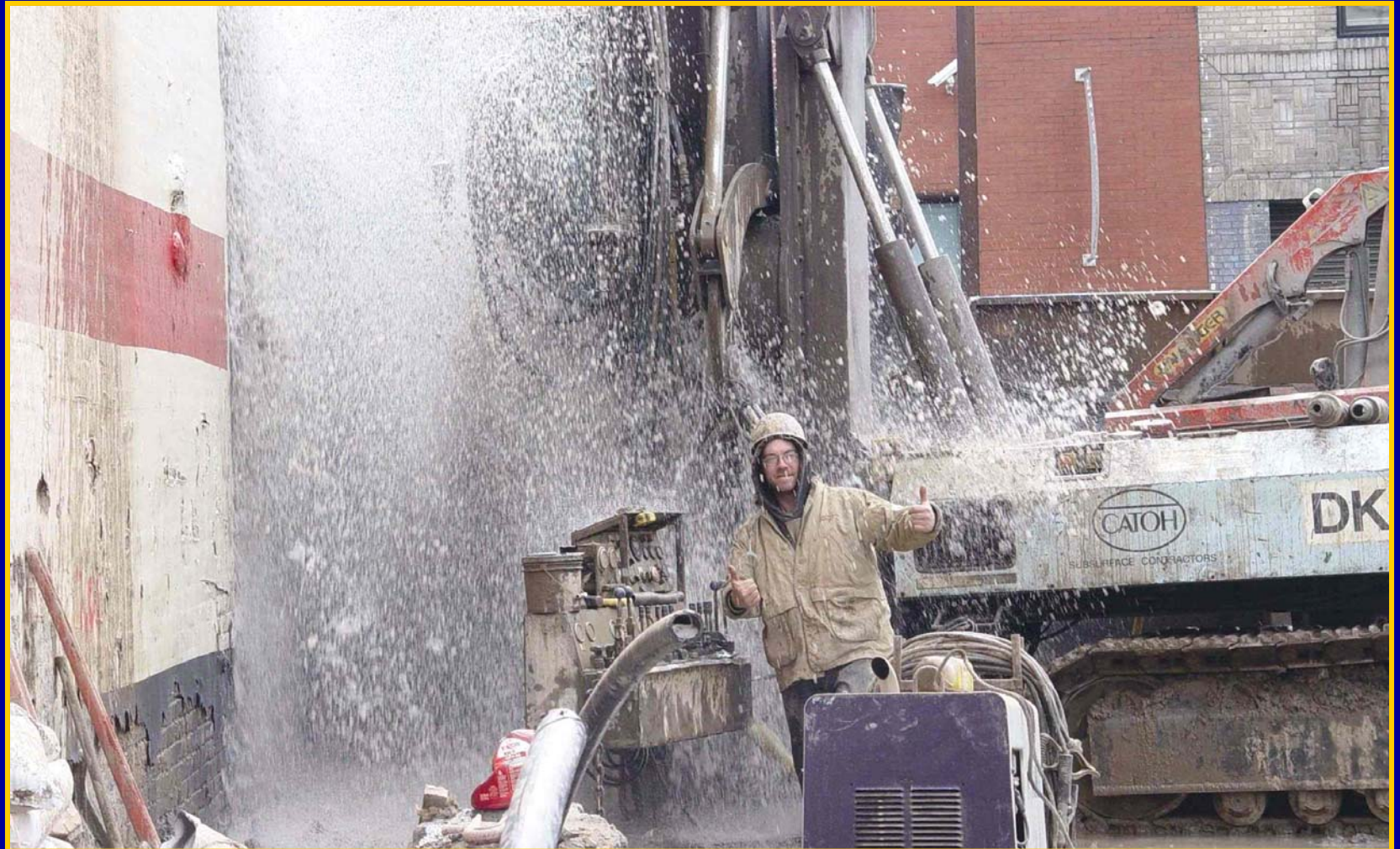


Reinforcement Design for 1400 Ton Macropile

Plan View Layout for Macropiles



Flushing out a rock socket prior to Macropile installation



Assembly of Macropile Reinforcing Cage



Setting Reinforcing Cage with Crane



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Setting Reinforcing Cage on a Snowy Day



The End

Questions?

