

1997 Seattle IWM

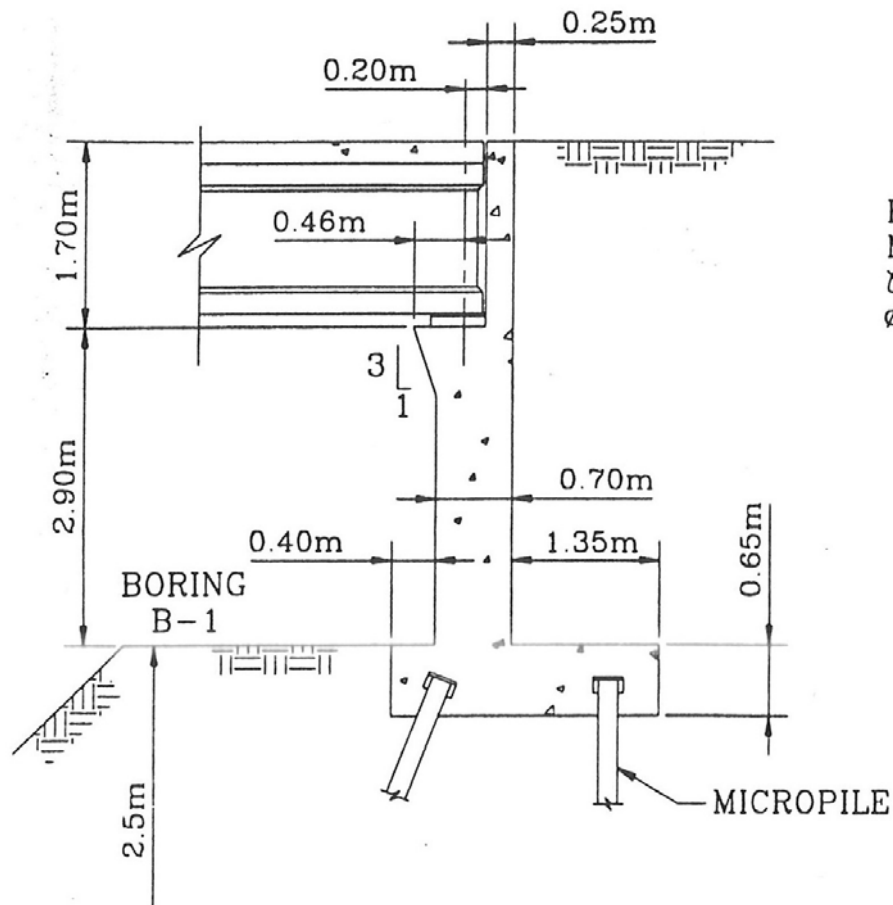
\$100 Micropile Challenge



8th International Workshop on Micropiles

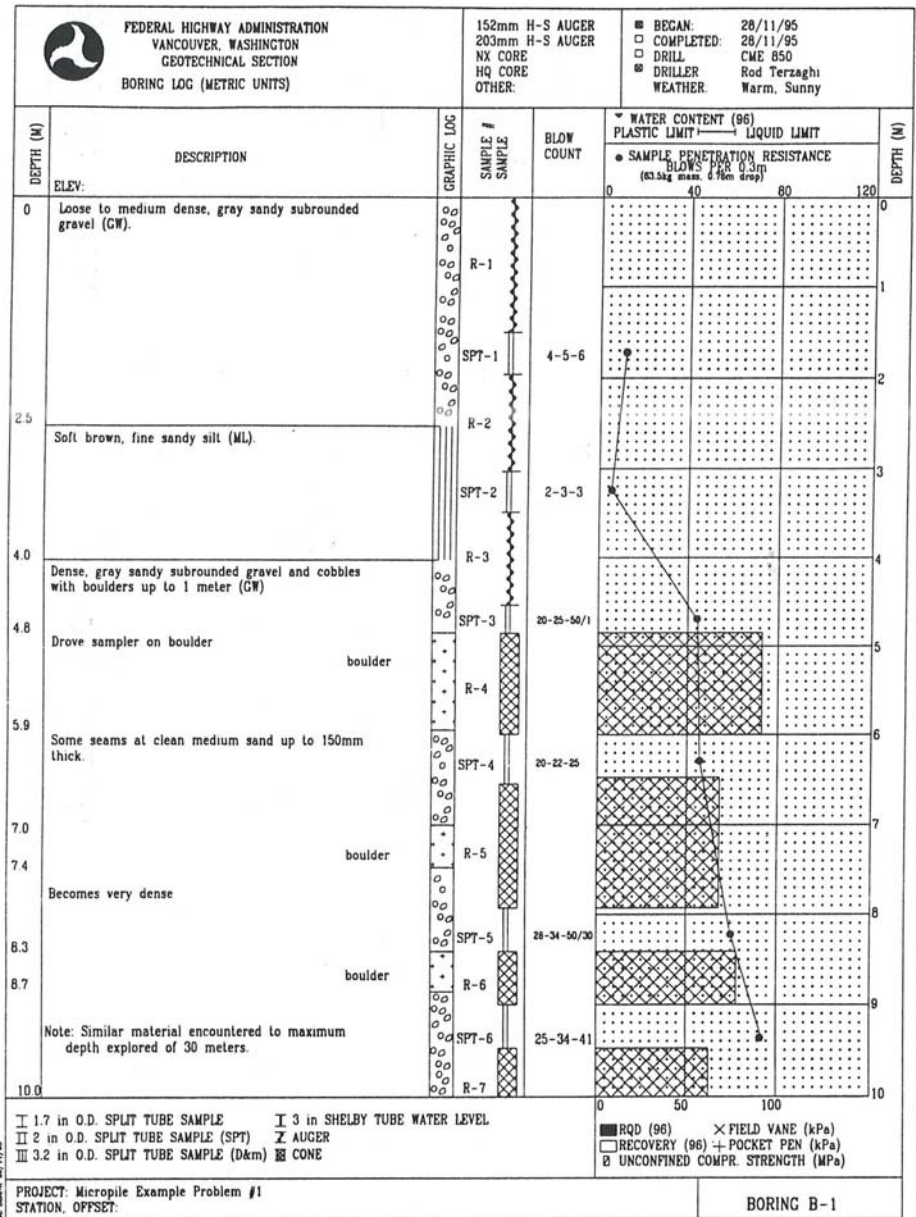
Toronto, ON, Canada September 26-30, 2007

Geometry



BACKFILL MATERIAL:
MEDIUM DENSE SAND
 $\gamma = 17.50 \text{ kN/m}^3$
 $\phi = 35^\circ$

Hypothetical Boring Log



Designs

TABLE 1
SUMMARY OF PROBLEM 1 RESULTS

Design	Team				
	Green	Blue	Red	Yellow	Black
Classification	2A	1B	1B	1B	1B
No. of piles	2 networks of 18 piles, inclined at 10°, with 5 tiebacks	6 vertical and 4 inclined piles	20 piles total, vertical and inclined at 20°	5 vertical and 7 inclined piles	5 vertical and 5 inclined piles at 3:1
Length and diameter	7.6m long and 100mm diameter	10m (vertical), 14m (inclined) and 150mm diameter	8m (vertical) 11m (inclined), and 240mm diameter	12m long and 178mm diameter	12m long and 140mm diameter
Construction	Rotary, bentonite sand-cement grout	Rotary duplex, neat grout (w/c = 0.4)	Rotary percussion, neat grout (w/c = 0.5)	Rotary percussion duplex, neat grout (w/c = 0.4)	Rotary percussion ODS, neat grout (w/c = 0.4-0.5)
Service Load	100 kN	785 kN	720 kN compression and 400 kN (tension)	900 kN (compression) and 400 kN (tension)	450 kN
Reinforcement	200mm bar Grade 60	57mm bar Grade 75	Not specified	45mm bar Grade 75	57mm bar Grade 75
QA/QC	Integrity testing Load testing Flow testing	Static load testing Grout cubes Fluid tests Records	Static load testing (compression and testing) Fluid tests	Grout cubes Fluid tests Static load testing	Certificates Case histories Grout cubes Fluid tests
Time	5 days	5 days	5 days + 2 days for testing	5 days + 2 days for testing	1½ days +++
Cost	\$25,000 + \$20,000 for testing	\$20,000	\$40,000 + \$20,000 for testing	\$24,300	\$17,180



2007 Toronto ISM

\$1000_{CDN} Micropile Test Challenge



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How did it perform under loading?



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Esteemed Judges



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