Proje Neches River Saltwater Barrier

Neches River and Tributaries, Texas

Contract No. DACW64-95-D-0007 Delivery Order No. 0038

## MMARY OF LABORATORY TEST RESULTS

Boring No. 97-32

| S # | Depth (ft) | P P (tsf) | SPT Blows per Foot | Visual Classification | U S C | Mc (%) | Dry Unit Wt (pcf) | Wet Unit Wt (pcf) | L L (%) | PL (%) | Mechanical Analysis % Passing | | | | | Torvane Shear Strength (tsf) | q u (tsf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | #4 | #10 | #40 | #100 | #200 | | |
| 1 | 0 - 2 | 4.50+ | | Clay,w/roots,Hard,Yellowish brown | C H | 16.6 | | | | | | | | | | | |
| 2 | 2 - 4 | 4.50+ | | Clay,w/roots,Hard,Yellowish brown | C H | 20.5 | | | | | | | | | | | |
| 3 | 4 - 6 | 1.25 | | Sandy Clay,w/ferrous nodules & sand seams, Stiff,Gray & yellowish gray | C L | 23.6 | 100.8 | 124.5 | 46.0 | 20.0 | 100.0 | 99.4 | 98.4 | 79.5 | 70.4 | | 1.27 |
| 4 | 6 - 8 | 0.25 | | Sandy Clay,w/ferrous nodules & sand seams, Soft,Gray & yellowish gray | C L | 24.1 | | | | | | | | | | | |
| 5 | 8 - 10 | | | Clayey Sand,Medium dense,Gray | S C | | | | | | | | | | | | |
| 6 | 10-11.5 | | 23 | Clayey Sand,Medium dense,Gray | S C | | | | | | 100.0 | 100.0 | 89.8 | 51.0 | 24.8 | | |
| 7 | 13.5-15 | | 26 | Sand,Medium Dense,Brown | SP-SM | | | | | | 100.0 | 100.0 | 93.4 | 12.9 | 5.8 | | |
| 8 | 18.5-20 | | 11 | Sand,w/pea gravel & silt,Medium dens,Gray | S P | | | | | | 99.8 | 99.3 | 60.9 | 2.1 | 1.5 | | |
| 9 | 24-26 | 2.75 | | Clay,w/silt partting & silt pockets,Very stiff, Yellowish brown & gray | C H | 20.7 | 104.7 | 126.4 | 57.0 | 24.0 | 100.0 | 100.0 | 99.6 | 99.0 | 98.5 | | 2.30 |
| 10 | 26-28 | 4.00 | | Clay,w/silt pockets,Very stiff,Yellowish brown & gray | C H | 20.9 | | | | | | | | | | | |
| 11 | 28-30 | 3.75 | | Clay,w/silt seams,Very stiff,Yellowish brown & gray | C H | 19.9 | | | | | | | | | | | |
| DS 12 | 30-32 | 3.75 | | Clay,w/silt seams,Very stiff,Yellowish brown & gray [SWD] | ~~C H~~ CL | 21 | 106 | | 44 | 14 | | | | | | | $\phi$=26.5 C=.23+F |
| 13 | 32-34 | 3.50 | | Clay,w/ferrous nodules & silt seams,Very stiff, Yellowish brown | C H | 20.7 | | | | | | | | | | | |
| 14 | 34-36 | 3.50 | | Clay,w/calcareous nodules & ferrous stains, slickensided,Very stiff,Yellowish brown | C H | 22.7 | | | | | | | | | | | |
| 15 | 36-38 | 3.25 | | Clay,w/calcareous nodules & ferrous stains, slickensided,Very stiff,Yellowish brown&gray | C H | 30.8 | 93.7 | 122.6 | 68.0 | 25.0 | 99.6 | 98.6 | 98.5 | 97.9 | 97.5 | | |
| 16 | 38-40 | 4.25 | | Clay,w/calcareous nodules & ferrous stains & sand seams,Hard,Yellowish brown & gary | C H | 19.8 | | | | | | | | | | | |
| 17 | 40-42 | 4.50 | | Clay,w/calcareous nodules & ferrous stains & sand seams,Hard,Yellowish brown & gary | C H | 18.8 | | | | | | | | | | | |
| 18 | 42-44 | 4.50+ | | Silty Clay,w/sand seams,Hard,Yellowish brown & gray | C L | 16.9 | 115.1 | 134.6 | 36.0 | 18.0 | 100.0 | 99.0 | 98.1 | 96.5 | 95.0 | | |
| 19 | 44-46 | 4.50+ | | Silty Clay,w/sand seams & sand pockets, Hard,Yellowish brown & gray | C L | 22.2 | | | | | | | | | | | |
| 20 | 46-48 | 4.00 | | Clay,w/ferrous stains&silt parttings,slickensided ,Very stiff,Red & gray | C H | 22.7 | | | | | | | | | | | |

S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classifcation, M c : Moisture Content

q u : Uncogined Compressive Strength, W O H : Weight of hammer, W O P : Weight of Pipe

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | #4 | #10 | #40 | #100 | #200 | | |
| 21 | 48-50 | 4.50+ | | Clay,w/ferrous stains,slickensided,Hard,Red | C H | 21.7 | | | | | | | | | | | |
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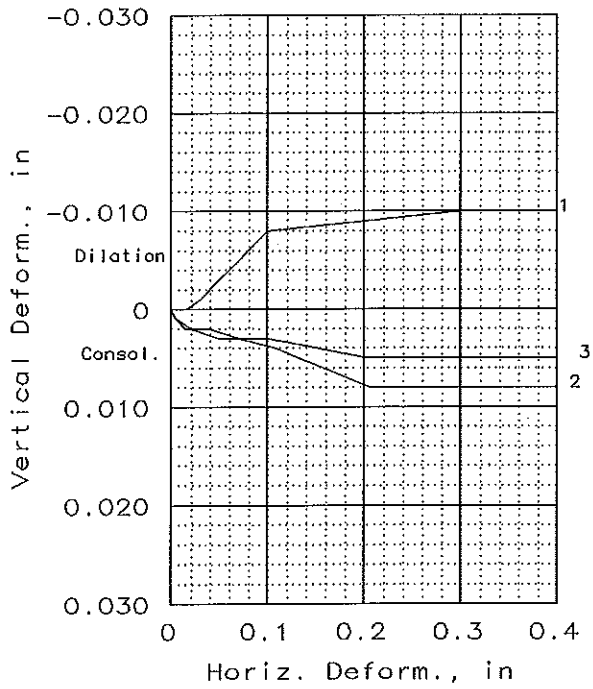


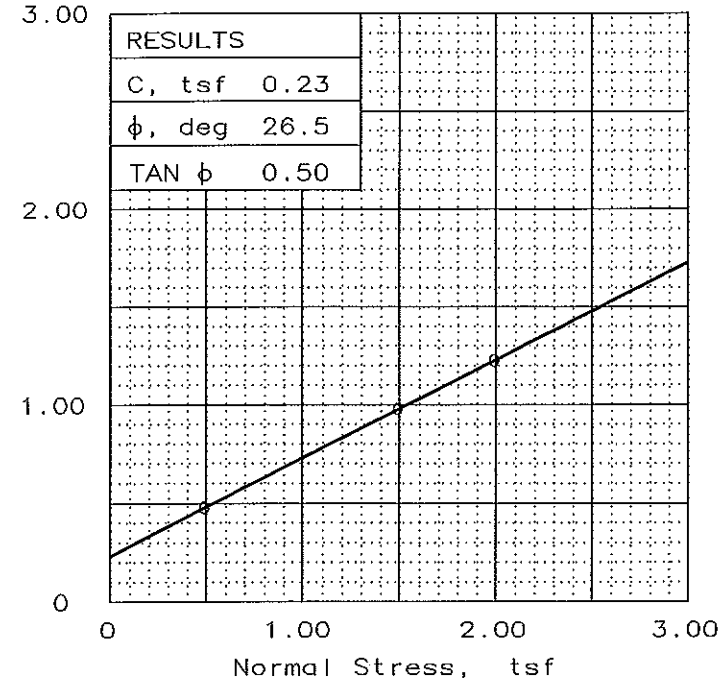


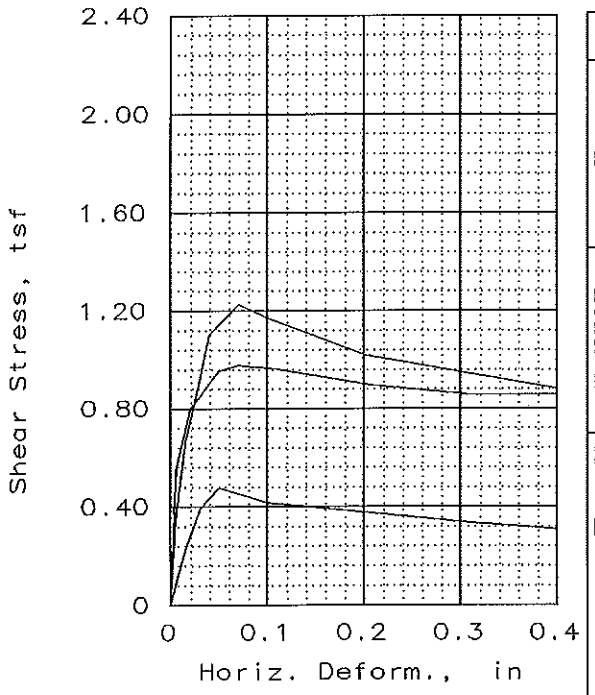


| SAMPLE NO. | | 1 | 2 | 3 |
|---|---|---|---|---|
| INITIAL | WATER CONTENT, % | 21.5 | 21.0 | 21.9 |
| | DRY DENSITY, pcf | 103.1 | 103.0 | 102.2 |
| | SATURATION, % | 91.3 | 89.2 | 90.9 |
| | VOID RATIO | 0.635 | 0.636 | 0.650 |
| | DIAMETER, in | 2.51 | 2.51 | 2.51 |
| | HEIGHT, in | 1.00 | 1.00 | 1.00 |
| AT TEST | WATER CONTENT, % | 23.4 | 21.9 | 22.2 |
| | DRY DENSITY, pcf | 103.1 | 105.7 | 105.4 |
| | SATURATION, % | 99.6 | 99.4 | 100.1 |
| | VOID RATIO | 0.635 | 0.595 | 0.599 |
| | DIAMETER, in | 2.51 | 2.51 | 2.51 |
| | HEIGHT, in | 1.00 | 0.98 | 0.97 |
| NORMAL STRESS, tsf | | 0.50 | 1.50 | 2.00 |
| MAX. SHEAR, tsf | | 0.48 | 0.98 | 1.23 |
| STRAIN RATE, %/min. | | 0.004 | 0.004 | 0.004 |
| ULT. SHEAR, tsf | | 0.31 | 0.86 | 0.88 |

SAMPLE DATA

SAMPLE TYPE: Undisturbed

DESCRIPTION: Lean Clay with Sand (CL)

LL= 44 PL= 14 PI= 30.0

SPECIFIC GRAVITY= 2.70

REMARKS: Specific Gravity Est.

FIG. NO.

CLIENT: US Army Corps of Engineers
Galveston District

PROJECT: Neches River Saltwater Barrier

SAMPLE LOCATION: Boring: 97-32, Fld No. 12
30.0-32.0, Lab No. 97/1086

PROJ. NO.: 16858 DATE: October 1997

DIRECT SHEAR TEST

**CORPS OF ENGINEERS - SOUTHWESTERN**