Job No. 0401-2906 Completion Date 5/12/90 Time ____ **Field Log of Boring** 90-79

Elevation ____ Location Disposal Area No 4 Driller M Braddford

Logger D. Findley

| Lab. Tests | Soil Sample No. | Soil Sample Depth | Soil Sample Type | Depth (ft) | Sample | Blows | Torvane Penet. | Comments | Description of Material |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | SILTY SAND, brown, fine, with clay seams and pockets, loose |
| | 1 | 5 | J | 5 | X | 3/4/3 | | | (7') |
| | | | | | | | | | SANDY CLAY, brown, with sand pockets and seams, firm |
| | 2 | 10 | Q | 10 | | | 0.75 | | |
| | | | | | | | No | Recovery | |
| | 3 | 14 | Q | | | | 0.75 | | |
| | 4 | 14.5 | Q | 15 | | | 0.75 | | (15') |
| | | | | | | | | | SILTY SAND, gray, fine with clay seams at 15' |
| | 5 | 18 | J | | | | | | |
| | 6 | 20 | J | 20 | X | 4/4/5 | | | |
| | | | | | | | | | (24.5') |
| | 7 | 25 | J | 25 | X | 2/3/5 | | | CLAY, brown and gray, stiff with sand seams at 24.5' - firm below 28' |
| | 8 | 27 | Q | | | | 1.75 | | |
| | 9 | 29 | Q | | | | 1.5 | | (29') |
| | | | | 30 | | | | | |
| | | | | 35 | | | | | |
| | | | | 40 | | | | | |

Remarks:

Boring Sealed? w/cuttings

Dry Auger ____ to ____ ft

Wet Rotary 0 to 29 ft

Water First Noticed ____ ft

Depth to Water ____ Caved at ____ Date ____ Time ____ ; ____

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Form ONS-02.07(6/87)

Job No. 0401-2906 Completion Date 5/12/90 Time ____ **Field Log of Boring** 90-79

Elevation ____ Location Disposal Area No 4 Driller M. Bradd-ford

Logger D. Findley

| Lab. Tests | Soil Sample No. | Depth | Type | Depth (ft) | Sample | Blows | Torvane Penet. | Comments | Description of Material |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | SILTY SAND, brown, fine, with clay seams and pockets, loose |
| | 1 | 5 | J | -5 | X | 3/4/3 | | | |
| | | | | | | | | | (7') SANDY CLAY, brown with sand pockets and seams |
| | 2 | 10 | Q | -10 | | | 0.75 | | |
| | | | | | | | No | Recovery | |
| | 3 | 14 | Q | | | | 0.75 | | |
| | 4 | 14.5 | Q | -15 | | | 0.75 | | (15') SILTY SAND, gray, fine with clay seams at 15' |
| | 5 | 18 | J | | | | | | |
| | 6 | 20 | J | -20 | X | 4/4/5 | | | |
| | | | | | | | | | (24.5') CLAY, brown and gray, stiff with sand seams at 24.5' |
| | 7 | 25 | J | -25 | X | 2/3/5 | | | |
| | 8 | 27 | Q | | | | 1.75 | | |
| | 9 | 29 | Q | | | | 1.5 | | (29') |
| | | | | -30 | | | | | |
| | | | | -35 | | | | | |
| | | | | -40 | | | | | |

Remarks:

Boring Sealed? Cuttings

Dry Auger ____ to ____ ft

Wet Rotary 0 to 29 ft

Water First Noticed ____ ft

Depth to Water ____ Caved at ____ Date ____ Time ____ ; ____

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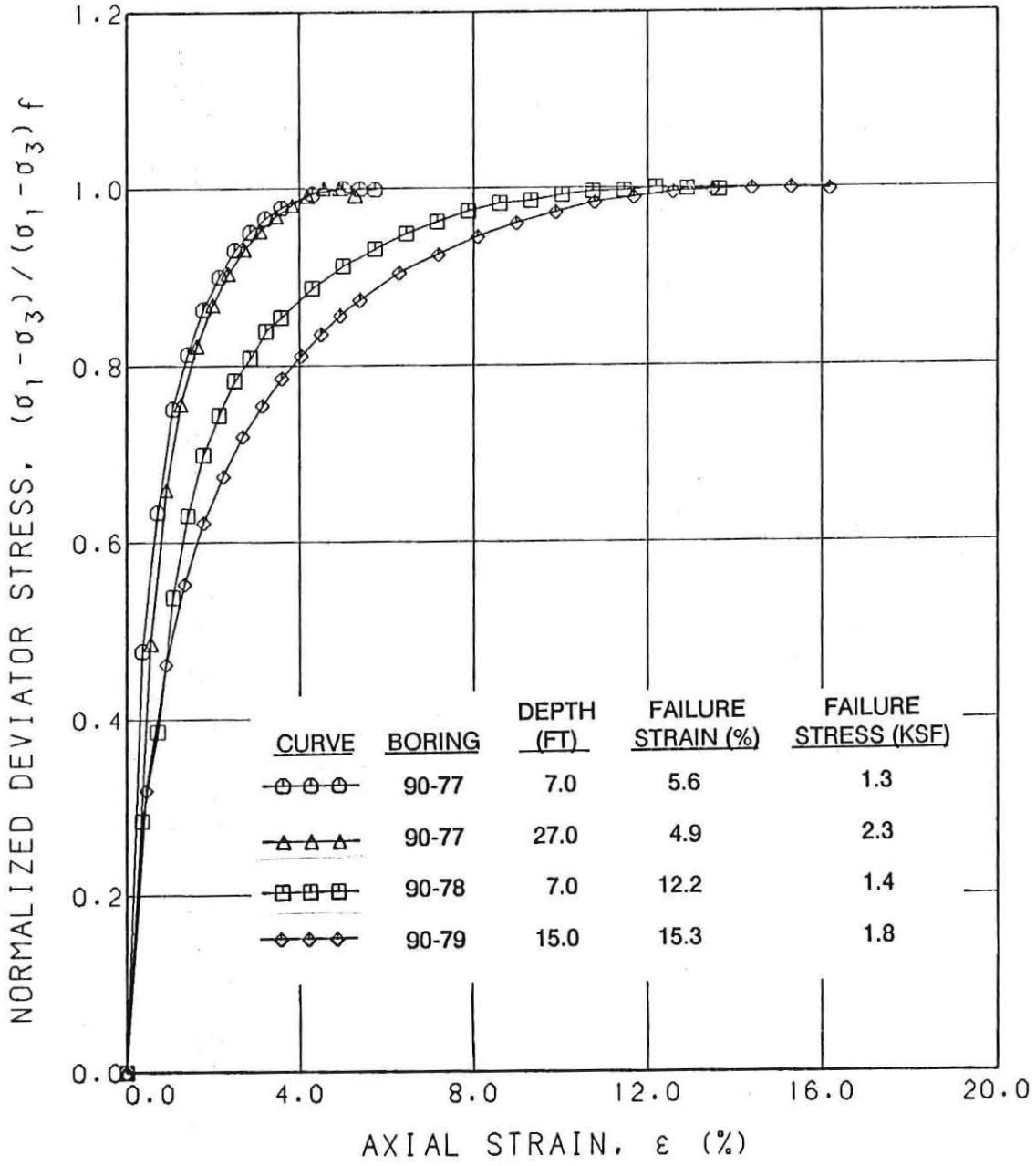
Form ONS-02.07(6/87)

SUMMARY OF TEST RESULTS
Galveston District, Corps of Engineers
Delivery Order No. 0016
Brazos Island Harbor
Brownsville Ship Channel

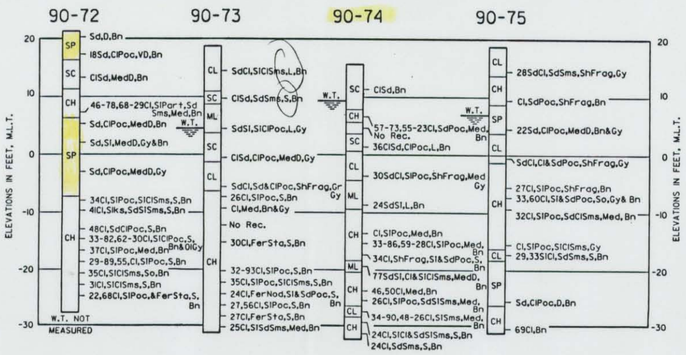
| Boring Number | Sample Number | Sample Depth (ft) | Visual Classification | USCS | MC (%) | UDW (pcf) | LL | PL | PI | Gradation, % Passing Sieve No. 4 | 10 | 40 | 200 | UNC Su (ksf) | TV Su (ksf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 90-79 | 1J | 0-5 | Brown fine SILTY SAND w/clay pckts | SM | | | | | | | | | | | |
| 90-79 | 2Q | 5-10 | Firm brown CLAY w/ sand pckts, shell frags & ferrous nod | CH | 28 | | | | | | 100 | 93 | 82 | | |
| 90-79 | 3Q | 10-14 | Firm brown CLAY w/ vert sandy clay sms & ferrous nods | CH | 35 | | | | | | | | | | |
| 90-79 | 4Q | 14.5-15 | Firm brown CLAY w/ ferrous nodules | CH | 36 | 87 | 56 | 27 | | | 100 | 99 | 91 | 0.9 | |
| 90-79 | 5J | 15-18 | Olive gray fine SILTY SAND w/clay pckts & free water | SM | | | | | | | | | | | |
| 90-79 | 6J | 18-20 | Olive gray fine SANDY SILT w/ clay pockets | ML | | | | | | | 100 | 96 | 58 | | |
| 90-79 | 7J | 20-25 | Brown CLAY w/silt pckts & sandy clay seams | CH | | | | | | | | | | | |
| 90-79 | 8Q | 25-27 | Brown CLAY w/ferrous stains | CH | 36 | 89 | 70 | | | | | | 100 | | |
| 90-79 | 9Q | 27-29 | Sample Not Received in Lab | | | | | | | | | | | | |
| 90-80 | 1Q | 3-5 | Stiff brown CLAY w/ silt partings & pockets | CH | 31 | | | | | | | | | | |
| 90-80 | 2Q | 5-7 | Firm brown CLAY w/ silt pockets | CH | 41 | 75 | 65 | 30 | | | 100 | 99 | 96 | 0.5 | |
| 90-80 | 3Q | 7-9 | Firm dk gray and brown CLAY w/si parts & pckts & sa sms | CH | 37 | | | | | | | | | | |
| 90-80 | 4Q | 9-11 | Soft brown CLAY w/ silty clay sms & parts | CH | 31 | | | | | | | | | | |
| 90-80 | 5 | 13.5-15 | Olive gray CLAY w/ silt partings | CH | | | | | | 92 | 87 | 84 | 83 | | |
| 90-80 | 6 | 18.5-20 | Olive gray CLAY w/ sand pockets | CH | | | | | | | | | | | |
| 90-80 | 7 | 20-22 | Firm brown CLAY w/ ferrous stns & silt pckts | CH | 34 | | | | | | | 100 | 99 | 0.5 | |
| 90-80 | 8 | 22-24 | Stiff brown CLAY w/ silt pockets | CH | 43 | | | | | | | | | | |
| 90-80 | 9 | 24-26 | Firm brown CLAY w/ silt pockets | CH | 39 | | | | | | | | | | |
| 90-80 | 10 | 26-28 | Soft brown CLAY w/ silt pckts & ferrous stns | CH | 37 | | | | | | | | | | |
| 90-80 | 11 | 28-30 | Soft brown CLAY w/ silt seams | CL | 30 | 78 | 39 | 20 | | | 100 | 99 | 99 | 0.2 | |
| 90-80 | 12 | 30-32 | Soft olive gray SILTY CLAY w/ clay pckts & ferrous stns | CH | 30 | | | | | | | | | | |
| 90-80 | 13 | 32-34 | Stiff brown CLAY w/ silt pockets | CH | 33 | | | | | | | | | | |
| 90-80 | 14 | 34-36 | Stiff brown CLAY w/ ferrous stains | CH | 30 | | | | | | | | | | |
| 90-80 | 15 | 36-38 | Stiff brown CLAY | CH | 32 | 89 | 68 | 28 | | | | | 100 | 1.1 | |
| 90-80 | 16 | 38-40 | Sample Not Received in Lab | | | | | | | | | | | | |
| 90-80 | 17J | 43.5-45 | Brown CLAY | CH | | | | | | | | 100 | 99 | | |
| 90-80 | 18Q | 45-47 | Sample Not Tested | | | | | | | | | | | | |
| 90-80 | 19Q | 47-49 | Stiff brown CLAY w/ silt pockets | CH | 40 | 77 | 62 | 32 | | | | | 100 | 1.4 | |

PLATE 11

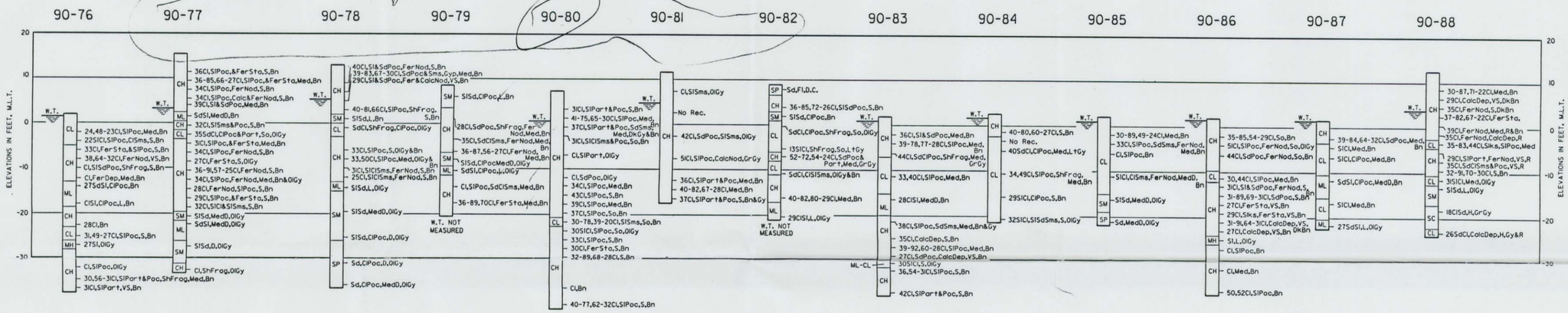



STRESS-STRAIN CURVES
UNCONFINED COMPRESSION TEST

PLATE 21




## DISPOSAL AREA No. 2




## DISPOSAL AREA No. 4

### NOTES;

1. SOILS HAVE BEEN CLASSIFIED IN ACCORDANCE WITH MILITARY STANDARD 619B "UNIFIED SOIL CLASSIFICATION SYSTEM FOR ROADS, AIRFIELDS, EMBANKMENTS AND FOUNDATIONS." CONSISTENCY OF SOILS SUCH AS SOFT, MEDIUM, HARD, LOOSE, DENSE, ETC., ARE RELATIVE TERMS BASED ON ESTIMATED UNDISTURBED SHEAR STRENGTH OF THE MATERIAL AS DETERMINED BY VISUAL CLASSIFICATION POCKET PENETROMETER TESTS AND PENETRATION RESISTANCE DURING SAMPLING.
2. FIGURES TO THE RIGHT OF BORING LOGS ARE WATER CONTENTS IN PERCENT OF THE DRY WEIGHT, DRY DENSITY, LIQUID LIMIT, PLASTIC LIMIT, AND BAR LINEAR SHRINKAGE. (MC-UDW),(LL-PL),(B.L.S.)*
3. BORINGS WERE DRILLED USING WET ROTARY DRILLING TECHNIQUES AND UNDISTURBED SAMPLES WHERE RECOVERED WITH A 3-INCH DIAMETER THIN WALL SAMPLER WHERE COHESIVE MATERIALS WERE ENCOUNTERED. WHERE COHESIONLESS MATERIALS WERE ENCOUNTERED, DISTURBED SAMPLES WERE TAKEN WITH A SPLIT SPOON SAMPLER DURING PERFORMANCE OF STANDARD PENETRATION TESTING.
4. WATER TABLE LEVELS SHOWN ON BORING LOGS WERE DETERMINED AFTER DRILLING BORINGS BY MEASURING THE TOP OF FLUID LEVELS IN THE BORINGS. INASMUCH AS WET ROTARY DRILLING TECHNIQUES AND DRILLING MUD WERE USED TO DRILL THE HOLES, THE LEVEL OF DRILLING FLUIDS IN THE BORE HOLES MAY NOT HAVE STABILIZED TO THE LEVEL OF THE ACTUAL WATER TABLE. ADDITIONALLY, WATER TABLES IN THE FIELD ARE LIKELY TO FLUCTUATE DEPENDING ON WEATHER CONDITIONS. THEREFORE, SOME VARIATION SHOULD BE ANTICIPATED BETWEEN WATER TABLES INDICATED AND WATER TABLES ENCOUNTERED IN THE FIELD.

### VISUAL CLASSIFICATIONS

| | | | |
|---|---|---|---|
| Bn Brown(ish) | Gr Green(ish) | R Red(dish) | Sta Stain(s) |
| Calc Calcareous | Gy Gray(ish) | Rec Recovery | V Very |
| Cl Clay(ey) | Gyp Gypsum | S Stiff | W.T. Water Table |
| D Dense | H Hard | Sd Sand(y) | |
| D.C. Driller's Classification | L Loose | Sl Shale | |
| Dep Deposit(s) | Lt Light | Sh Shell(y) | |
| Dk Dark | Med Medium | Sl Silty | |
| Fer Ferrous | Nod Nodules | Slks Slickensides | |
| Fl Fine(s) | Ol Olive | Sms Seams | |
| Frag Fragment(s) | Part Particle(s) | So Soft | |
| | Poc Pocket(s) | | |

### LABORATORY CLASSIFICATION

SP POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES.
SM SILTY SANDS, SAND-SILT MIXTURES.
SC CLAYEY SANDS, SAND-CLAY MIXTURES.
ML INORGANIC SILTS AND VERY FINE SANDS, WITH SLIGHT PLASTICITY.
CL INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, LEAN CLAYS.
MH INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS.
CH INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.

| REVISION | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |

OFFICE OF THE DISTRICT ENGINEER
U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

DRAWN BY: P.B.S.
TRACED BY:
CHECKED BY: J.T.F.
SUBMITTED BY: David S. Campbell, CHIEF, SOILS OR DESIGN SECTION
APPROVED: David S. Campbell, CHIEF, DESIGN & SURVEY BRANCH
APPROVED: for E. W. Whitley, CHIEF ENGINEERING DIVISION
DATED: MAY 1992

BRAZOS ISLAND HARBOR, TEXAS
BROWNSVILLE CHANNEL
DREDGING INSHORE REACH NO. 1
DISPOSAL AREAS Nos. 2 & 4
# BORING LOGS

Prepared under the direction of
Brink P. Miller, Col., C.E.
District Engineer

SCALE: AS SHOWN
SPEC. DATE:
DRAWING NUMBER: F-6
SHEET 13 OF 17 FILE NO. RIO 901-204