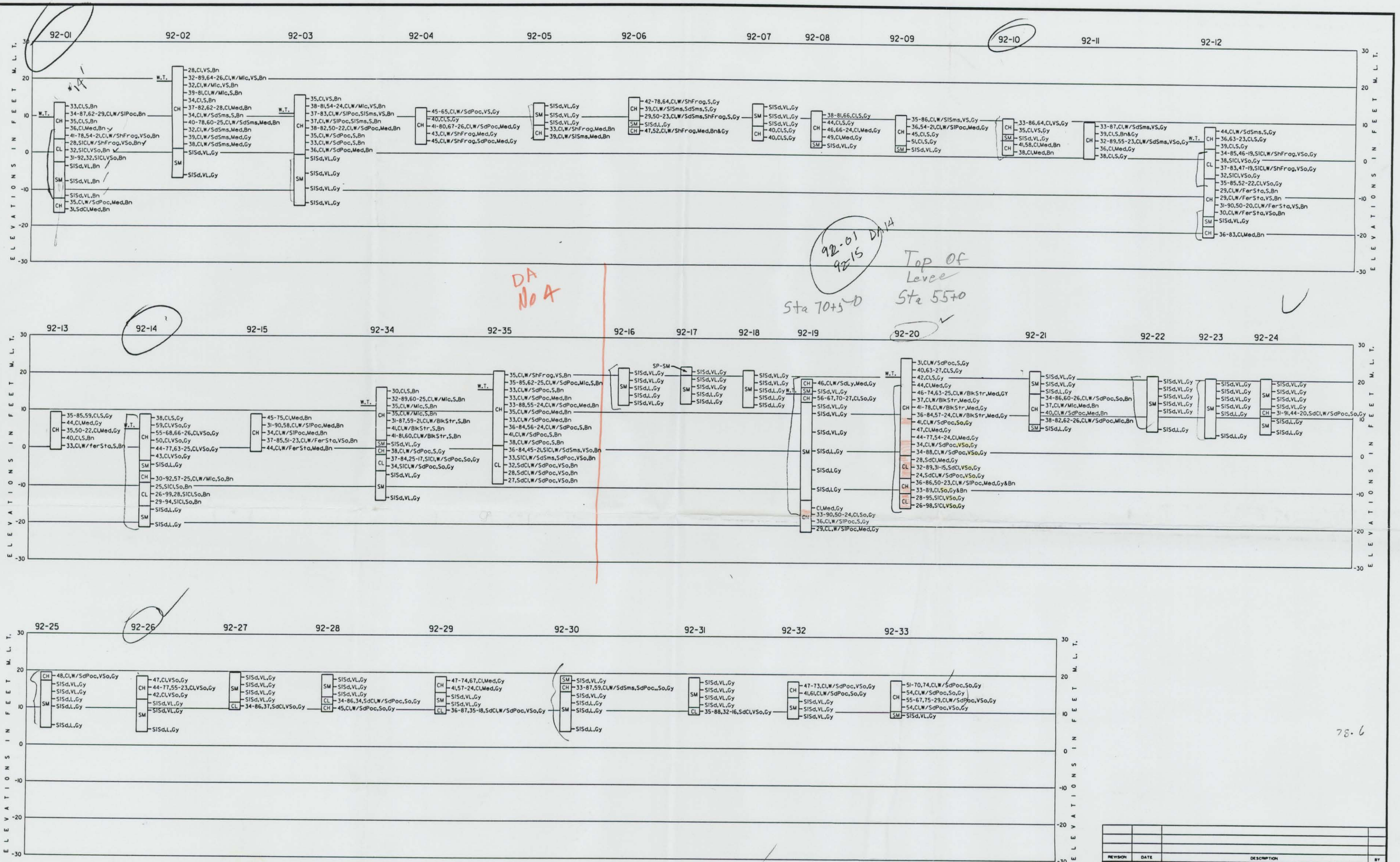




NOTE: SEE DRAWING NUMBER F-6 FOR SOILS NOTES.

|                                                                                                                     |  |                                                                                                                                |             |    |
|---------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------|-------------|----|
| REVISION                                                                                                            |  | DATE                                                                                                                           | DESCRIPTION | BY |
| OFFICE OF THE DISTRICT ENGINEER<br>U.S. ARMY ENGINEER DISTRICT, GALVESTON<br>CORPS OF ENGINEERS<br>GALVESTON, TEXAS |  |                                                                                                                                |             |    |
| DRAWN BY:<br>P.B.S.                                                                                                 |  | Brazos Island Harbor, Texas<br>Brownsville Channel<br>Dredging Inshore Reach No. 1<br>DISPOSAL AREAS Nos. 2 & 4<br>BORING LOGS |             |    |
| CHECKED BY:<br>J.T.F.                                                                                               |  | DATE: MAY 1992                                                                                                                 |             |    |
| SUBMITTED BY:<br>[Signature]                                                                                        |  | APPROVED BY:<br>[Signature]                                                                                                    |             |    |
| Prepared under the direction of<br>Brink P. Miller, Col., C.E.,<br>District Engineer                                |  | SCALE: AS SHOWN<br>SPEC. DATE:<br>DRAWING NUMBER<br>F-7<br>SHEET 14 OF 17 FILE NO. RID 901-240                                 |             |    |

# U.S. ARMY CORPS OF ENGINEERS

| DEPTH, FEET |       | SAMPLE      | SAMPLE NO.    | PEN./TORVANE | SPT.-BLOW COUNT        | BORING NO. <u>92-01</u> DATE: BEGIN <u>3-22-92</u> PAGE <u>1 / 1</u><br>JOB NO. <u>146535</u> COMPLETE <u>3-22-92</u> Thin Walled Tube<br>PROJECT <u>Brownsville Disa. Area #4</u> <input checked="" type="checkbox"/> 3" <input type="checkbox"/> 6"<br>LOCATION <u>"</u> <u>Ship Channel</u><br>ELEVATION OF HOLE _____<br>MANUFACTURER'S DESIGNATION OF DRILL RIG <u>ARDLO-C-1000</u><br>GROUNDWATER: DEPTH <u>4"</u> ft., ELEV. _____ ft., at end of Drilling<br>WEATHER <u>Cloudy - Warm - Windy</u><br>DRILLER <u>D. Mitchell</u> LOGGER <u>J. Berg</u> |  |  |  |  |
|-------------|-------|-------------|---------------|--------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
|             |       | COLOR       | MATERIAL TYPE | CONSISTENCY  | SECONDARY CONSTITUENTS | STRUCTURAL FEATURES AND COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |
| 0           |       |             |               |              |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
|             | 1.0   | TAN         | Clay          | stiff        |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
|             | 2.0   | GRAY<br>TAN | "             | "            |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
| 5           | 3.5   | TAN         | "             | Med. stiff   |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
|             | 4.0   | "           | "             | stiff        |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
|             | 5.25  | "           | "             | soft         | silt                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
| 10          | 6.5   | "           | "             | Med. stiff   | "                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
|             | 7.25  | "           | "             | soft         | "                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
| 15          | 8.5   | "           | "             | Med. stiff   | "                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
|             | 9.12  | GRAY        | SAND          | Very loose   | silt                   | SA. at 16'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |
| 20          | 10.12 | TAN         | "             | "            | "                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
|             | 11.12 | "           | "             | "            | "                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
| 25          | 12.5  | TAN<br>GRAY | Clay          | Med. stiff   | silt                   | cl. at 26'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |
|             | 13.5  | GRAY<br>TAN | "             | "            | sand                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
| 30          |       |             |               |              |                        | Bottom of 92-01<br>30'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |
| 35          |       |             |               |              |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |

Project: Disposal Areas Nos.2 and 4 for Brownsville Ship Channel  
Brownsville, Texas  
Contract No. DACW64-92-D-0001 Delivery order No. 0008

# SUMMARY OF LABORATORY TEST RESULTS

Boring No. 92-01

| S # | Depth (ft) | P P (tsf) | SPT Blows per Foot | Visual Classification                        | U S C | M c (%) | Dry Unit Wt (pcf) | Wet Unit Wt (pcf) | LL (%) | P L (%) | Mechanical Analysis % Passing |      |      |      |      | Torvane Shear Strength (tsf) | q u (tsf) |
|-----|------------|-----------|--------------------|----------------------------------------------|-------|---------|-------------------|-------------------|--------|---------|-------------------------------|------|------|------|------|------------------------------|-----------|
|     |            |           |                    |                                              |       |         |                   |                   |        |         | #4                            | #10  | #40  | #100 | #200 |                              |           |
| 1   | 0-2        | 1.50      |                    | Brown,Clay,Stiff                             | CH    | 32.8    |                   |                   |        |         |                               |      |      |      |      |                              |           |
| 2   | 2-4        | 1.25      |                    | Brown,Clay,Stiff,w/silt pockets              | CH    | 34.4    | 86.5              | 116.3             | 62     | 29      |                               |      |      |      |      |                              |           |
| 3   | 4-6        | 1.00      |                    | Brown,Clay,Stiff                             | CH    | 35.2    |                   |                   |        |         |                               |      |      |      |      |                              |           |
| 4   | 6-8        | 0.50      |                    | Brown,Clay,Medium stiff                      | CH    | 36.0    |                   |                   |        |         |                               |      |      |      |      |                              |           |
| 5   | 8-10       | 0.00      |                    | Brown,Clay,Very soft,w/shell fragments       | CH    | 40.7    | 77.6              | 109.2             | 54     | 21      | 100.0                         | 99.6 | 99.3 | 99.1 | 98.7 |                              | 0.13      |
| 6   | 10-12      | 0.00      |                    | Brown,Clay,Very soft,Silty,w/shell fragments | CL    | 28.0    |                   |                   |        |         |                               |      |      |      |      |                              |           |
| 7   | 12-14      | 0.00      |                    | Brown,Clay,Very soft,Silty                   | CL    | 31.7    |                   |                   |        |         |                               |      |      |      |      |                              |           |
| 8   | 14-16      | 0.00      |                    | Brown,Clay,Very soft,Silty                   | CL    | 30.5    | 92.0              | 120.1             | 32     |         |                               |      |      |      |      |                              |           |
| 9   | 16.5-18    |           | 1 - / 1 12"        | Brown,Sand,Very loose,Silty                  | S M   |         |                   |                   |        | 100     | 100.0                         | 99.9 | 81.8 | 35.0 |      |                              |           |
| 10  | 20.5-22    |           | 1 / 12" - 1        | Brown,Sand,Very loose,Silty                  | S M   |         |                   |                   |        |         |                               |      |      |      |      |                              |           |
| 11  | 24.5-26    |           | 1 - 1 / 12"        | Brown,Sand,Very loose,Silty                  | S M   |         |                   |                   |        |         |                               |      |      |      |      |                              |           |
| 12  | 26-28      | 0.50      |                    | Brown,Clay,Medium stiff,w/sand pockets       | CH    | 35.0    |                   |                   |        |         |                               |      |      |      |      |                              |           |
| 13  | 28-30      | 0.50      |                    | Brown,Clay,Medium stiff,Sandy                | CH    | 30.7    |                   |                   |        |         |                               |      |      |      |      |                              |           |
|     |            |           |                    |                                              |       |         |                   |                   |        |         |                               |      |      |      |      |                              |           |
|     |            |           |                    |                                              |       |         |                   |                   |        |         |                               |      |      |      |      |                              |           |
|     |            |           |                    |                                              |       |         |                   |                   |        |         |                               |      |      |      |      |                              |           |
|     |            |           |                    |                                              |       |         |                   |                   |        |         |                               |      |      |      |      |                              |           |

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

q u : Unconfined Compressive Strength, W O H : Weight of hammer, W O P : Weight of pipe

Geotest Engineering, Inc.

JOB NO. 14G538

DATE 4/3/92

PROJECT Disposal Areas Nos.2 and 4 for Brownsvill Ship Channel,Brown

BORING NO. 92-01

SAMPLE NO. 5

DEPTH 8-10 ft

SPECIMEN NO. 1

CLASSIFICATION

Brown,Clay,very soft, w/shell fragments

|                            |            |                  |               |
|----------------------------|------------|------------------|---------------|
| Tare No.                   | P-213      | Height           | 5.595 in.     |
| Tare plus Wet Specimen     | 556.99 gm  | Average Diameter | 2.830 in.     |
| Tare plus Dry Specimen     | 408.04 gm  | Initial Area     | 6.290 sq in.  |
| Water Weight               | 148.95 gm  | Volume           | 35.194 cu in. |
| Tare Weight                | 42.26 gm   | Volume of Solids | cu in.        |
| Wet Specimen               | 1009.42 gm | Void Ratio       |               |
| Dry Specimen               | 717.32 gm  | Saturation       | %             |
| Water Content              | 40.72 %    | Dry Density      | 77.6 lb/cu ft |
| Specific Gravity of Solids |            |                  |               |
| LL = 54                    | PL = 21    | PI = 33          |               |

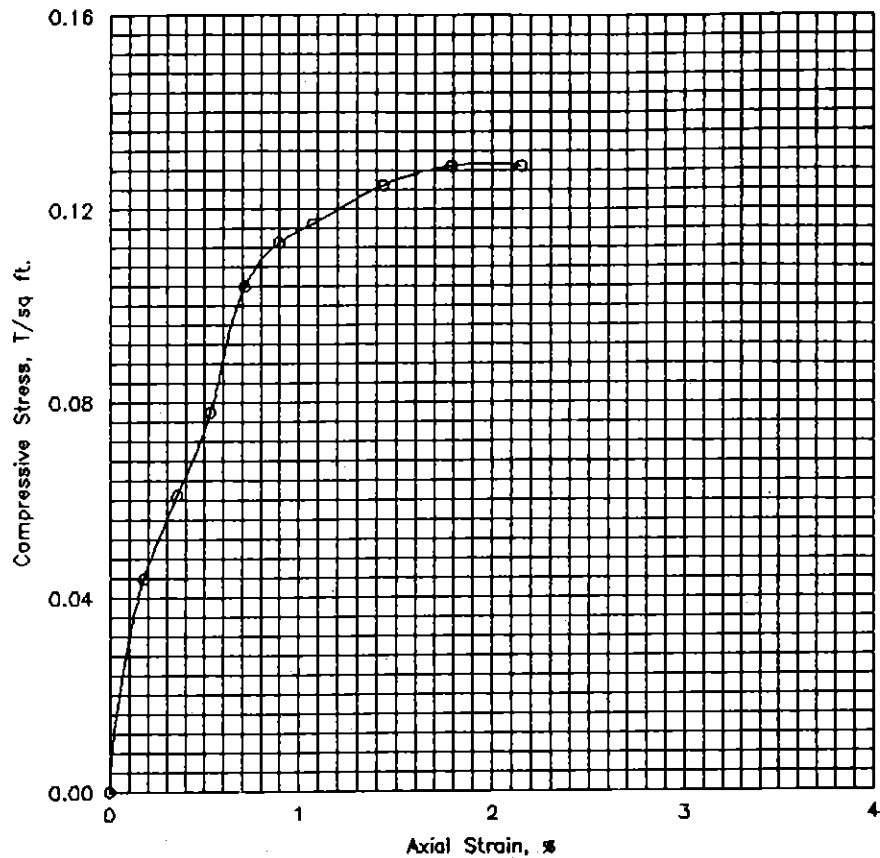
Proving Ring No. 10170

Proving Ring Constant, K = .766 lbs/div.

| Elapsed Time min. | Dial Reading 0.001" | Cumulative Change in. | Proving Ring Dial Reading | Axial Load lb | Axial Strain | Area Corr. sq in. | Compr. Stress tsf |
|-------------------|---------------------|-----------------------|---------------------------|---------------|--------------|-------------------|-------------------|
| .0                | 0.                  | .000                  | .0                        | .0            | .000         | 6.29              | .000              |
| .2                | 10.                 | .010                  | 5.0                       | 3.8           | .002         | 6.30              | .044              |
| .4                | 20.                 | .020                  | 7.0                       | 5.4           | .004         | 6.31              | .061              |
| .6                | 30.                 | .030                  | 9.0                       | 6.9           | .005         | 6.32              | .078              |
| .7                | 40.                 | .040                  | 12.0                      | 9.2           | .007         | 6.34              | .104              |
| .9                | 50.                 | .050                  | 13.0                      | 10.0          | .009         | 6.35              | .113              |
| 1.0               | 60.                 | .060                  | 13.5                      | 10.3          | .011         | 6.36              | .117              |
| 1.3               | 80.                 | .080                  | 14.5                      | 11.1          | .014         | 6.38              | .125              |
| 1.6               | 100.                | .100                  | 15.0                      | 11.5          | .018         | 6.40              | .129              |
| 1.9               | 120.                | .120                  | 15.0                      | 11.5          | .021         | 6.43              | .129              |

Job No. 146538

Failure Sketches



☐ Controlled stress  
☒ Controlled strain

|                                                          |                       |                                                     |        |              |    |
|----------------------------------------------------------|-----------------------|-----------------------------------------------------|--------|--------------|----|
| Test No.                                                 |                       | 1                                                   |        |              |    |
| Type of Specimen                                         |                       | Undisturbed                                         |        |              |    |
| Initial                                                  | Water content         | $w_0$                                               | 40.7 % | %            | %  |
|                                                          | Void ratio            | $e_0$                                               |        |              |    |
|                                                          | Saturation            | $S_0$                                               | %      | %            | %  |
|                                                          | Dry density, lb/cu ft | $\gamma_d$                                          | 77.6   |              |    |
| Time to failure, min                                     |                       | $t_f$                                               | 1.58   |              |    |
| Unconfined compressive strength, T/sq ft                 |                       | $q_u$                                               | .13    |              |    |
| Undrained shear strength, T/sq ft                        |                       | $S_u$                                               | .06    |              |    |
| Sensitivity ratio                                        |                       | $S_t$                                               |        |              |    |
| Initial specimen diameter, in.                           |                       | $D_0$                                               | 2.830  |              |    |
| Initial specimen height, in.                             |                       | $H_0$                                               | 5.595  |              |    |
| Classification Brown, Clay, very soft, w/shell fragments |                       |                                                     |        |              |    |
| LL                                                       | 54                    | PL                                                  | 21     | PI           | 33 |
|                                                          |                       |                                                     |        | $G_s$        |    |
| Remarks                                                  |                       | Project Disposal Areas Nos. 2 and 4 for Brownsville |        |              |    |
|                                                          |                       | Area Ship Channel, Brownsville, Texas               |        |              |    |
|                                                          |                       | Boring No. 92-01                                    |        | Sample No. 5 |    |
|                                                          |                       | Depth 8-10 ft                                       |        | Date 4/3/92  |    |
|                                                          |                       | UNCONFINED COMPRESSION TEST REPORT                  |        |              |    |