

# U.S. ARMY CORPS OF ENGINEERS

| DEPTH, FEET |    | SAMPLE NO. | PEN./TORVANE  | SPT.-BLOW COUNT | BORING NO. <u>91-317</u> DATE: BEGIN <u>1-7-92</u> PAGE <u>1/2</u> |                                  |                  | JOB NO. <u>14C-531</u> COMPLETE <u>1-7-92</u> Thin Walled Tube       |  | PROJECT <u>C.I.W.W.</u> <input checked="" type="checkbox"/> 4.5" <input type="checkbox"/> 6" |  |
|-------------|----|------------|---------------|-----------------|--------------------------------------------------------------------|----------------------------------|------------------|----------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------|--|
|             |    |            |               |                 | LOCATION <u>Sargent Grack sta 407+50</u>                           |                                  |                  | ELEVATION OF HOLE                                                    |  |                                                                                              |  |
|             |    |            |               |                 | MANUFACTURER'S DESIGNATION OF DRILL RIG <u>Failing CFD.2</u>       |                                  |                  | GROUNDWATER: DEPTH <u>0</u> ft., ELEV. _____ ft., at end of Drilling |  |                                                                                              |  |
|             |    |            |               |                 | WEATHER <u>cloudy cool</u>                                         |                                  |                  | DRILLER <u>J. Gorman</u> LOGGER <u>D. Crowell</u>                    |  |                                                                                              |  |
|             |    | COLOR      | MATERIAL TYPE | CONSISTENCY     | SECONDARY CONSTITUENTS                                             | STRUCTURAL FEATURES AND COMMENTS |                  |                                                                      |  |                                                                                              |  |
| 0           | 1  | 0.50       | Tan           | clay            | M. stiff                                                           | silt                             | w/ roots         |                                                                      |  |                                                                                              |  |
|             | 2  | 0.75       | Gr            | clay            | M. stiff                                                           | silt                             | Tan              |                                                                      |  |                                                                                              |  |
| 5           | 3  | 0.50       | Gray          | clay            | M. stiff                                                           | silt                             | Tan              |                                                                      |  |                                                                                              |  |
|             | 4  | 0.75       | Tan           | clay            | M. stiff                                                           | silt                             | Gray             |                                                                      |  |                                                                                              |  |
| 10          | 5  | 0.50       | Tan           | clay            | M. stiff                                                           | silt                             | Gray             |                                                                      |  |                                                                                              |  |
|             | 6  | 0.25       | Gr            | clay            | soft                                                               | silt                             | w/ sand grains   |                                                                      |  |                                                                                              |  |
|             | 7  | 0.00       | Gray          | clay            | very soft                                                          | silt                             | Tan w/ shell     |                                                                      |  |                                                                                              |  |
| 15          | 8  | 0.00       | Gray          | clay            | V. soft                                                            | silt                             | Tan w/ shell     |                                                                      |  |                                                                                              |  |
|             | 9  | 0.25       | Gray          | clay            | soft                                                               | silt                             |                  |                                                                      |  |                                                                                              |  |
| 20          | 10 | 0.75       | Gray          | clay            | M. stiff                                                           | silt                             | Tan              |                                                                      |  |                                                                                              |  |
|             | 11 | 1.0        | Gray          | clay            | stiff                                                              | silt                             | Tan              |                                                                      |  |                                                                                              |  |
|             | 12 | 1.5        | Gray          | clay            | stiff                                                              | silt                             | Tan w/ calc nod  |                                                                      |  |                                                                                              |  |
| 25          | 13 | 2.0        | Tan           | clay            | V. stiff                                                           | silt                             | gray             |                                                                      |  |                                                                                              |  |
|             | 14 | 2.0        | Tan           | clay            | V. stiff                                                           | silt                             | gray             |                                                                      |  |                                                                                              |  |
|             | 15 | 2.5        | Gray          | clay            | V. stiff                                                           |                                  | Tan              |                                                                      |  |                                                                                              |  |
| 30          | 16 | 2.5        | Gray          | clay            | V. stiff                                                           |                                  | Tan w/ calc nods |                                                                      |  |                                                                                              |  |
|             | 17 | 3.5        | Gray          | clay            | V. stiff                                                           |                                  | Tan w/ calc nods |                                                                      |  |                                                                                              |  |
| 35          | 18 | 3.5        | Gray          | clay            | V. stiff                                                           |                                  | Tan w/ calc nods |                                                                      |  |                                                                                              |  |

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|-------------|----|------------|---------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--|--|--|
|             |    | COLOR      | MATERIAL TYPE | CONSISTENCY     | SECONDARY CONSTITUENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | STRUCTURAL FEATURES AND COMMENTS |  |  |  |
| 35          | 19 | Gray       | clay          | V. stiff        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Tan w/calc nods                  |  |  |  |
| 40          | 20 | Gray       | clay          | V. stiff        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Tan w/calc. nods                 |  |  |  |
|             | 21 | Tan        | clay          | V. stiff        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Gray w/calc. nods                |  |  |  |
|             | 22 | Tan        | clay          | V. stiff        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Gray w/calc. nods                |  |  |  |
| 45          | 23 | Tan        | clay          | V. stiff        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Gray w/calc nods                 |  |  |  |
|             | 24 | Tan        | clay          | V. stiff        | silt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | w/calc nods                      |  |  |  |
| 50          | 25 | Tan        | clay          | V. stiff        | silt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | w/calc. nods                     |  |  |  |
| 55          |    |            |               |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Bottom of 91-317 @ 50'           |  |  |  |
| 60          |    |            |               |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                  |  |  |  |
| 65          |    |            |               |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                  |  |  |  |
| 70          |    |            |               |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                  |  |  |  |

Project : Gulf Intracoastal Waterway, near Sargent Beach, Texas  
 Contract No. DACW64-92-D-0001 Delivery Order No.0005

# SUMMARY OF LABORATORY TEST RESULTS

Boring No. 91-317

| 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 (%) | PL (%) | Mechanical Analysis % Passing |       |       |      |      | Torvane Shear Strength (tsf) | q u (tsf) |
|-----|------------|-----------|--------------------|--------------------------------------------------------------------|-------|---------|-------------------|-------------------|--------|--------|-------------------------------|-------|-------|------|------|------------------------------|-----------|
|     |            |           |                    |                                                                    |       |         |                   |                   |        |        | #4                            | #10   | #40   | #100 | #200 |                              |           |
| 1   | 0-2        | 0.50      |                    | Brown, Clay, Medium stiff, w/roots                                 | CH    | 29.4    |                   |                   |        |        |                               |       |       |      |      |                              |           |
| 2   | 2-4        | 1.50      |                    | Brown, Clay, Stiff                                                 | CH    | 28.8    |                   |                   |        |        |                               |       |       |      |      |                              |           |
| 3   | 4-6        | 1.00      |                    | Gray, Clay, Stiff                                                  | CH    | 32.1    |                   |                   | 52     |        |                               |       |       |      |      |                              |           |
| 4   | 6-8        | 0.75      |                    | Tan & gray, Clay, Medium stiff, Silty                              | OK CH | 39      | 81                | 112.0             | 66     | 19     |                               |       |       |      |      | C = 670                      | P 815     |
| 5   | 8-10       | 1.25      |                    | Gray, Clay, Stiff                                                  | CH    | 40.1    |                   |                   |        |        |                               |       |       |      |      |                              |           |
| 6   | 10-12      | 0.25      |                    | Gray, Clay, Soft, w/organic material & silt seams                  | CH    | 58.6    |                   | 101               |        |        |                               |       |       |      |      | 0.12                         |           |
| 7   | 12-14      | 0.00      |                    | Gray, Clay, Very soft, w/shell & shell fragments                   | CH    | 48.1    |                   |                   | 51     |        | 95.5*                         | 92.1* | 90.6* | 90.0 | 88.8 | 0.08                         |           |
| 8   | 14-16      | 0.00      |                    | Gray, Clay, Very soft, w/shell fragments                           | CH    | 47.1    |                   |                   |        |        |                               |       |       |      |      | 0.09                         |           |
| 9   | 16-18      | 0.25      |                    | Gray, Clay, Soft, Silty                                            | OK CH | 39      | 81                | 112.0             | 57     | 16     |                               |       |       |      |      | C = 210                      | P 815     |
| 10  | 18-20      | 0.75      |                    | Gray, Clay, Medium stiff                                           | CH    | 50.5    |                   |                   |        |        |                               |       |       |      |      |                              |           |
| 11  | 20-22      | 1.75      |                    | Olive gray, Clay, Stiff, w/ferrous stains, slickensided            | CH    | 47.0    |                   |                   | 93     |        |                               |       |       |      |      |                              |           |
| 12  | 22-24      | 1.50      |                    | Gray & brown, Clay, Stiff, w/calcareous nodules, slickensided      | CH    | 41.1    |                   |                   |        |        |                               |       |       |      |      |                              |           |
| 13  | 24-26      | 2.25      |                    | Brown & gray, Clay, Very stiff, slickensided                       | CH    | 36.9    |                   |                   |        |        |                               |       |       |      |      |                              |           |
| 14  | 26-28      | 2.50      |                    | Brown & gray, Clay, Very stiff, w/ferrous stains, slickensided     | CH    | 47.8    |                   |                   |        |        |                               |       |       |      |      |                              |           |
| 15  | 28-30      | 1.75      |                    | Brown & gray, Clay, Stiff, w/calcareous nodules, slickensided      | CH    | 41.5    |                   |                   |        |        |                               |       |       |      |      |                              |           |
| 16  | 30-32      | 2.75      |                    | Olive gray, Clay, Very stiff, Silty, w/calcareous nodules          | CL    | 23.0    |                   |                   |        |        |                               |       |       |      |      |                              |           |
| 17  | 32-34      | 2.50      |                    | Brown & gray, Clay, Very stiff, w/calcareous nodules, slickensided | CH    | 35.7    |                   |                   |        |        |                               |       |       |      |      |                              |           |

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

\* : Material Retained are Shell & Shell fragments

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| S # | Depth<br>(ft) | P P<br>(tsf) | SPT<br>Blows<br>per<br>Foot | Visual<br>Classification                                      | U S C | M c<br>(%) | Dry<br>Unit<br>Wt<br>(pcf) | Wet<br>Unit<br>Wt<br>(pcf) | LL<br>(%) | P L<br>(%) | Mechanical Analysis<br>% Passing |     |     |      |      | Torvane<br>Shear<br>Strength<br>(tsf) | q u<br>(tsf) |
|-----|---------------|--------------|-----------------------------|---------------------------------------------------------------|-------|------------|----------------------------|----------------------------|-----------|------------|----------------------------------|-----|-----|------|------|---------------------------------------|--------------|
|     |               |              |                             |                                                               |       |            |                            |                            |           |            | #4                               | #10 | #40 | #100 | #200 |                                       |              |
| 18  | 34-36         | 3.00         |                             | Olive gray,Clay,Very stiff,w/calcareous nodules               | CH    | 24.2       |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
| 19  | 36-38         | 4.5+         |                             | Brown,Clay,Hard,w/calcareous nodules & ferrous stains         | CH    | 22.9       |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
| 20  | 38-40         | 4.5+         |                             | Olive gray & brown,Clay,Hard,w/calcareous nodules             | CH    | 22.3       |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
| 21  | 40-42         | 4.5+         |                             | Brown & gray,Clay,Hard,w/calcareous nodules                   | CH    | 22.5       |                            |                            | 50        |            |                                  |     |     |      |      |                                       |              |
| 22  | 42-44         | 3.75         |                             | Gray & brown,Clay,Very stiff,w/calcareous nodules             | CH    | 21.5       |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
| 23  | 44-46         | 3.75         |                             | Brown & gray,Clay,Very stiff,w/blocky structure, Slickensided | CH    | 28.6       |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
| 24  | 46-48         | 2.75         |                             | Brown & gray,Clay,Very stiff,Silty                            | CL    | 19.9       |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
| 25  | 48-50         | 2.75         |                             | Brown & gray,Clay,Very stiff,Silty,w/calcareous nodules       | CL    | 20.0       |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
|     |               |              |                             |                                                               |       |            |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
|     |               |              |                             |                                                               |       |            |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
|     |               |              |                             |                                                               |       |            |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
|     |               |              |                             |                                                               |       |            |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
|     |               |              |                             |                                                               |       |            |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
|     |               |              |                             |                                                               |       |            |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
|     |               |              |                             |                                                               |       |            |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
|     |               |              |                             |                                                               |       |            |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
|     |               |              |                             |                                                               |       |            |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
|     |               |              |                             |                                                               |       |            |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
|     |               |              |                             |                                                               |       |            |                            |                            |           |            |                                  |     |     |      |      |                                       |              |
|     |               |              |                             |                                                               |       |            |                            |                            |           |            |                                  |     |     |      |      |                                       |              |

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