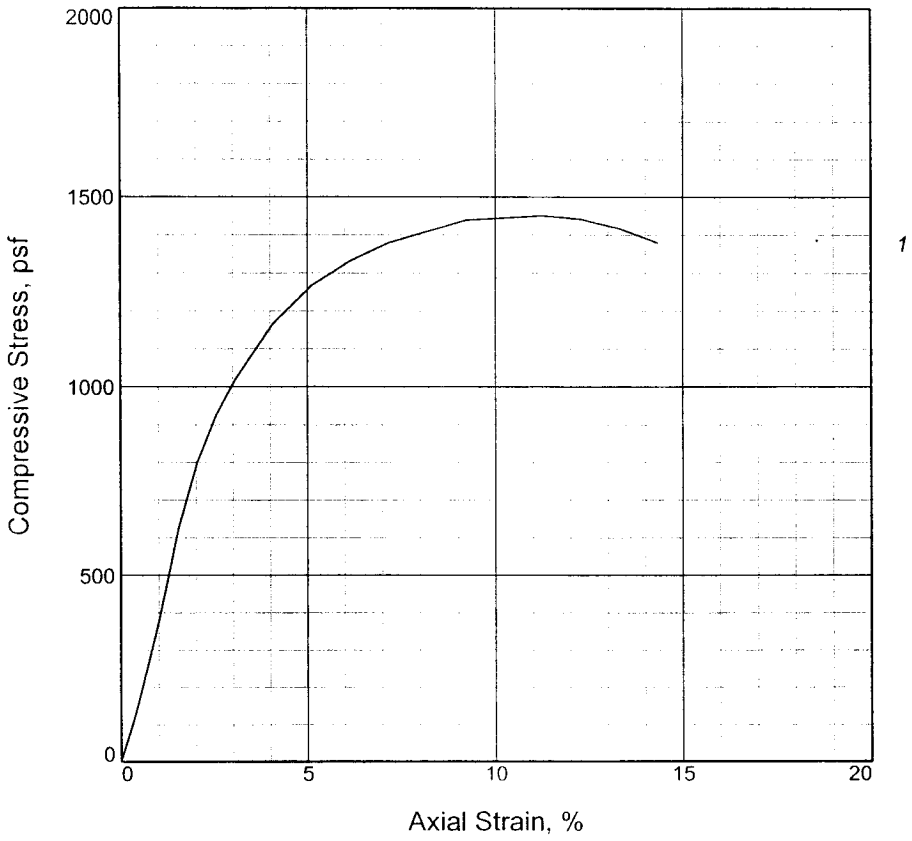
# UNCONFINED COMPRESSION TEST




| Specimen No. | 1 | | | |
|---|---|---|---|---|
| Unconfined strength, psf | 1450.0 | | | |
| Undrained shear strength, psf | 725.0 | | | |
| Failure strain, % | 11.3 | | | |
| Strain rate, in./min. | 0.058 | | | |
| Water content, % | 31.4 | | | |
| Wet density, pcf | 113.6 | | | |
| Dry density, pcf | 86.5 | | | |
| Saturation, % | 87.9 | | | |
| Void ratio | 0.9777 | | | |
| Specimen diameter, in. | 1.388 | | | |
| Specimen height, in. | 2.930 | | | |
| Height/diameter ratio | 2.11 | | | |

**Description:** M GR & T CH3 W/ LNS ML, LYS SM, TR-WD

| LL = | PL = | PI = | **Assumed GS=** 2.74 | **Type:** UNDISTURBED |
|---|---|---|---|---|

**Project No.:** 19082
**Date:** 11-9-05

**Remarks:**
TORVANE = 0.380 tsf

**Figure** 1

**Client:** URS Corporation

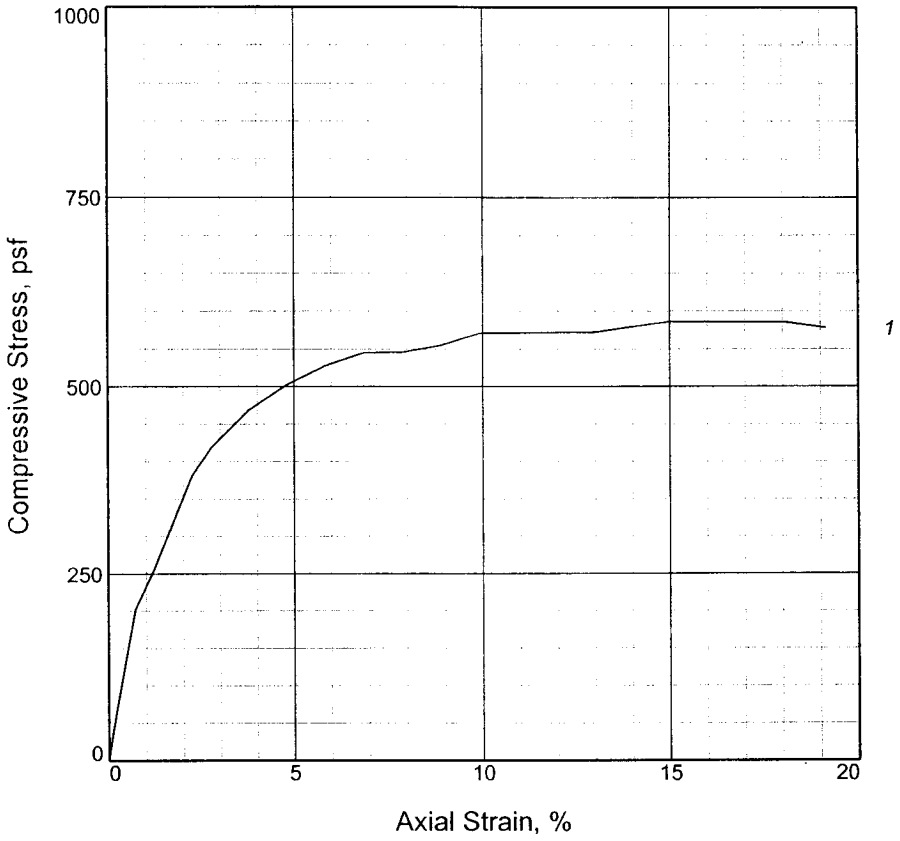
**Project:** U.S. Army Corps of Engineers
Inner Harbor Navigational Canal
**Source of Sample:** B-4WG **Depth:** 2.5
**Sample Number:** 2

UNCONFINED COMPRESSION TEST

EUSTIS ENGINEERING COMPANY, INC.

**Tested By:** ZH **Checked By:** JS

# UNCONFINED COMPRESSION TEST




| Specimen No. | 1 | | | |
|---|---|---|---|---|
| Unconfined strength, psf | 586.2 | | | |
| Undrained shear strength, psf | 293.1 | | | |
| Failure strain, % | 15.1 | | | |
| Strain rate, in./min. | 0.059 | | | |
| Water content, % | 43.2 | | | |
| Wet density, pcf | 106.5 | | | |
| Dry density, pcf | 74.4 | | | |
| Saturation, % | 92.1 | | | |
| Void ratio | 1.2655 | | | |
| Specimen diameter, in. | 1.388 | | | |
| Specimen height, in. | 2.930 | | | |
| Height/diameter ratio | 2.11 | | | |

**Description:** SO GR CH3 W/ ARS & LNS ML, TR-WD

| LL = | PL = | PI = | Assumed GS= 2.7 | Type: UNDISTURBED |
|---|---|---|---|---|

**Project No.:** 19082
**Date:** 11/15/05
**Remarks:**
TORVANE = 0.230 TSF

**Figure** _____

**Client:** URS Corporation

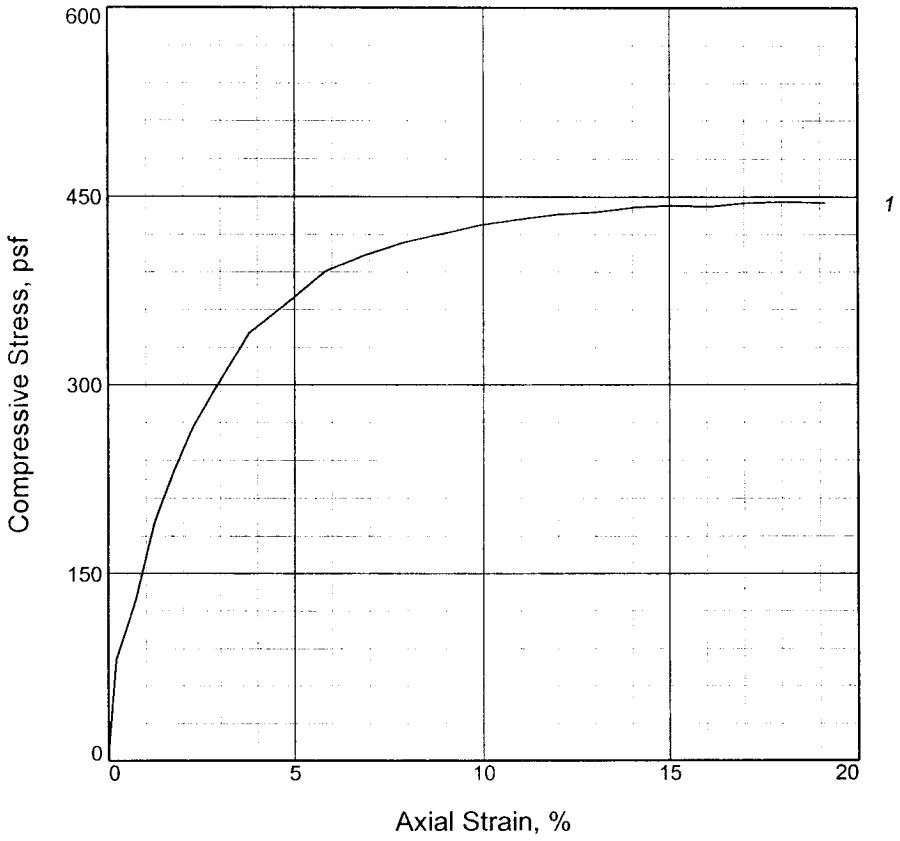
**Project:** U.S. Army Corps of Engineers
Inner Harbor Navigational Canal
**Source of Sample:** B-4WG **Depth:** 5.0
**Sample Number:** 3

UNCONFINED COMPRESSION TEST

EUSTIS ENGINEERING COMPANY, INC.

**Tested By:** RR **Checked By:** DP

# UNCONFINED COMPRESSION TEST




| Specimen No. | 1 | | | |
|---|---|---|---|---|
| Unconfined strength, psf | 443.0 | | | |
| Undrained shear strength, psf | 221.5 | | | |
| Failure strain, % | 15.1 | | | |
| Strain rate, in./min. | 0.059 | | | |
| Water content, % | 70.9 | | | |
| Wet density, pcf | 95.8 | | | |
| Dry density, pcf | 56.0 | | | |
| Saturation, % | 95.3 | | | |
| Void ratio | 2.0075 | | | |
| Specimen diameter, in. | 1.388 | | | |
| Specimen height, in. | 2.930 | | | |
| Height/diameter ratio | 2.11 | | | |

**Description:** VSO GR CH3 W/ ARS SM, TR-WD

| LL = | PL = | PI = | **Assumed GS=** 2.7 | **Type:** UNDISTURBED |
|---|---|---|---|---|

**Project No.:** 19082
**Date:** 11/09/05

**Remarks:**
TORVANE = 0.150 TSF

**Figure** 1

**Client:** URS Corporation

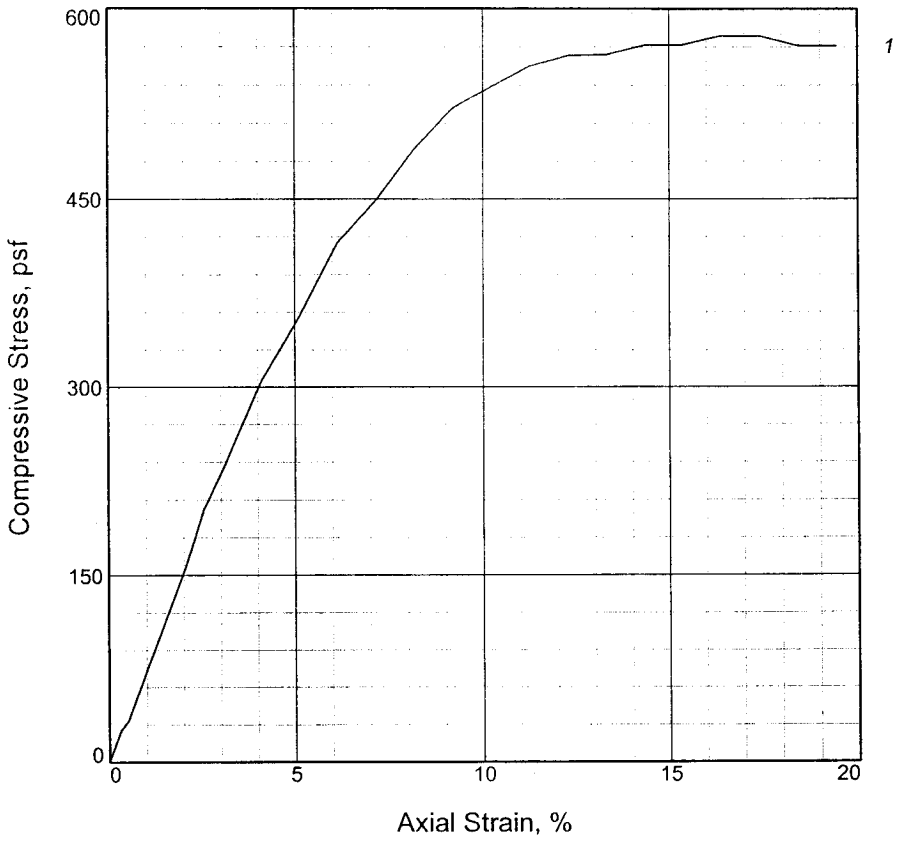
**Project:** U.S. Army Corps of Engineers
Inner Harbor Navigational Canal
**Source of Sample:** B-4WG **Depth:** 10.0
**Sample Number:** 5

UNCONFINED COMPRESSION TEST

EUSTIS ENGINEERING COMPANY, INC.

**Tested By:** LM **Checked By:** DP

# UNCONFINED COMPRESSION TEST




| Specimen No. | 1 | | | |
|---|---|---|---|---|
| Unconfined strength, psf | 578.6 | | | |
| Undrained shear strength, psf | 289.3 | | | |
| Failure strain, % | 16.4 | | | |
| Strain rate, in./min. | 0.055 | | | |
| Water content, % | 163.7 | | | |
| Wet density, pcf | 76.0 | | | |
| Dry density, pcf | 28.8 | | | |
| Saturation, % | 91.2 | | | |
| Void ratio | 4.8449 | | | |
| Specimen diameter, in. | 1.388 | | | |
| Specimen height, in. | 2.930 | | | |
| Height/diameter ratio | 2.11 | | | |

**Description:** SO DGR & GR CHOA W/ WD, RT

| LL = | PL = | PI = | **Assumed GS=** 2.7 | **Type:** UNDISTURBED |
|---|---|---|---|---|

**Project No.:** 19082
**Date:** 11/09/05

**Remarks:**
TORVANE = 0.2700 TSF

**Client:** URS Corporation

**Project:** U.S. Army Corps of Engineers
Inner Harbor Navigational Canal
**Source of Sample:** B-4WG **Depth:** 15.0
**Sample Number:** 7

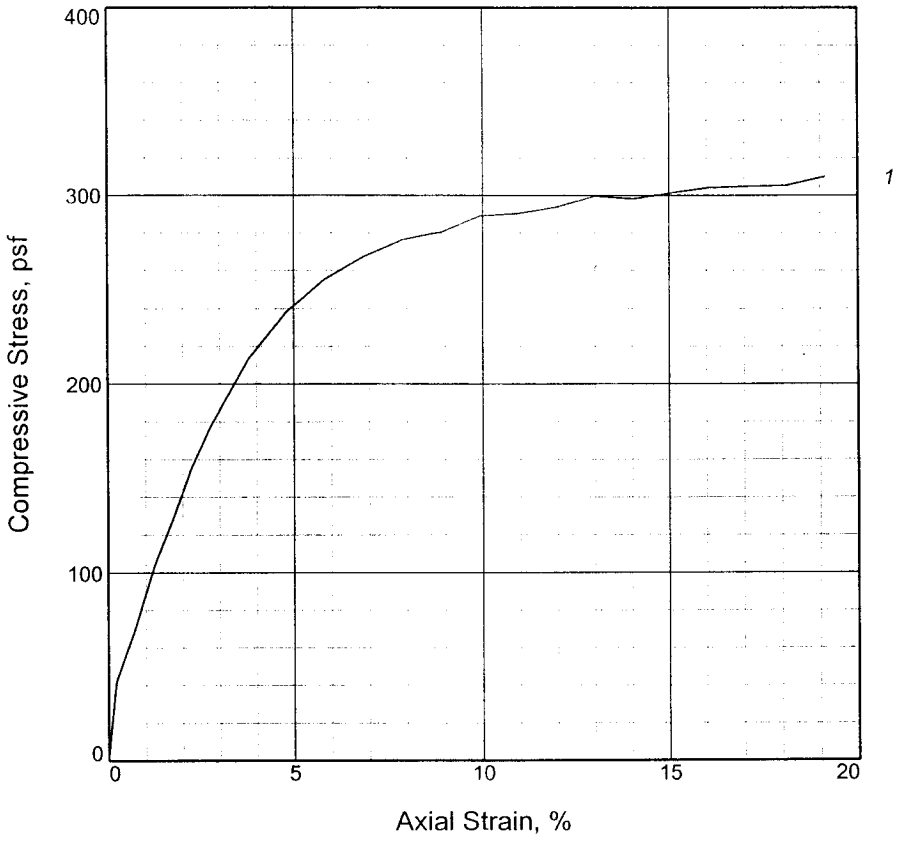
UNCONFINED COMPRESSION TEST

EUSTIS ENGINEERING COMPANY, INC.

**Figure** 1

**Tested By:** ZH **Checked By:** DP

# UNCONFINED COMPRESSION TEST




| Specimen No. | 1 | | | |
|---|---|---|---|---|
| Unconfined strength, psf | 299.4 | | | |
| Undrained shear strength, psf | 149.7 | | | |
| Failure strain, % | 13.0 | | | |
| Strain rate, in./min. | N/A | | | |
| Water content, % | 75.9 | | | |
| Wet density, pcf | 93.9 | | | |
| Dry density, pcf | 53.4 | | | |
| Saturation, % | 94.3 | | | |
| Void ratio | 2.2061 | | | |
| Specimen diameter, in. | 1.388 | | | |
| Specimen height, in. | 2.930 | | | |
| Height/diameter ratio | 2.11 | | | |

**Description:** VSO GR CH4 W/ TR-WD

| LL = | PL = | PI = | **Assumed GS=** 2.74 | **Type:** UNDISTURBED |
|---|---|---|---|---|

**Project No.:** 19082
**Date:** 11/09/05

**Remarks:**
TORVANE = 0.170 TSF

**Client:** URS Corporation

**Project:** U.S. Army Corps of Engineers
Inner Harbor Navigational Canal
**Source of Sample:** B-4WG **Depth:** 20.0
**Sample Number:** 9

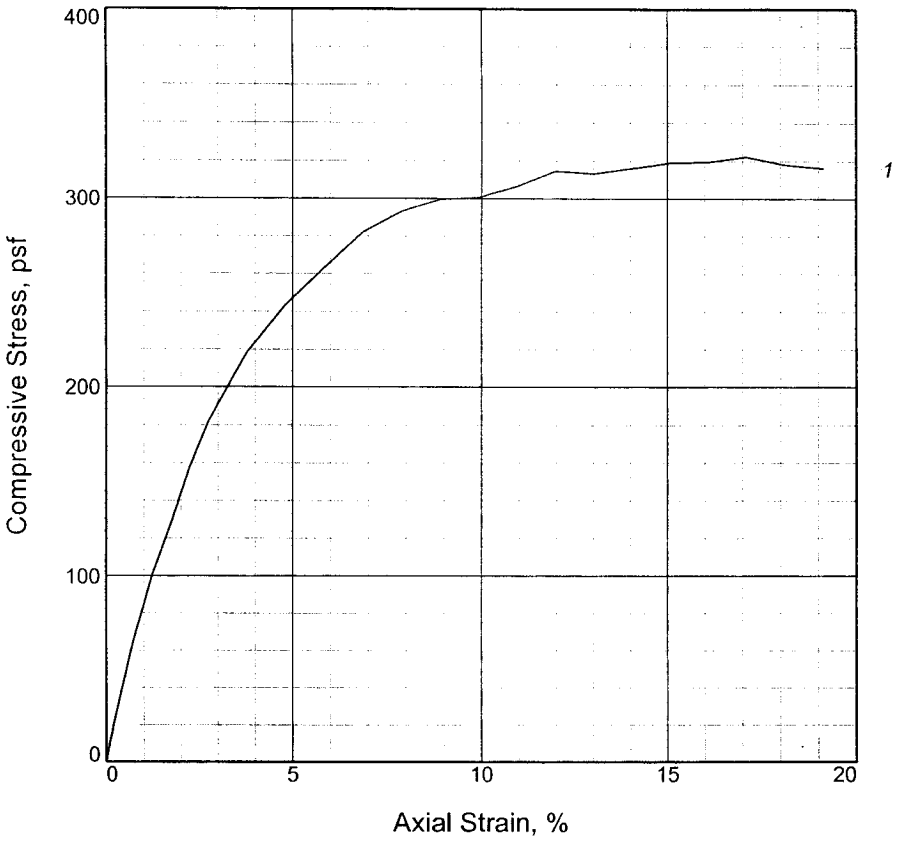
UNCONFINED COMPRESSION TEST

EUSTIS ENGINEERING COMPANY, INC.

**Figure** 1

**Tested By:** LM **Checked By:** DP

# UNCONFINED COMPRESSION TEST




| Specimen No. | 1 | | | |
|---|---|---|---|---|
| Unconfined strength, psf | 314.4 | | | |
| Undrained shear strength, psf | 157.2 | | | |
| Failure strain, % | 12.0 | | | |
| Strain rate, in./min. | 0.059 | | | |
| Water content, % | 58.7 | | | |
| Wet density, pcf | 99.5 | | | |
| Dry density, pcf | 62.7 | | | |
| Saturation, % | 93.1 | | | |
| Void ratio | 1.7269 | | | |
| Specimen diameter, in. | 1.388 | | | |
| Specimen height, in. | 2.930 | | | |
| Height/diameter ratio | 2.11 | | | |

**Description:** VSO CH4 W/ ARS ML

| LL = | PL = | PI = | **Assumed GS=** 2.74 | **Type:** UNDISTURBED |
|---|---|---|---|---|

**Project No.:** 19082
**Date:** 11/09/05

**Remarks:**
TORVANE = 0.200 TSF

**Client:** URS Corporation

**Project:** U.S. Army Corps of Engineers
Inner Harbor Navigational Canal
**Source of Sample:** B-4WG **Depth:** 25.0
**Sample Number:** 11

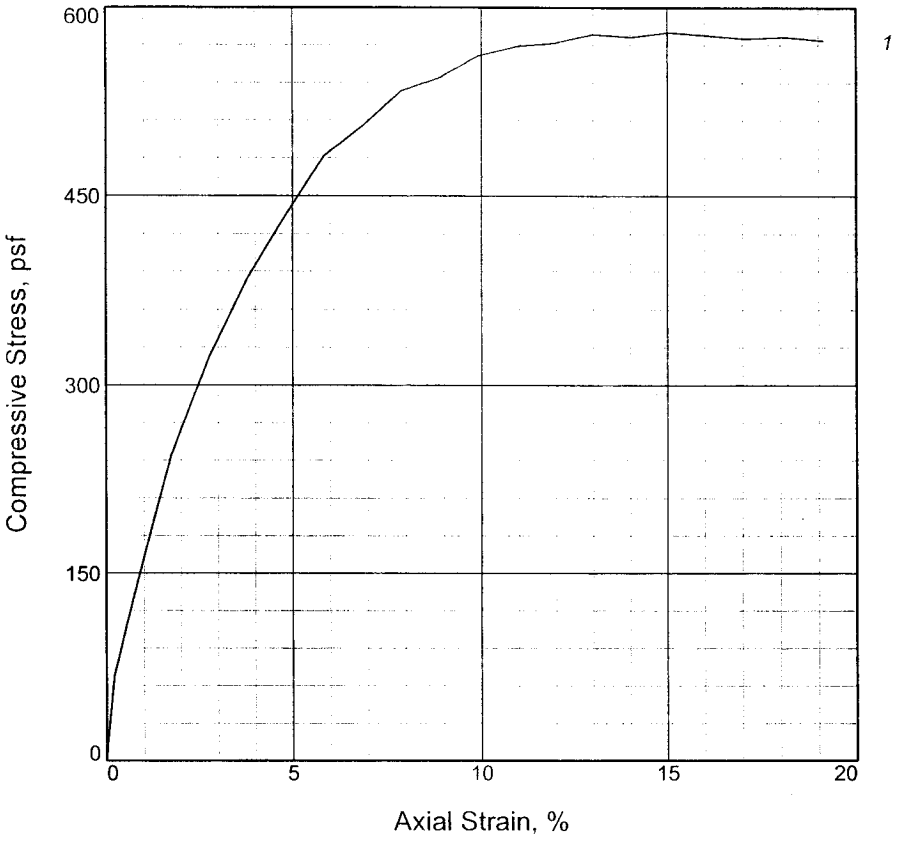
UNCONFINED COMPRESSION TEST

EUSTIS ENGINEERING COMPANY, INC.

**Figure** 1

**Tested By:** ZH **Checked By:** DP

# UNCONFINED COMPRESSION TEST




| Specimen No. | 1 | | | |
|---|---|---|---|---|
| Unconfined strength, psf | 578.5 | | | |
| Undrained shear strength, psf | 289.2 | | | |
| Failure strain, % | 13.0 | | | |
| Strain rate, in./min. | 0.059 | | | |
| Water content, % | 54.1 | | | |
| Wet density, pcf | 101.4 | | | |
| Dry density, pcf | 65.8 | | | |
| Saturation, % | 92.7 | | | |
| Void ratio | 1.5978 | | | |
| Specimen diameter, in. | 1.388 | | | |
| Specimen height, in. | 2.930 | | | |
| Height/diameter ratio | 2.11 | | | |

**Description:** SO GR CH4

| LL = | PL = | PI = | **Assumed GS=** 2.74 | **Type:** UNDISTURBED |
|---|---|---|---|---|

**Project No.:** 19082
**Date:** 11/09/05

**Remarks:**
TORVANE = 0.200 TSF

**Figure** 1

**Client:** URS Corporation

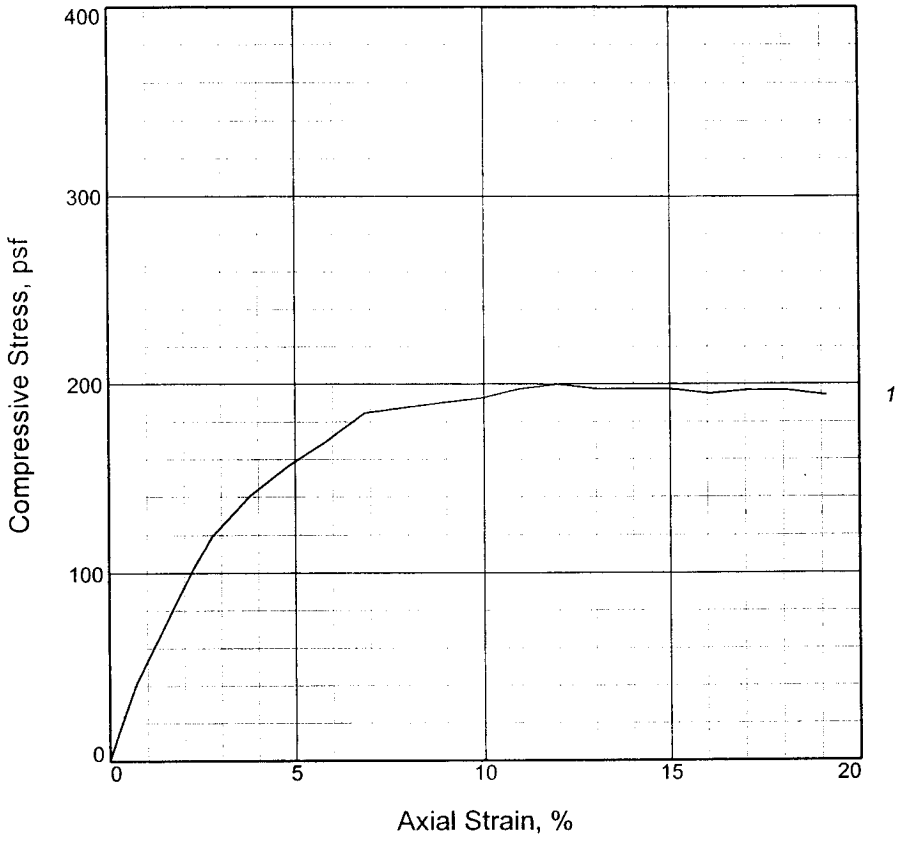
**Project:** U.S. Army Corps of Engineers
Inner Harbor Navigational Canal
**Source of Sample:** B-4WG **Depth:** 30.0
**Sample Number:** 13

UNCONFINED COMPRESSION TEST

EUSTIS ENGINEERING COMPANY, INC.

**Tested By:** LM **Checked By:** DP

# UNCONFINED COMPRESSION TEST




| Specimen No. | 1 | | | |
|---|---|---|---|---|
| Unconfined strength, psf | 199.7 | | | |
| Undrained shear strength, psf | 99.8 | | | |
| Failure strain, % | 12.0 | | | |
| Strain rate, in./min. | 0.059 | | | |
| Water content, % | 65.4 | | | |
| Wet density, pcf | 96.9 | | | |
| Dry density, pcf | 58.6 | | | |
| Saturation, % | 93.3 | | | |
| Void ratio | 1.9200 | | | |
| Specimen diameter, in. | 1.388 | | | |
| Specimen height, in. | 2.930 | | | |
| Height/diameter ratio | 2.11 | | | |

**Description:** VSO GR CH4 W/ SL

| LL = | PL = | PI = | **Assumed GS=** 2.74 | **Type:** UNDISTURBED |
|---|---|---|---|---|

**Project No.:** 19082
**Date:** 11/09/05

**Remarks:**
TORVANE = 0.100 TSF

**Figure** 1

**Client:** URS Corporation

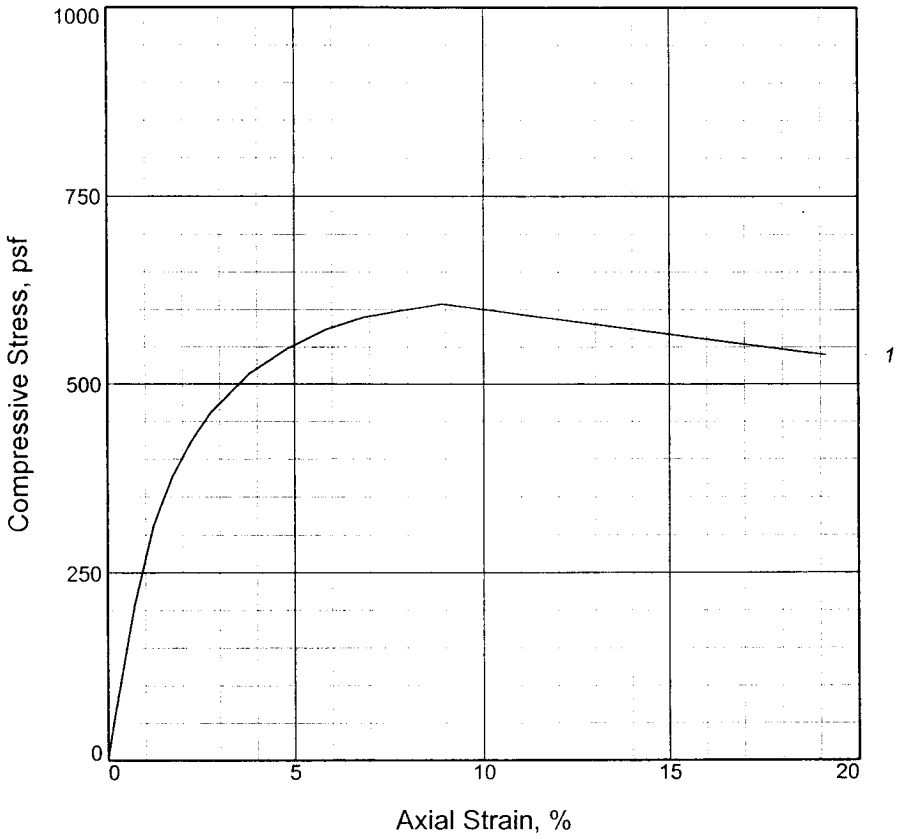
**Project:** U.S. Army Corps of Engineers
Inner Harbor Navigational Canal
**Source of Sample:** B-4WG **Depth:** 35.0
**Sample Number:** 15

UNCONFINED COMPRESSION TEST

EUSTIS ENGINEERING COMPANY, INC.

**Tested By:** ZH **Checked By:** DP

# UNCONFINED COMPRESSION TEST




| Specimen No. | 1 | | | |
|---|---|---|---|---|
| Unconfined strength, psf | 607.5 | | | |
| Undrained shear strength, psf | 303.8 | | | |
| Failure strain, % | 8.9 | | | |
| Strain rate, in./min. | 0.058 | | | |
| Water content, % | 69.5 | | | |
| Wet density, pcf | 96.8 | | | |
| Dry density, pcf | 57.1 | | | |
| Saturation, % | 95.4 | | | |
| Void ratio | 1.9950 | | | |
| Specimen diameter, in. | 1.388 | | | |
| Specimen height, in. | 2.930 | | | |
| Height/diameter ratio | 2.11 | | | |

**Description:** SO GR CH4 W/ SL

| LL = | PL = | PI = | **Assumed GS=** 2.74 | **Type:** UNDISTURBED |
|---|---|---|---|---|

**Project No.:** 19082
**Date:** 11/09/05

**Remarks:**
TORVANE = 0.250 TSF

**Client:** URS Corporation

**Project:** U.S. Army Corps of Engineers
Inner Harbor Navigational Canal
**Source of Sample:** B-4WG **Depth:** 40.0
**Sample Number:** 17

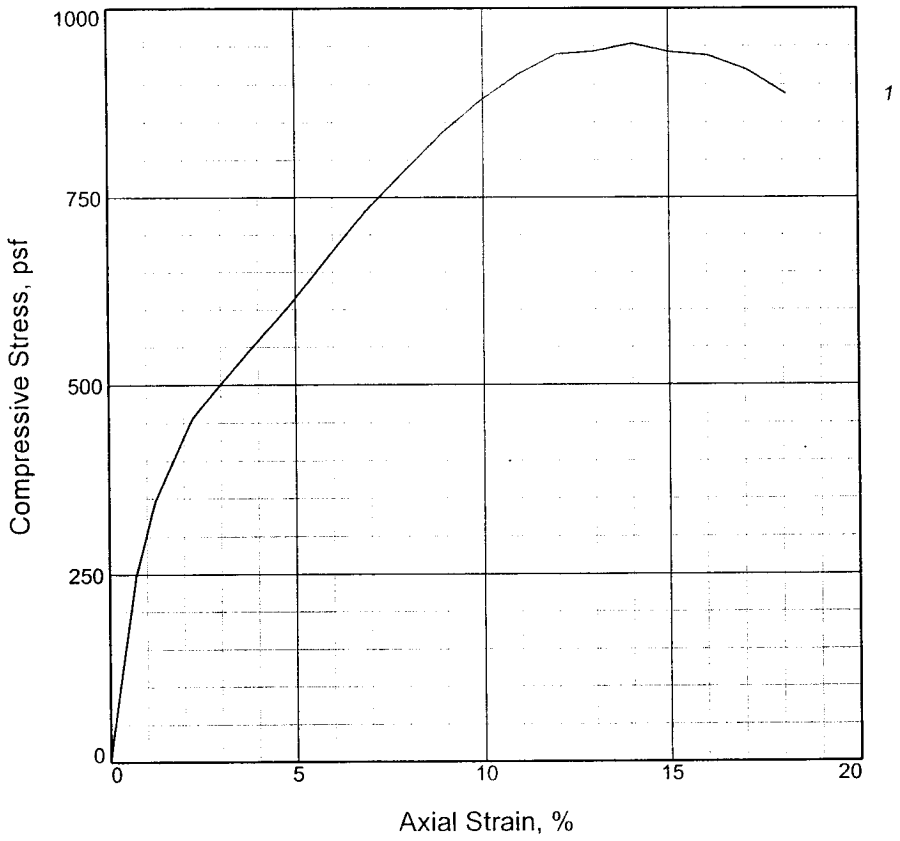
UNCONFINED COMPRESSION TEST

EUSTIS ENGINEERING COMPANY, INC.

**Figure** 1

**Tested By:** ZH **Checked By:** DP

# UNCONFINED COMPRESSION TEST




| Specimen No. | 1 | | | |
|---|---|---|---|---|
| Unconfined strength, psf | 953.3 | | | |
| Undrained shear strength, psf | 476.6 | | | |
| Failure strain, % | 14.0 | | | |
| Strain rate, in./min. | 0.058 | | | |
| Water content, % | 54.9 | | | |
| Wet density, pcf | 102.1 | | | |
| Dry density, pcf | 65.9 | | | |
| Saturation, % | 94.3 | | | |
| Void ratio | 1.5951 | | | |
| Specimen diameter, in. | 1.388 | | | |
| Specimen height, in. | 2.930 | | | |
| Height/diameter ratio | 2.11 | | | |

**Description:** SO GR CH4 W/ SL

| LL = | PL = | PI = | **Assumed GS=** 2.74 | **Type:** UNDISTURBED |
|---|---|---|---|---|

**Project No.:** 19082
**Date:** 11/09/05

**Remarks:**
TORVANE = 0.250 TSF

**Client:** URS Corporation

**Project:** U.S. Army Corps of Engineers
Inner Harbor Navigational Canal
**Source of Sample:** B-4WG **Depth:** 45.0
**Sample Number:** 19

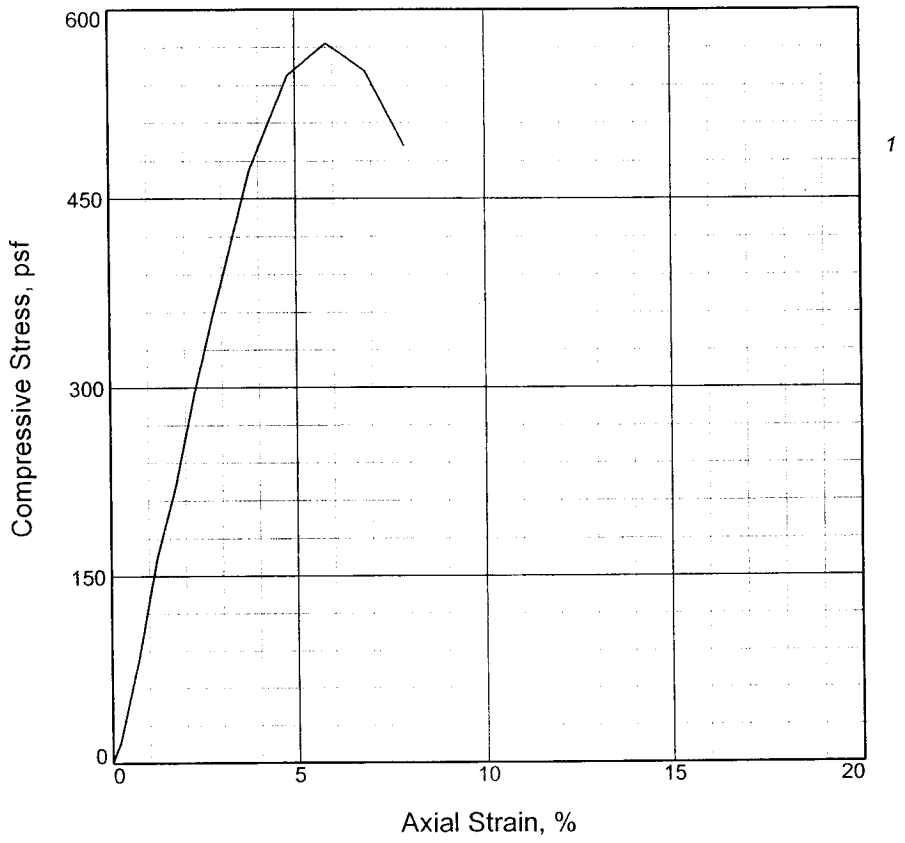
UNCONFINED COMPRESSION TEST

EUSTIS ENGINEERING COMPANY, INC.

**Figure** 1

**Tested By:** ZH **Checked By:** DP

# UNCONFINED COMPRESSION TEST




| Specimen No. | 1 | | | |
|---|---|---|---|---|
| Unconfined strength, psf | 573.1 | | | |
| Undrained shear strength, psf | 286.5 | | | |
| Failure strain, % | 5.8 | | | |
| Strain rate, in./min. | 0.058 | | | |
| Water content, % | 39.3 | | | |
| Wet density, pcf | 109.3 | | | |
| Dry density, pcf | 78.5 | | | |
| Saturation, % | 92.4 | | | |
| Void ratio | 1.1471 | | | |
| Specimen diameter, in. | 1.388 | | | |
| Specimen height, in. | 2.930 | | | |
| Height/diameter ratio | 2.11 | | | |

**Description:** SO GR CL5 W/ SIF

| LL = | PL = | PI = | **Assumed GS=** 2.7 | **Type:** UNDISTURBED |
|---|---|---|---|---|

**Project No.:** 19082
**Date:** 11/09/05
**Remarks:**
TORVANE = 0.250 TSF

**Figure** 1

**Client:** URS Corporation

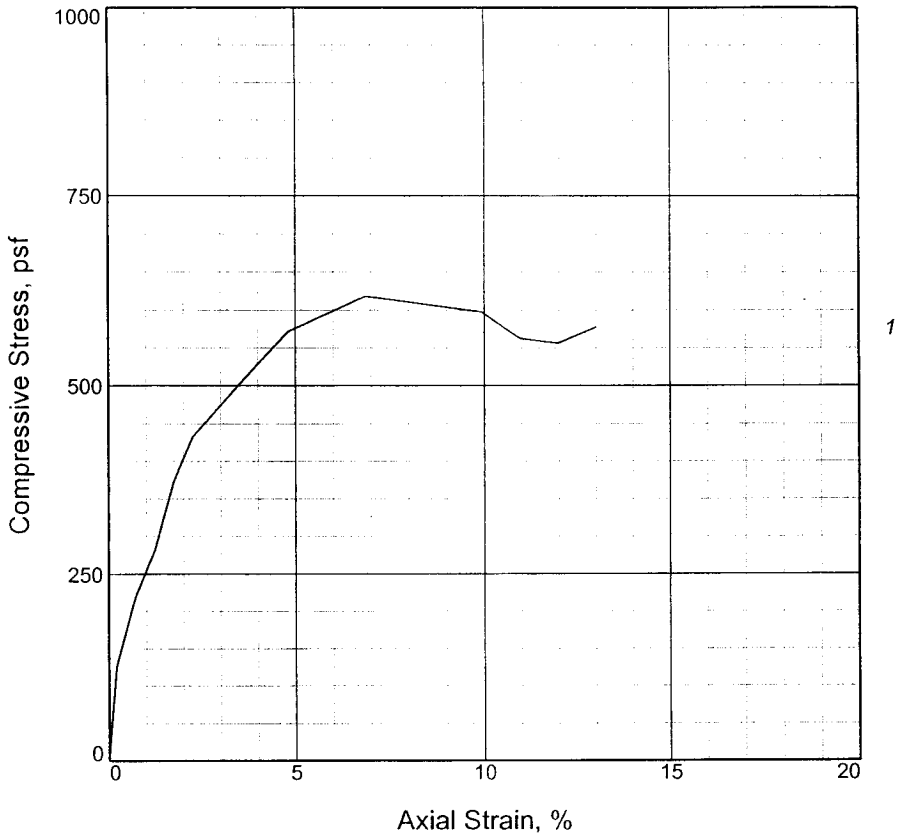
**Project:** U.S. Army Corps of Engineers
Inner Harbor Navigational Canal
**Source of Sample:** B-4WG **Depth:** 50.0
**Sample Number:** 21

UNCONFINED COMPRESSION TEST

EUSTIS ENGINEERING COMPANY, INC.

**Tested By:** ZH **Checked By:** DP

# UNCONFINED COMPRESSION TEST




| Specimen No. | 1 | | | |
|---|---|---|---|---|
| Unconfined strength, psf | 617.8 | | | |
| Undrained shear strength, psf | 308.9 | | | |
| Failure strain, % | 6.9 | | | |
| Strain rate, in./min. | 0.058 | | | |
| Water content, % | 34.0 | | | |
| Wet density, pcf | 113.8 | | | |
| Dry density, pcf | 85.0 | | | |
| Saturation, % | 93.3 | | | |
| Void ratio | 0.9836 | | | |
| Specimen diameter, in. | 1.388 | | | |
| Specimen height, in. | 2.930 | | | |
| Height/diameter ratio | 2.11 | | | |

**Description:** SO GR CH2

| LL = | PL = | PI = | **Assumed GS=** 2.7 | **Type:** UNDISTURBED |
|---|---|---|---|---|

**Project No.:** 19082
**Date:** 11/09/05
**Remarks:**
TORVANE = 0.280 TSF

**Client:** URS Corporation

**Project:** U.S. Army Corps of Engineers
Inner Harbor Navigational Canal
**Source of Sample:** B-4WG **Depth:** 55.0
**Sample Number:** 23

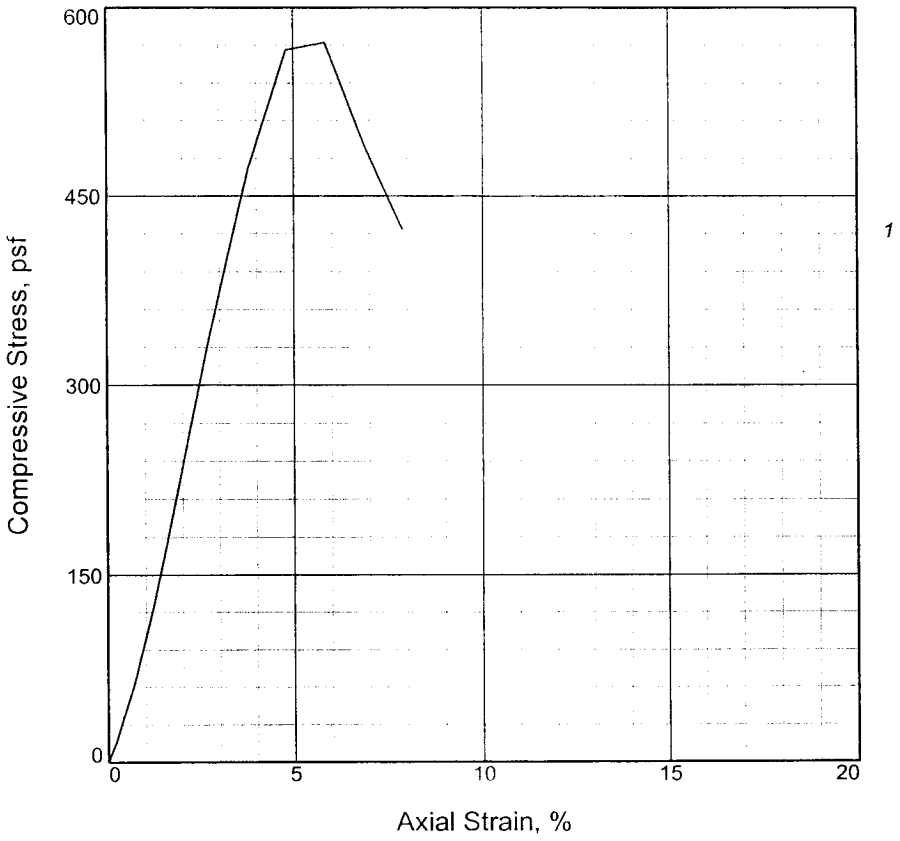
UNCONFINED COMPRESSION TEST

EUSTIS ENGINEERING COMPANY, INC.

**Figure** 1

**Tested By:** ZH **Checked By:** DP

# UNCONFINED COMPRESSION TEST




| Specimen No. | 1 | | | |
|---|---|---|---|---|
| Unconfined strength, psf | 572.1 | | | |
| Undrained shear strength, psf | 286.1 | | | |
| Failure strain, % | 5.8 | | | |
| Strain rate, in./min. | 0.059 | | | |
| Water content, % | 30.7 | | | |
| Wet density, pcf | 111.9 | | | |
| Dry density, pcf | 85.6 | | | |
| Saturation, % | 85.7 | | | |
| Void ratio | 0.9686 | | | |
| Specimen diameter, in. | 1.388 | | | |
| Specimen height, in. | 2.930 | | | |
| Height/diameter ratio | 2.11 | | | |

**Description:** SO GR CL3 W/ WD

| LL = | PL = | PI = | **Assumed GS=** 2.7 | **Type:** UNDISTURBED |
|---|---|---|---|---|

**Project No.:** 19082
**Date:** 11/09/05
**Remarks:**
TORVANE = 0.200 TSF

**Client:** URS Corporation

**Project:** U.S. Army Corps of Engineers
Inner Harbor Navigational Canal
**Source of Sample:** B-4WG **Depth:** 60.0
**Sample Number:** 25

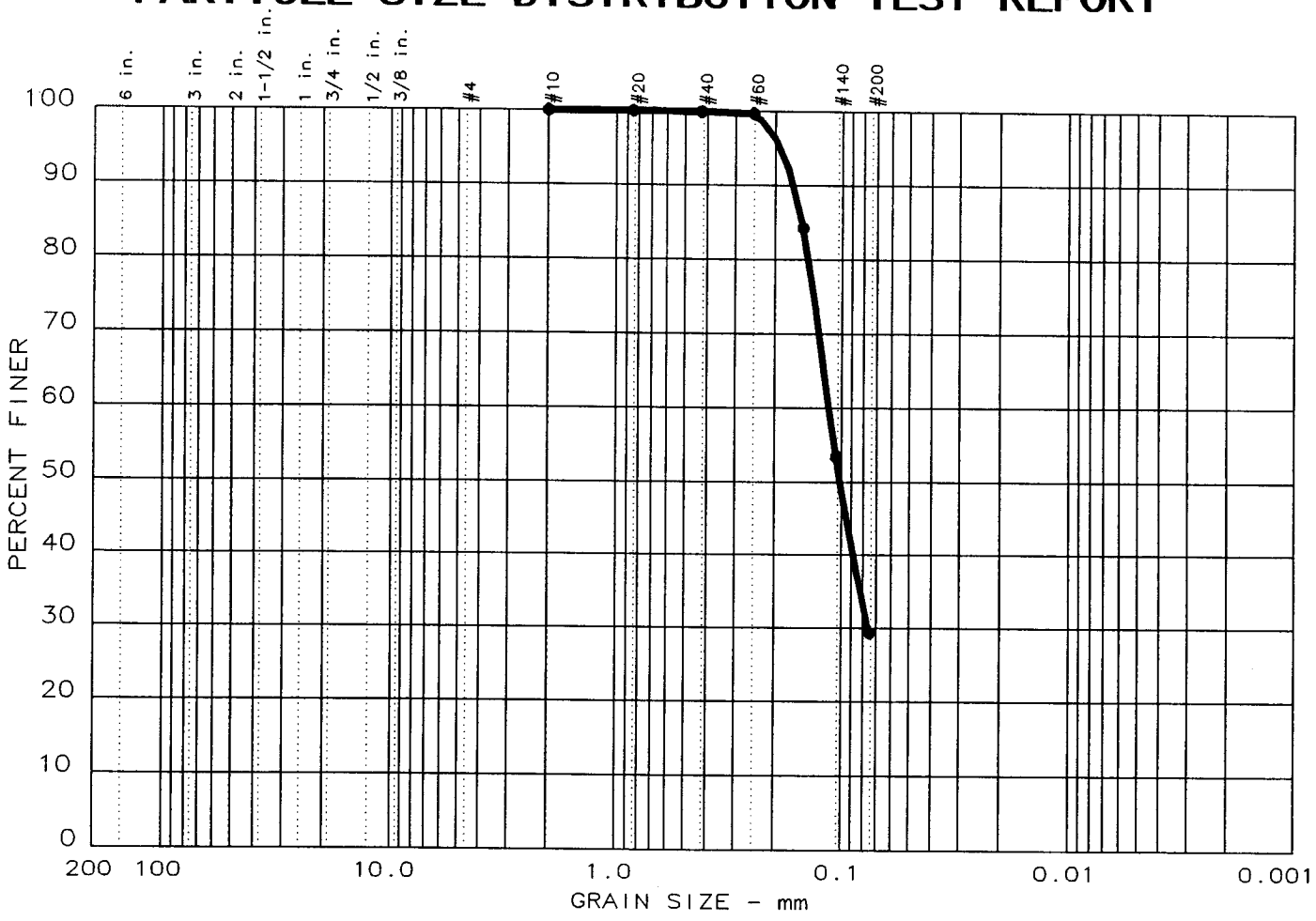
UNCONFINED COMPRESSION TEST

EUSTIS ENGINEERING COMPANY, INC.

Figure 1

**Tested By:** ZH **Checked By:** DP

# PARTICLE SIZE DISTRIBUTION TEST REPORT




| | % +3" | % GRAVEL | % SAND | % SILT | % CLAY | USCS | LL | PI |
|---|---|---|---|---|---|---|---|---|
| ● | 0.0 | 0.0 | 70.7 | 29.3 | | SM1 | | |
| | | | | | | | | |
| | | | | | | | | |

| SIEVE inches size | PERCENT FINER ● | | |
|---|---|---|---|
| | | | |
| | GRAIN SIZE | | |
| $D_{60}$<br>$D_{30}$<br>$D_{10}$ | 0.11<br>0.08 | | |
| | COEFFICIENTS | | |
| $C_c$<br>$C_u$ | | | |

| SIEVE number size | PERCENT FINER ● |
|---|---|
| 10 | 100.0 |
| 20 | 100.0 |
| 40 | 99.9 |
| 60 | 99.7 |
| 100 | 84.3 |
| 140 | 53.4 |
| 200 | 29.3 |

Sample information:
● Boring 4WG, Sample 27
Gr SM1

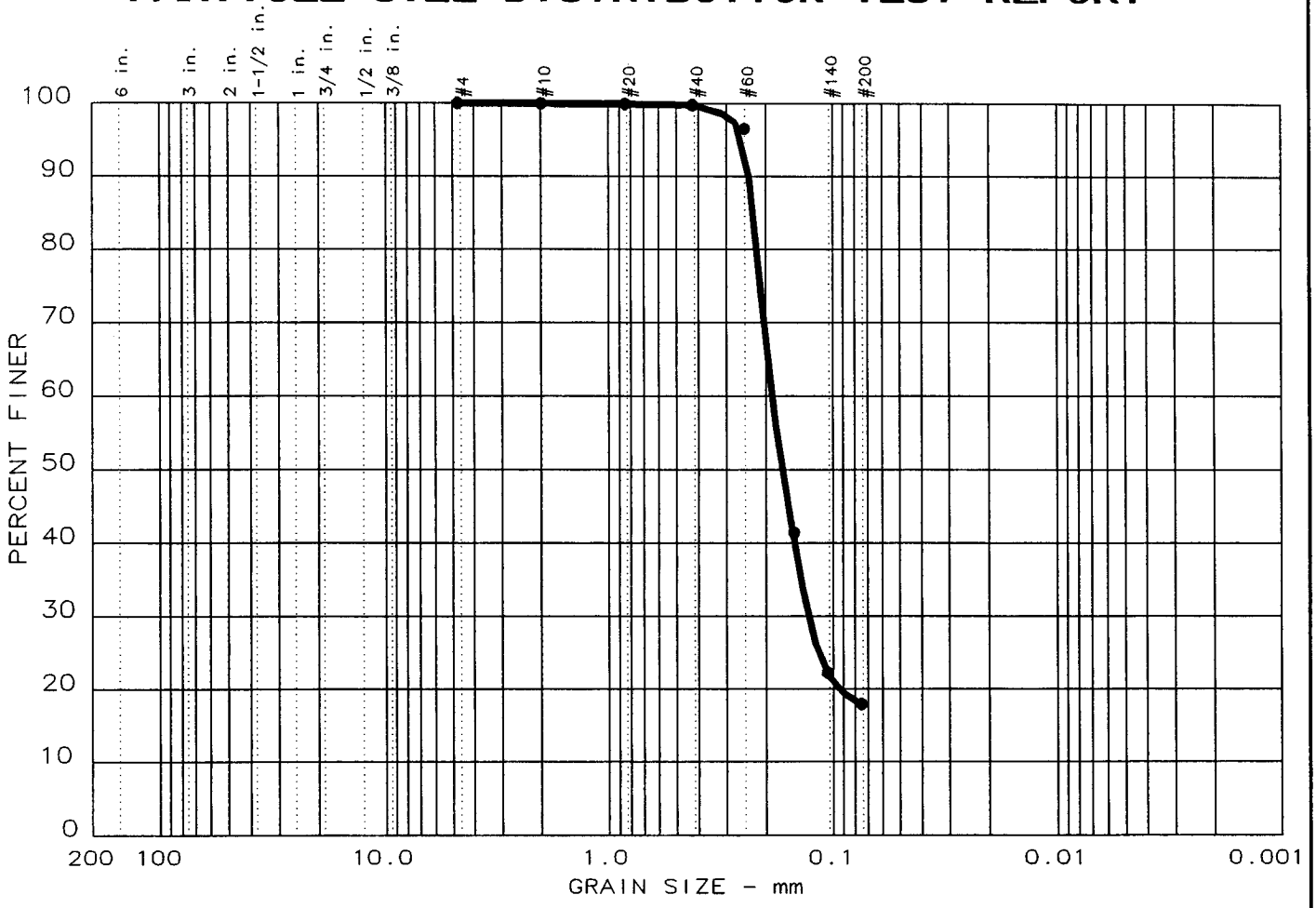
Remarks:
Sample depth 66.0'

**Eustis Engineering Company, Inc.**

Project No.: 19082
Project: USACE

Date: 11-17-05 Data Sheet No. ——

# PARTICLE SIZE DISTRIBUTION TEST REPORT




| | % +3" | % GRAVEL | % SAND | % SILT | % CLAY | USCS | LL | PI |
|---|---|---|---|---|---|---|---|---|
| ● | 0.0 | 0.0 | 82.1 | 17.9 | | SM1-s | | |
| | | | | | | | | |
| | | | | | | | | |

| SIEVE inches size | PERCENT FINER ● | | |
|---|---|---|---|
| | | | |
| | GRAIN SIZE | | |
| $D_{60}$<br>$D_{30}$<br>$D_{10}$ | 0.19<br>0.13 | | |
| | COEFFICIENTS | | |
| $C_c$<br>$C_u$ | | | |

| SIEVE number size | PERCENT FINER ● |
|---|---|
| 4 | 100.0 |
| 10 | 99.9 |
| 20 | 99.9 |
| 40 | 99.8 |
| 60 | 96.5 |
| 100 | 41.4 |
| 140 | 22.2 |
| 200 | 17.9 |

Sample information:
● Boring 4WG, Sample 32
Gr SM1-s

Remarks:
Sample depth 78.5'

**Eustis Engineering Company, Inc.**

Project No.: 19082
Project: USACE

Date: 11-17-05 Data Sheet No. ——