copy 1 of 2

# Dare County Construction and Demolition Landfill

*4 Construction and Demolition Debris Landfill*

# Construction Quality Assurance Report

February 2011

APPROVED
DIVISION OF WASTE MANAGEMENT
SOLID WASTE SECTION
DATE Apr 13 2011 BY
DOC ID 13481

CDM

CDM

5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
tel: 919-325-3500
fax: 919-781-5730

| Permit No. | Date | Document ID No. |
|---|---|---|
| **28-03** | **April 01, 2011** | **13454** |

RECEIVED
**April 1, 2011 via a mail**
Solid Waste Section
Raleigh Central Office

March 31, 2011

Mr. Ming-Tai Chao, P.E.
Environmental Engineer II
North Carolina Department of Environmental and Natural Resources
Division of Waste Management
Permitting Branch, Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699-1646

Subject: Dare County
Dare County Construction and Demolition Landfill (C&DLF)
Construction Quality Assurance Report
Response to Comments

Dear Mr. Chao:

On behalf of Dare County, CDM is pleased to submit revisions to the Dare County Construction and Demolition Landfill Construction Quality Assurance Report per your review comments received on February 28, 2011. For your convenience, CDM has formatted this letter correspondence to present your comment followed immediately by our response in *italics*.

1. Please provide the final letter dated June 28, 2010 with the signature and seal of the NC licensed surveyor.

   *The signed and sealed letter of final quantities is included in* ***Attachment No. 1.***

2. (Appendix A-5) The Section 6.1A of the approved CQA Plan specified that the compacted fill material shall have the minimum internal friction angle of 35 degree according to testing method ASTM D4767; however, the test result of the sample - Proctor No. 3 has the internal friction angle of 31 degree. Please explain why the sample result is acceptable and provide any remedial approaches.

   *Failure envelope has two components: cohesion and friction. Based on the test results, this sample (Proctor #3) will have an internal friction angle of 31.6 degrees and cohesion of 1,348 psf. The failure envelope for this sample intersects with a failure envelope, which has only an internal friction angle of 35 degrees component, at a vertical stress of around 16 ksf. For any load less than this pressure, the test result (internal friction plus cohesion) will be more conservative. The maximum anticipated load (in the middle of the cell) above this fill layer will be less than 3 ksf.*

3. (Appendices A-5 & A-8; Compaction Test Report dated June 11, 2010; Location Cell 4 Pad, Sub Lots – 5, 6, 7, 8, 9, 10) The dry density for Test Sample 1 shall be 101.7 pcf, not the reported 105.3 pcf, if the wet density is 119.8 pcf and moisture content is 17.8%. Then, the calculated "% Proctor" is approximately 93.7% of the maximum dry density, which is less than the specified criterion – 95% of the maximum dry density in the approved CQA plan. Please explain why the sample result is acceptable and provide any remedial approaches.

   *The compaction test report dated June 11, 2010 contained a typographical error in the percent moisture for test number 1. The revised sheet is included in* ***Attachment No. 2****.*

4. (Appendix A-6, Geotechnics Lab Data Sheet for Moisture-Density Relationship dated June 15, 2010. Boring No. ACRE 1; Lift 5; Lab ID 2010-652-09-03) The Sample Identification Number - Upper CF-01 is likely a typographic error of Upper CF-11. Please clarify.

   *The QCL conformance test results for moisture density relationship with lab ID: 652-09-03, sample ID: Upper CF-01 and dated June 15, 2010 contain a typographical error with the sample ID and should read Upper CF-11. The revised moisture density sheets associated with this sample number are included in* ***Attachment No. 3****.*

5. (Appendix A-7) In the Summary Table (CFFDR-01, Page 1 of 10, dated April 23, 2010), the values of in-placed moisture content (12.4%) & density (119.9 pcf) of the sample SC-02 are inconsistent with those stated in the Raw Data Sheet (14.2% & 121.9 pcf). Please clarify.

   *The measured in place wet density, percent moisture and dry density of CQC field data summary table for CFFDR-01 contained typographical errors for test numbers SC-02 and SC-03. The revised sheets are included in* ***Attachment No. 4****.*

6. (Appendix A-7) The descriptions of the following sample locations - ND-51, ND-52, ND-55, ND-56, ND-63, & ND-64 stated in the Summary Table (CFFDR-02, Page 1 of 8, dated May 4, 2010) are inconsistent with the attached sample location drawings. Please clarify.

*The CQC field data summary table for CFFDR-02 contained typographical errors in the test location for test numbers ND-51, ND-55, ND-56, ND-59, ND-60, ND-63 and ND-64. The revised sheets are included in* ***Attachment No. 5****.*

7. (Appendix A-7) In the Summary Tables (CFFDR-04, Page 2 of 15, dated June 7, 2010 & CFFDR-05, Page 1 of 8, dated June 9, 2010) the Proctor ID (652-07-02) and related moisture & density data are not provided in the CQA report. Please provide the data.

   *The CQC field data summary table for CFFDR-04 contained typographical errors in the proctor ID for test numbers ND-193 to ND-208. The proctor ID was revised to read 652-07-05. Additionally the proctor ID in the legend for the Upper Common Fill Moisture\Density 1 point plot was revised. The revised sheets are included in* ***Attachment No. 6****.*

   *The CQC field data summary table for CFFDR-05 contained typographical errors in the proctor ID for test numbers ND-237 to ND-280. The proctor ID was revised to read 652-07-05. Additionally the proctor ID in the legend for the Upper Common Fill Moisture\Density 1 point plot was revised. The revised sheets are included in* ***Attachment No. 7****.*

8. (Appendix A-7) In the Summary Table (CFFDR-08, Page 1 of 5, dated June 29, 2010) the sample ND-387 has referenced the maximum dry density of 112.9 pcf (the Proctor ID 652-09-03) for the compaction effort. However, the measured maximum dry density for the sample - Proctor ID 652-09-03 is 109.4 pcf. Please make necessary correction.

   *The CQC field data summary table for CFFDR-08 contained typographical errors in maximum dry density and optimum percent moisture for test number ND-387. The revised sheet is included in* ***Attachment No. 8****.*

Additionally, in the February 14 2011 cover letter that came along with the CQA Report indicated that there were two pre-operational conditions of the Permit to Construct for Cell No. 4 had not been completed by the County at this time, which included:

1. Modification of the Operations Plan by adding the provisions and day-to-day management practices of recyclable material including, but not limited to, white goods/scrap metals, used/scrap tires as described in the December 31 2009 response letter (Doc ID 9246), prepared by CDM on

behalf of Dare County to DWM's Comment Nos. 7, 8, and 9. Dare County must submit the Solid Waste Section the revised Operations Plan for review and approval.

*Section 7 of the Operations Plan was modified to include information regarding management of white goods and scrap tires. A revised Section 7 is included in* ***Attachment No. 9****. Additionally, Sheet SD-1 in the Facility Plan was modified to include the location of the white goods gravel pad. The revised Sheet SD-1 is included in* ***Attachment No. 10****.*

2. Modification of the Operations Plan by removing the scrap tire from the waste stream for disposal at Cell 4 and future cells.

   *Reference to scrap tires was removed from Section 2 of the Operations Plan. The revised section is included in* ***Attachment No. 11****.*

3. Please provide the modified Operations Plan including the above-mentioned information as an addendum or supplemental to the Application of Permit to Construction for Cell No. 4.

   *Refer to Attachments Nos. 9, 10 and 11 for modifications to the Operations and Facility Plans.*

Furthermore, please identify if B-103 is a soil boring or a piezometer that is located in the footprints of the Cell No.4 (Refer Sheet No. 1 "Site Map" in the approved Hydrogeologic Report and Water Quality Monitoring Plan for Cell No. 4 [Doc ID 6910]). If B-103 is a piezometer, please provide the related well abandonment record which was not provided in the "Dare County Construction and Demolition Mr. Edward Mann February 28, 2010 Doc ID 13041 Page 3 of 3 Debris Landfill Phase No. 4 Expansion Well Abandonment Record" dated April 14, 2010 and prepared by Froehling & Robertson, Inc.

*Boring B-103 is a soil boring as shown on the Site Map in the Hydrogeologic Report and Water Quality Monitoring Plan for Cell No. 4.*

If you have any questions or need additional information, please do not hesitate to call me at (919) 787-5620.

Very truly yours,

NORTH CAROLINA PROFESSIONAL SEAL 028426 ENGINEER W. MICHAEL BRINCHEK

03.31.2011

W. Michael Brinchek, P.E., BCEE
Senior Project Manager
Camp Dresser & McKee

cc: Ed Mussler, NCDENR DWM
Edward Mann, Dare County

*Attachment No. 1*

Surveying Solutions, PC
License C-1948
5401 Hillsborough St
P.O. Box 33324
Raleigh, NC 27636
Phone: 919-854-4833
Fax: 919-854-4834

June 28, 2010

Glover Construction Company, Inc.
Attn: Ed Marks
P.O. Box 40
Highway 301 N.
Pleasant Hill, NC 27866

Re: Quantities, Dare County – Construction and Demolition Debris Landfill, Cell 4

Mr. Marks,

Per your request, listed below are the computed fill quantities for the above listed site for the month of June and final quantity summaries for the project:

**Cell 4 area**

| | |
|---|---|
| Total amount of fill to date | 107,429 Cubic yards |
| Amount of fill for April (letter dated May 10, 2010) | 53,809 Cubic yards |
| Amount of fill for May (letter dated June 10, 2010) | 37,751 Cubic yards |
| Amount of fill for June | 15,869 Cubic yards |

**Breakdown of June fill, Cell 4 area:**

| | |
|---|---|
| Amount of fill to subgrade (up to 2' below final grade and including road) | 5,638 Cubic yards |
| Amount of fill for final grade (2' minimum final lift) | 10,231 Cubic yards |

**Cell 4 area final quantity summary:**

| | |
|---|---|
| Total amount of fill to subgrade | 67,093 Cubic yards |
| Total amount of fill for final grade (2' minimum final lift) | 34,698 Cubic yards |

**Note**: Quantity calculations for Cell 4 are computed using topographic information provided by the contractor for the following:
Topographic information of the cell area after stripping

**Borrow area fill:**
Total amount of fill 43,035 Cubic yards

**Note:** Quantity calculations for the borrow area fill are computed using topographic information provided by the contractor for the following:
Topographic information of the additional borrow area after excavation
Topographic information of the additional borrow area after filling

All information shown was computed from field information obtained under my direct supervision except as noted. The date of the final survey for the site was June 15, 2010. All quantity information provided is true and correct to the best of my knowledge and belief.

NORTH CAROLINA PROFESSIONAL SEAL L-3911 LAND SURVEYOR DWAYNE R. KROEZE

Dwayne R. Kroeze

Dwayne R, Kroeze, P.L.S. L-3911

*Attachment No. 2*

GET Solutions, Inc.
Geotechnical • Environmental • Testing

**G E T Solutions, Inc.**
106 Capital Trace; Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

Project: Dare County Landfill - Phase (Cell) 4
Project Location: Dare County North Carolina
Client: CDM
General Contractor: Glover
Grading Contractor: Glover

Date: 6/11/10
Technician: J. Meads
Job Number: EC10-166T
Weather: Clear Temp. (°F) 75
General Test Location: Cell 4 Pad; Sub-Lots 5, 6, 7, 8, 9, 10

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 1 | 13.8 | 105.3 | 119.8 | 5 | 95% | 97% | x | | FG | Lot 5; 35.50.027' N 74.49.115' W |
| 2 | 11.0 | 111.8 | 124.1 | 5 | 95% | 100+% | x | | FG | Lot 4; 35.50.027' N 75.49.137' W |
| 3 | 15.9 | 104.9 | 121.5 | 5 | 95% | 97% | x | | FG | Lot 7 35.50.070' N 75.49.117' W |
| 4 | 14.3 | 107.6 | 123.0 | 5 | 95% | 99% | x | | FG | Lot 6 35.50.068' N 75.49.140' W |
| 5 | 16.1 | 105.1 | 122.0 | 5 | 95% | 97% | x | | FG | Lot 9 35.50.121' N 75.49.122' W |
| 6 | 13.1 | 108.7 | 122.9 | 5 | 95% | 100% | x | | FG | Lot 10 35.50.119' N 75.49.147' W |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

Compaction Equipment Used: Roller
Test Location Established By: GET Solutions Inc.
Test Elevation Established By: GET Solutions Inc.
Description of Material Tested: Onsite excavated soils
Proctor Type: ASTM D698
Gauge Standardization counts: Moisture: 602 Density: 2768

| Gauge make/model/serial #: | Troxler | 3430 | 31918 |
|---|---|---|---|
| | MAKE | MODEL | SERIAL # |

Proctor Number: 5
Max. Dry Density (pcf): 108.5
Optimum Moisture (%): 16.0%
Field Testing Procedure: ASTM D 6938
Field Testing Method:
- ■ A) Direct transmission & test depth
- □ B) Backscatter

Remarks:

*Attachment No. 3*

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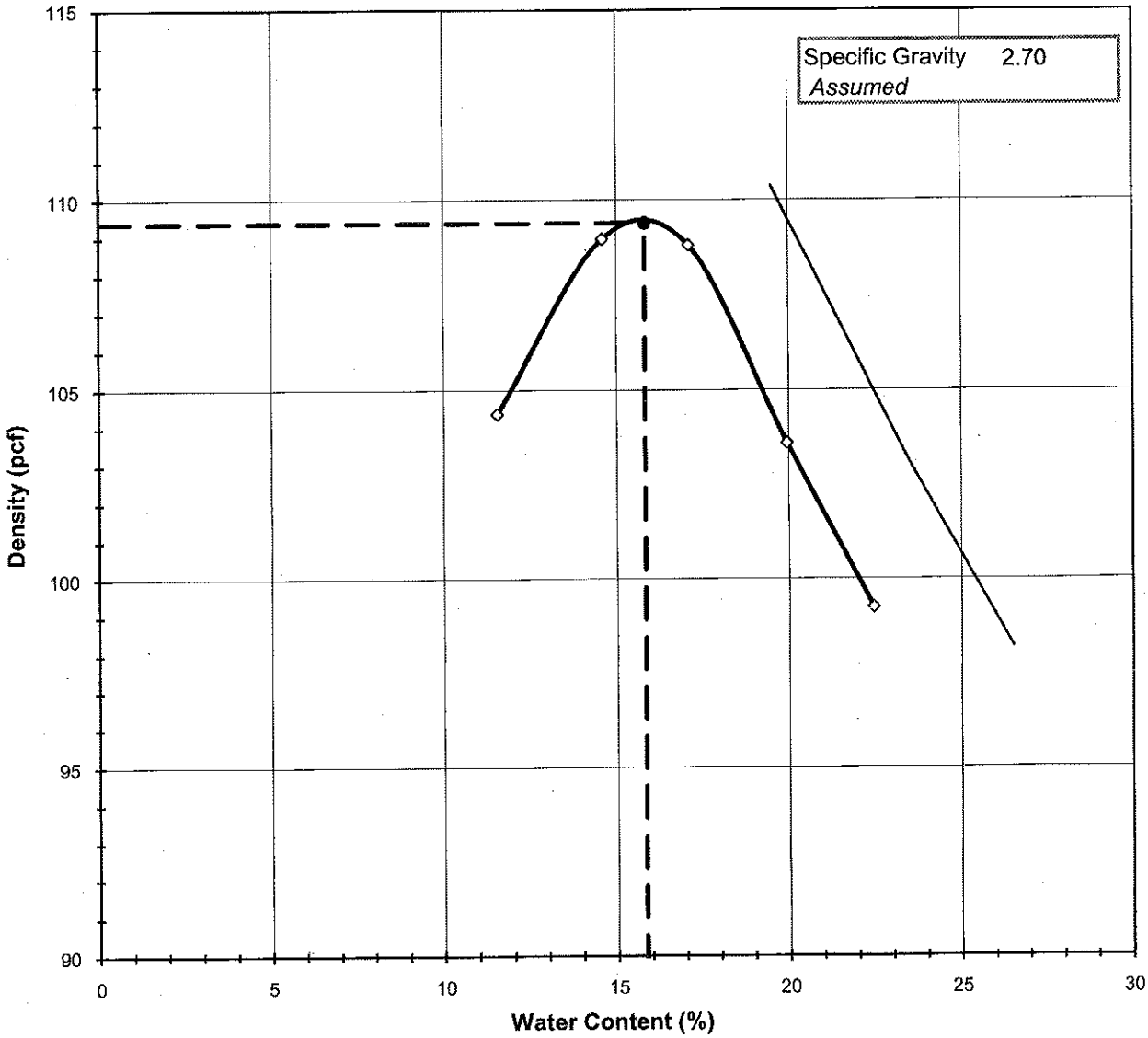
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 1 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-11 |
| Lab ID | 2010-652-09-03 | Test Method | **STANDARD** |

Visual Description GRAY CLAYEY SAND

**Optimum Water Content** **15.8**
**Maximum Dry Density** **109.4**




*Tested By* SD *Date* 6/15/2010 *Checked By* JRB *Date* 3.2.11

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-09-03 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 1 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-11 |
| Lab ID | 2010-652-09-03 | | |

Visual Description GRAY CLAYEY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 22210 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4308 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6064 | 6191 | 6230 | 6182 | 6141 |
| Wt.of Mold (gm) | 4308 | 4308 | 4308 | 4308 | 4308 |
| Wt. of WS | 1756 | 1883 | 1922 | 1874 | 1833 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 304 | 311 | 306 | 307 | 315 |
| Wt. of Tare & WS (gm) | 477.00 | 436.60 | 619.00 | 575.80 | 563.10 |
| Wt. of Tare & DS (gm) | 439.07 | 391.70 | 541.49 | 498.47 | 480.20 |
| Wt. of Tare (gm) | 110.30 | 83.90 | 88.50 | 110.90 | 110.90 |
| Wt. of Water (gm) | 37.93 | 44.90 | 77.51 | 77.33 | 82.90 |
| Wt. of DS (gm) | 328.77 | 307.80 | 452.99 | 387.57 | 369.30 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.87 | 2.00 | 2.04 | 1.99 | 1.95 |
| Wet Density (pcf) | 116.4 | 124.9 | 127.4 | 124.3 | 121.5 |
| **Moisture Content (%)** | **11.5** | **14.6** | **17.1** | **20.0** | **22.4** |
| **Dry Density (pcf)** | **104.4** | **109.0** | **108.8** | **103.6** | **99.3** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 19.5 | 23.5 | 26.5 |
| **Dry Unit Weight (pcf)** | 110.4 | 103.1 | 98.2 |

*Tested By* SD *Date* 6/15/2010 *Checked By* JRB *Date* 3.2.11



DCN:CT-S12 DATE:12/11/00 REVISION 5 \\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-09-03 Proctor.XLS]Sheet1

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*Attachment No. 4*

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase No. 4
**Project Number :** 2010-652

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# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-01** | Geotechnics Representative : Jacob R. Buda | Page : 1 of 10 |
| Date (s) : **4.5. - 4.16.10** | Reviewed By : [illegible] | Date : 3-2-11 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Stockpile |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 01 | ACRE 1 | BRIDGE LIFT | 8" | 652-01-03 | 101.7 | 16.2 | **111.0** | **10.9** | **100.1** | **98.4%** | **95.0%** | |
| SC - 01 | ACRE 1 | BRIDGE LIFT | NA | 652-01-03 | 101.7 | 16.2 | **109.1** | **11.2** | **98.1** | **96.5%** | **95.0%** | |
| ND - 02 | ACRE 1 | BRIDGE LIFT | 8" | 652-01-03 | 101.7 | 16.2 | **112.5** | **11.2** | **101.2** | **99.5%** | **95.0%** | |
| ND - 03 | ACRE 1 | BRIDGE LIFT | 8" | 652-01-03 | 101.7 | 16.2 | **111.4** | **9.9** | **101.4** | **99.7%** | **95.0%** | |
| ND - 04 | ACRE 1 | BRIDGE LIFT | 8" | 652-01-03 | 101.7 | 16.2 | **113.3** | **14.9** | **98.6** | **97.0%** | **95.0%** | |
| ND - 05 | ACRE 2 | BRIDGE LIFT | 8" | 652-01-03 | 101.7 | 16.2 | **113.9** | **11.1** | **102.5** | **100.8%** | **95.0%** | |
| ND - 06 | ACRE 2 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **122.7** | **14.2** | **107.4** | **97.6%** | **95.0%** | |
| SC - 02 | ACRE 2 | BRIDGE LIFT | NA | 1pt.-02 | 110.1 | 14.2 | **121.9** | **14.2** | **106.7** | **97.0%** | **95.0%** | |
| ND - 07 | ACRE 2 | BRIDGE LIFT | 8" | 652-01-03 | 101.7 | 16.2 | **112.7** | **11.6** | **101.0** | **99.3%** | **95.0%** | |
| ND - 08 | ACRE 2 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **118.5** | **12.7** | **105.1** | **97.5%** | **95.0%** | |
| ND - 09 | ACRE 3 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **117.7** | **12.7** | **104.4** | **96.9%** | **95.0%** | |
| ND - 10 | ACRE 3 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **122.3** | **11.3** | **109.9** | **99.8%** | **95.0%** | |
| ND - 11 | ACRE 3 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **118.1** | **11.9** | **105.5** | **97.9%** | **95.0%** | |
| ND - 12 | ACRE 3 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **124.5** | **10.2** | **113.0** | **102.6%** | **95.0%** | |
| ND - 13 | ACRE 4 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **118.1** | **13.5** | **104.1** | **96.5%** | **95.0%** | |
| ND - 14 | ACRE 4 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **119.9** | **10.0** | **109.0** | **99.0%** | **95.0%** | |
| ND - 15 | ACRE 4 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **116.2** | **11.6** | **104.1** | **96.6%** | **95.0%** | |
| ND - 16 | ACRE 4 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **118.3** | **12.8** | **104.9** | **97.3%** | **95.0%** | |
| ND - 17 | ACRE 1 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **121.0** | **11.3** | **108.7** | **100.8%** | **95.0%** | |
| ND - 18 | ACRE 1 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **117.1** | **11.0** | **105.5** | **97.9%** | **95.0%** | |
| ND - 19 | ACRE 1 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.8** | **11.1** | **106.9** | **99.2%** | **95.0%** | |
| ND - 20 | ACRE 1 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **117.0** | **11.1** | **105.3** | **97.7%** | **95.0%** | |
| ND - 21 | ACRE 2 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.6** | **11.5** | **106.4** | **98.7%** | **95.0%** | |
| ND - 22 | ACRE 2 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **115.5** | **10.5** | **104.5** | **97.0%** | **95.0%** | |
| ND - 23 | ACRE 2 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.4** | **12.8** | **105.0** | **97.4%** | **95.0%** | |
| ND - 24 | ACRE 2 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **121.3** | **12.9** | **107.4** | **99.7%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase No. 4
**Project Number :** 2010-652

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# Field Density Report

| | | | |
|---|---|---|---|
| Report Number : **CFFDR-01** | Geotechnics Representative : Jacob R. Buda | Page : 2 of 10 |
| Date (s) : **4.5. - 4.16.10** | Reviewed By : MDS | Date : 3-2-11 |

| | | | |
|---|---|---|---|
| Contractor : | Glover Construction | Borrow Source : | On-Site Stockpile |

| | |
|---|---|
| Compaction Equipment : | New Holland TJ450 Farm Tractor w/ Smoothdrum Roller |

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| SC - 03 | ACRE 2 | LIFT 1 | NA | 652-02-02 | 107.8 | 13.5 | **119.9** | **12.4** | **106.7** | **99.0%** | **95.0%** | |
| ND - 25 | ACRE 5 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **123.7** | **13.3** | **109.2** | **99.2%** | **95.0%** | |
| ND - 26 | ACRE 5 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **115.9** | **11.8** | **103.7** | **96.2%** | **95.0%** | |
| ND - 27 | ACRE 5 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **114.3** | **9.6** | **104.3** | **96.7%** | **95.0%** | |
| ND - 28 | ACRE 5 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **117.4** | **7.6** | **109.1** | **99.1%** | **95.0%** | |
| ND - 29 | ACRE 6 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **113.2** | **9.0** | **103.9** | **96.3%** | **95.0%** | |
| ND - 30 | ACRE 6 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **115.7** | **8.1** | **107.0** | **99.3%** | **95.0%** | |
| ND - 31 | ACRE 6 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **116.1** | **8.9** | **106.6** | **98.9%** | **95.0%** | |
| ND - 32 | ACRE 6 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **117.7** | **13.4** | **103.8** | **96.3%** | **95.0%** | |
| ND - 33 | ACRE 7 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **119.6** | **14.4** | **104.5** | **97.0%** | **95.0%** | |
| ND - 34 | ACRE 7 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **117.7** | **12.7** | **104.4** | **96.9%** | **95.0%** | |
| ND - 35 | ACRE 7 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **119.2** | **12.9** | **105.6** | **97.9%** | **95.0%** | |
| ND - 36 | ACRE 7 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **121.6** | **11.1** | **109.5** | **99.4%** | **95.0%** | |
| ND - 37 | ACRE 8 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **118.7** | **12.9** | **105.1** | **97.5%** | **95.0%** | |
| ND - 38 | ACRE 8 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **116.5** | **11.4** | **104.6** | **97.0%** | **95.0%** | |
| ND - 39 | ACRE 8 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **120.2** | **15.6** | **104.0** | **96.5%** | **95.0%** | |
| ND - 40 | ACRE 8 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **119.0** | **13.2** | **105.1** | **97.5%** | **95.0%** | |
| ND - 41 | ACRE 3 | LIFT 1 | 8" | 1pt.-02 | 110.1 | 14.2 | **122.4** | **10.9** | **110.4** | **100.2%** | **95.0%** | |
| ND - 42 | ACRE 3 | LIFT 1 | 8" | 1pt.-02 | 110.1 | 14.2 | **118.8** | **9.2** | **108.8** | **98.8%** | **95.0%** | |
| ND - 43 | ACRE 3 | LIFT 1 | 8" | 1pt.-02 | 110.1 | 14.2 | **121.4** | **9.7** | **110.7** | **100.5%** | **95.0%** | |
| ND - 44 | ACRE 3 | LIFT 1 | 8" | 652-01-01 | 105.2 | 17.1 | **116.4** | **10.4** | **105.4** | **100.2%** | **95.0%** | |
| ND - 45 | ACRE 4 | LIFT 1 | 8" | 652-01-01 | 105.2 | 17.1 | **115.8** | **11.6** | **103.8** | **98.6%** | **95.0%** | |
| ND - 46 | ACRE 4 | LIFT 1 | 8" | 652-01-01 | 105.2 | 17.1 | **115.9** | **11.1** | **104.3** | **99.2%** | **95.0%** | |
| ND - 47 | ACRE 4 | LIFT 1 | 8" | 652-01-01 | 105.2 | 17.1 | **116.4** | **10.5** | **105.3** | **100.1%** | **95.0%** | |
| ND - 48 | ACRE 4 | LIFT 1 | 8" | 652-01-01 | 105.2 | 17.1 | **112.8** | **11.1** | **101.5** | **96.5%** | **95.0%** | |
| | | | | | | | | | | | | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

*Attachment No. 5*

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-02** | Geotechnics Representative : Jacob R. Buda | Page : 1 of 8 |
| Date (s) : **4.19. - 4.23.10** | Reviewed By : NAPS | Date : 3-2-11 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Stockpile |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 49 | ACRE 10 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **120.9** | **16.1** | **104.1** | **96.6%** | **95.0%** | |
| ND - 50 | ACRE 10 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **116.6** | **12.7** | **103.5** | **96.0%** | **95.0%** | |
| ND - 51 | ACRE 12 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **119.7** | **12.6** | **106.3** | **98.6%** | **95.0%** | |
| ND - 52 | ACRE 12 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **116.8** | **12.7** | **103.6** | **96.1%** | **95.0%** | |
| ND - 53 | ACRE 12 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **115.6** | **9.6** | **105.5** | **97.8%** | **95.0%** | |
| ND - 54 | ACRE 12 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **123.5** | **15.2** | **107.2** | **99.4%** | **95.0%** | |
| ND - 55 | ACRE 10 | Bridge Lift | 8" | 1pt.-02 | 110.1 | 14.2 | **121.8** | **10.8** | **109.9** | **99.8%** | **95.0%** | |
| ND - 56 | ACRE 10 | Bridge Lift | 8" | 1pt.-02 | 110.1 | 14.2 | **124.1** | **13.5** | **109.3** | **99.3%** | **95.0%** | |
| ND - 57 | ACRE 9 | Bridge Lift | 8" | 1pt.-02 | 110.1 | 14.2 | **126.7** | **13.1** | **112.0** | **101.7%** | **95.0%** | |
| ND - 58 | ACRE 9 | Bridge Lift | 8" | 1pt.-02 | 110.1 | 14.2 | **122.7** | **8.4** | **113.2** | **102.8%** | **95.0%** | |
| ND - 59 | ACRE 11 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **113.8** | **7.3** | **106.1** | **98.4%** | **95.0%** | |
| ND - 60 | ACRE 11 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **111.8** | **9.0** | **102.6** | **95.1%** | **95.0%** | |
| ND - 61 | ACRE 11 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **115.6** | **12.3** | **102.9** | **95.5%** | **95.0%** | |
| ND - 62 | ACRE 11 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **116.3** | **10.2** | **105.5** | **97.9%** | **95.0%** | |
| ND - 63 | ACRE 9 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **121.1** | **12.7** | **107.5** | **99.7%** | **95.0%** | |
| ND - 64 | ACRE 9 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **119.4** | **13.7** | **105.0** | **97.4%** | **95.0%** | |
| ND - 65 | ACRE 13 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **118.6** | **9.4** | **108.4** | **100.6%** | **95.0%** | |
| ND - 66 | ACRE 13 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **119.1** | **12.4** | **106.0** | **98.3%** | **95.0%** | |
| ND - 67 | ACRE 13 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **121.0** | **12.1** | **107.9** | **100.1%** | **95.0%** | |
| ND - 68 | ACRE 13 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **121.3** | **11.2** | **109.1** | **101.2%** | **95.0%** | |
| ND - 69 | ACRE 14 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **118.3** | **11.0** | **106.6** | **98.9%** | **95.0%** | |
| ND - 70 | ACRE 14 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **118.3** | **11.9** | **105.7** | **98.1%** | **95.0%** | |
| ND - 71 | ACRE 14 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **120.3** | **12.7** | **106.7** | **99.0%** | **95.0%** | |
| ND - 72 | ACRE 14 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **117.6** | **13.2** | **103.9** | **96.4%** | **95.0%** | |
| ND - 73 | ACRE 6 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **115.1** | **10.7** | **104.0** | **96.5%** | **95.0%** | |
| ND - 74 | ACRE 6 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **120.1** | **15.1** | **104.3** | **96.8%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

*Attachment No. 6*

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-04** | Geotechnics Representative : Jacob R. Buda | Page : 2 of 15 |
| Date (s) : **5.19. - 5.22.10** | Reviewed By : MMS | Date : 3-2-11 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 179 | S. Access Rd. | ~ Grade | 6" | 652-03-05 | 101.3 | 17.8 | **109.6** | **5.6** | **103.8** | **102.5%** | **95.0%** | |
| ND - 180 | S. Access Rd. | ~ Grade | 6" | 652-03-05 | 101.3 | 17.8 | **104.9** | **5.3** | **99.6** | **98.3%** | **95.0%** | |
| ND - 181 | ACRE 2 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **120.2** | **12.5** | **106.8** | **100.0%** | **95.0%** | |
| ND - 182 | ACRE 2 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **120.2** | **17.5** | **102.3** | **95.8%** | **95.0%** | |
| ND - 183 | ACRE 4 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **120.3** | **15.2** | **104.4** | **97.8%** | **95.0%** | |
| ND - 184 | ACRE 4 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **122.9** | **18.6** | **103.6** | **97.0%** | **95.0%** | |
| ND - 185 | ACRE 6 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **121.1** | **18.9** | **101.9** | **95.4%** | **95.0%** | |
| ND - 186 | ACRE 6 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **121.0** | **18.4** | **102.2** | **95.7%** | **95.0%** | |
| ND - 187 | ACRE 6 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **120.5** | **18.8** | **101.4** | **95.0%** | **95.0%** | |
| ND - 188 | ACRE 6 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **119.6** | **17.9** | **101.4** | **95.0%** | **95.0%** | |
| ND - 189 | ACRE 4 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **118.8** | **16.9** | **101.6** | **95.2%** | **95.0%** | |
| ND - 190 | ACRE 4 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **118.1** | **14.6** | **103.1** | **96.5%** | **95.0%** | |
| ND - 191 | ACRE 2 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **122.9** | **20.4** | **102.1** | **95.6%** | **95.0%** | |
| ND - 192 | ACRE 2 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **122.5** | **14.3** | **107.2** | **100.4%** | **95.0%** | |
| ND - 193 | ACRE 8 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **120.1** | **18.2** | **101.6** | **97.0%** | **95.0%** | |
| ND - 194 | ACRE 8 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **120.9** | **20.7** | **100.2** | **95.6%** | **95.0%** | |
| ND - 195 | ACRE 10 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **121.3** | **21.5** | **99.8** | **95.3%** | **95.0%** | |
| ND - 196 | ACRE 10 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **119.2** | **17.0** | **101.9** | **97.2%** | **95.0%** | |
| ND - 197 | ACRE 12 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **119.5** | **20.0** | **99.6** | **95.0%** | **95.0%** | |
| ND - 198 | ACRE 12 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **121.8** | **21.5** | **100.2** | **95.7%** | **95.0%** | |
| ND - 199 | ACRE 14 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **119.3** | **19.1** | **100.2** | **95.6%** | **95.0%** | |
| ND - 200 | ACRE 14 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **120.0** | **19.5** | **100.4** | **95.8%** | **95.0%** | |
| ND - 201 | ACRE 14 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **119.8** | **19.4** | **100.3** | **95.7%** | **95.0%** | |
| ND - 202 | ACRE 14 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **118.7** | **19.2** | **99.6** | **95.0%** | **95.0%** | |
| ND - 203 | ACRE 12 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **120.2** | **20.3** | **99.9** | **95.3%** | **95.0%** | |
| ND - 204 | ACRE 12 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **120.4** | **19.3** | **100.9** | **96.3%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

Geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-04** | Geotechnics Representative : Jacob R. Buda | Page : 3 of 15 |
| Date (s) : **5.19. - 5.22.10** | Reviewed By : [illegible] | Date : 3-2-11 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

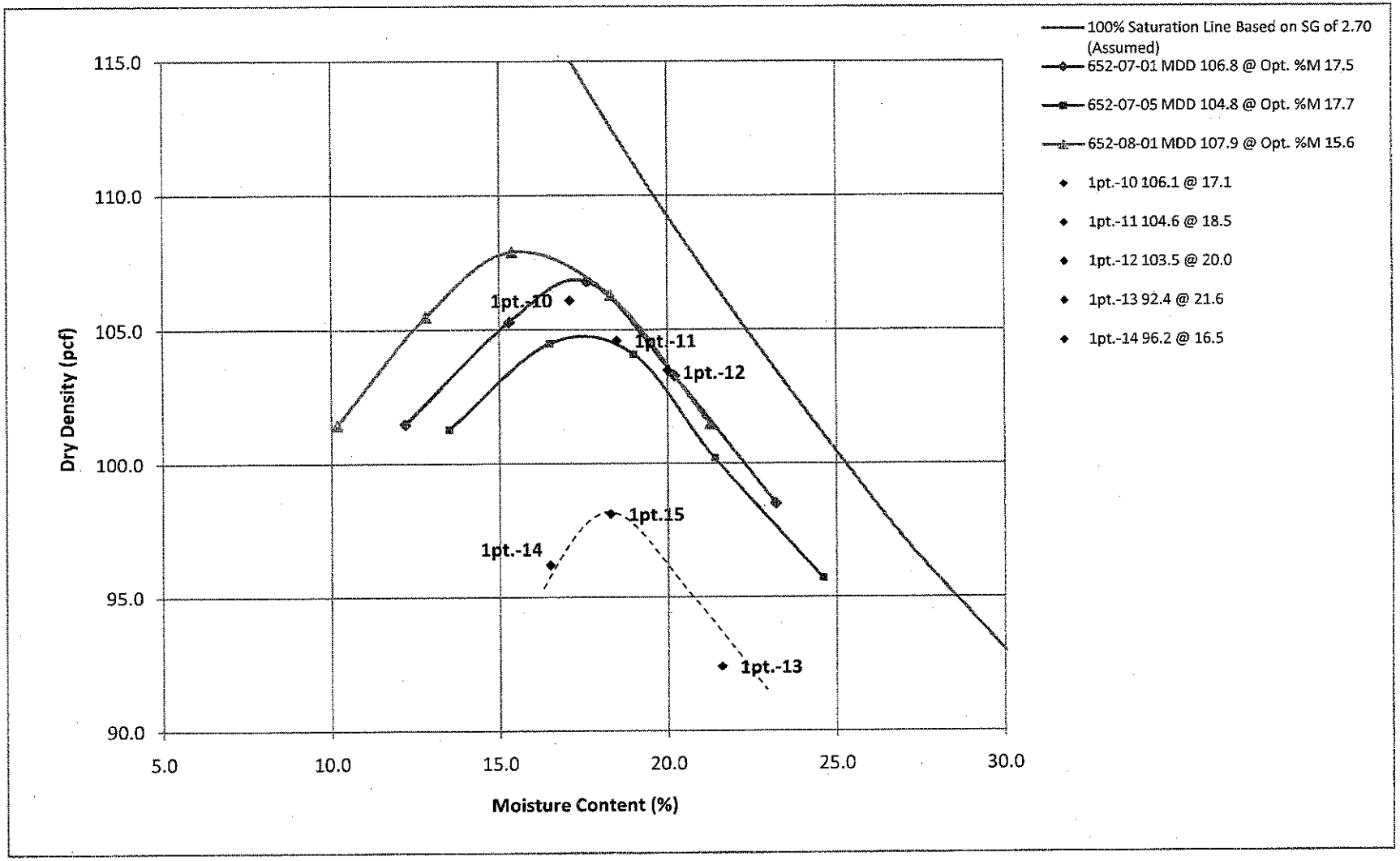
| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 205 | ACRE 10 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **121.9** | **20.6** | **101.1** | **96.4%** | **95.0%** | |
| ND - 206 | ACRE 10 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **120.2** | **19.7** | **100.4** | **95.8%** | **95.0%** | |
| ND - 207 | ACRE 8 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **121.9** | **20.4** | **101.2** | **96.6%** | **95.0%** | |
| ND - 208 | ACRE 8 | LIFT 3 | 6" | 652-07-05 | 104.8 | 17.7 | **121.6** | **19.5** | **101.8** | **97.1%** | **95.0%** | |
| ND - 209 | ACRE 13 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **119.4** | **20.7** | **98.9** | **100.8%** | **95.0%** | |
| ND - 210 | ACRE 13 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **116.3** | **22.7** | **94.8** | **96.6%** | **95.0%** | |
| ND - 211 | ACRE 11 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **119.0** | **20.8** | **98.5** | **100.4%** | **95.0%** | |
| ND - 212 | ACRE 11 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **116.0** | **20.3** | **96.4** | **98.3%** | **95.0%** | |
| ND - 213 | ACRE 9 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.6** | **19.2** | **98.7** | **100.6%** | **95.0%** | |
| ND - 214 | ACRE 9 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **120.2** | **20.1** | **100.1** | **102.0%** | **95.0%** | |
| ND - 215 | ACRE 9 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **121.7** | **21.2** | **100.4** | **102.4%** | **95.0%** | |
| ND - 216 | ACRE 9 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.3** | **17.7** | **99.7** | **101.6%** | **95.0%** | |
| ND - 217 | ACRE 11 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **113.1** | **19.4** | **94.7** | **96.6%** | **95.0%** | |
| ND - 218 | ACRE 11 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **111.4** | **19.5** | **93.2** | **95.0%** | **95.0%** | |
| ND - 219 | ACRE 13 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.2** | **21.7** | **96.3** | **98.2%** | **95.0%** | |
| ND - 220 | ACRE 13 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **115.6** | **22.1** | **94.7** | **96.5%** | **95.0%** | |
| ND - 221 | ACRE 7 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **118.9** | **18.6** | **100.3** | **102.2%** | **95.0%** | |
| ND - 222 | ACRE 7 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **118.0** | **23.5** | **95.5** | **97.4%** | **95.0%** | |
| ND - 223 | ACRE 5 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.0** | **24.6** | **93.9** | **95.7%** | **95.0%** | |
| ND - 224 | ACRE 5 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **119.3** | **23.0** | **97.0** | **98.9%** | **95.0%** | |
| ND - 225 | ACRE 3 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.7** | **24.9** | **94.2** | **96.1%** | **95.0%** | |
| ND - 226 | ACRE 3 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.9** | **22.3** | **96.4** | **98.3%** | **95.0%** | |
| ND - 227 | ACRE 3 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **115.5** | **23.3** | **93.7** | **95.5%** | **95.0%** | |
| ND - 228 | ACRE 3 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **115.6** | **22.1** | **94.7** | **96.5%** | **95.0%** | |
| ND - 229 | ACRE 5 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **115.6** | **21.7** | **95.0** | **96.8%** | **95.0%** | |
| ND - 230 | ACRE 5 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **115.7** | **22.3** | **94.6** | **96.4%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

geotechnics
INTEGRITY IN TESTING

## Onsite Upper Common Fill Moisture / Density Relationships

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652




2200 Westinghouse Blvd. - Suite 103 - Raleigh, NC 27604 - Phone (919) 876-0405 - Fax (919) 876-0460

*Attachment No. 7*

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

Geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-05** | Geotechnics Representative : Jacob R. Buda | Page : 1 of 8 |
| Date (s) : **5.24. - 5.28.10** | Reviewed By : [illegible] | Date : 3-2-11 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 233 | ACRE 1 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.4** | **20.9** | **97.1** | **99.0%** | **95.0%** | |
| ND - 234 | ACRE 1 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **116.8** | **21.4** | **96.2** | **98.1%** | **95.0%** | |
| ND - 235 | ACRE 1 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **115.2** | **19.6** | **96.3** | **98.2%** | **95.0%** | |
| ND - 236 | ACRE 1 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.0** | **20.1** | **97.4** | **99.3%** | **95.0%** | |
| ND - 237 | ACRE 2 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **118.5** | **18.5** | **100.0** | **95.4%** | **95.0%** | |
| ND - 238 | ACRE 2 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **118.7** | **17.8** | **100.8** | **96.1%** | **95.0%** | |
| ND - 239 | ACRE 4 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **119.3** | **19.2** | **100.1** | **95.5%** | **95.0%** | |
| ND - 240 | ACRE 4 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **118.1** | **17.9** | **100.2** | **95.6%** | **95.0%** | |
| ND - 241 | ACRE 6 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **116.8** | **17.3** | **99.6** | **95.0%** | **95.0%** | |
| ND - 242 | ACRE 6 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **119.1** | **17.4** | **101.4** | **96.8%** | **95.0%** | |
| ND - 243 | ACRE 8 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **117.9** | **16.8** | **100.9** | **96.3%** | **95.0%** | |
| ND - 244 | ACRE 8 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **118.0** | **17.3** | **100.6** | **96.0%** | **95.0%** | |
| ND - 245 | ACRE 8 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **118.1** | **17.9** | **100.2** | **95.6%** | **95.0%** | |
| ND - 246 | ACRE 8 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **120.1** | **17.8** | **102.0** | **97.3%** | **95.0%** | |
| ND - 247 | ACRE 6 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **118.1** | **18.4** | **99.7** | **95.2%** | **95.0%** | |
| ND - 248 | ACRE 6 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **117.2** | **17.1** | **100.1** | **95.5%** | **95.0%** | |
| ND - 249 | ACRE 4 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **118.3** | **18.0** | **100.3** | **95.7%** | **95.0%** | |
| ND - 250 | ACRE 4 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **123.5** | **20.1** | **102.8** | **98.1%** | **95.0%** | |
| ND - 251 | ACRE 2 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **118.1** | **17.8** | **100.3** | **95.7%** | **95.0%** | |
| ND - 252 | ACRE 2 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **123.3** | **17.0** | **105.4** | **100.6%** | **95.0%** | |
| ND - 253 | ACRE 10 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **119.6** | **19.1** | **100.4** | **95.8%** | **95.0%** | |
| ND - 254 | ACRE 10 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **120.6** | **17.4** | **102.7** | **98.0%** | **95.0%** | |
| ND - 255 | ACRE 12 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **118.2** | **18.0** | **100.2** | **95.6%** | **95.0%** | |
| ND - 256 | ACRE 12 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **119.1** | **17.8** | **101.1** | **96.5%** | **95.0%** | |
| ND - 257 | ACRE 14 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **117.8** | **17.4** | **100.3** | **95.7%** | **95.0%** | |
| ND - 258 | ACRE 14 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **122.5** | **17.5** | **104.3** | **99.5%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

Geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-05** | Geotechnics Representative : Jacob R. Buda | Page : 2 of 8 |
| Date (s) : **5.24. - 5.28.10** | Reviewed By : MPS | Date : 3-2-11 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

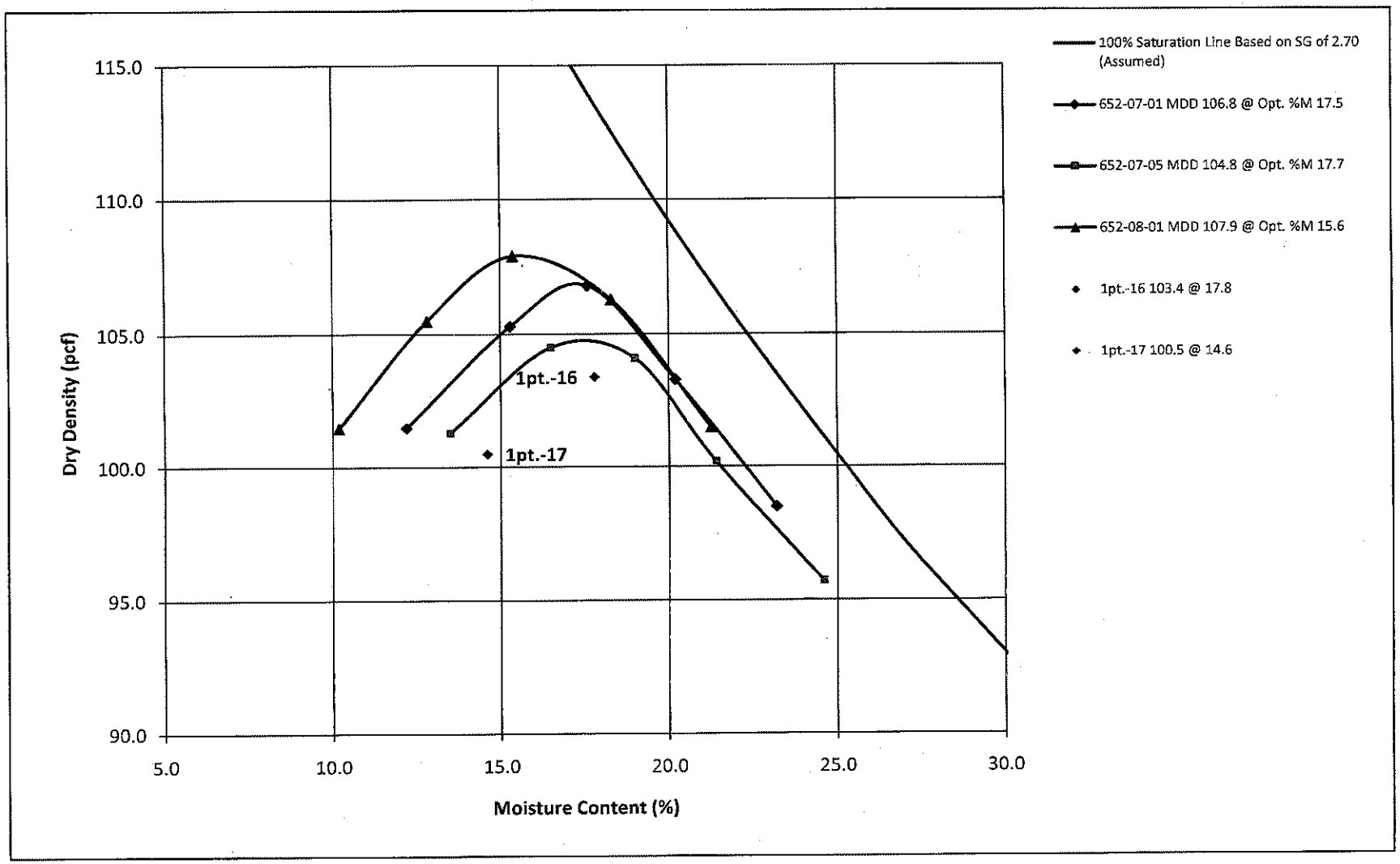
| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 259 | ACRE 14 | LIFT 4 | 6" | 652-07-05 | 104.8 | 18.3 | **117.8** | **18.2** | **99.7** | **95.1%** | **95.0%** | |
| ND - 260 | ACRE 14 | LIFT 4 | 6" | 652-07-05 | 104.8 | 18.3 | **117.7** | **16.9** | **100.7** | **96.1%** | **95.0%** | |
| ND - 261 | ACRE 12 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **117.8** | **17.9** | **99.9** | **95.3%** | **95.0%** | |
| ND - 262 | ACRE 12 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **122.6** | **20.3** | **101.9** | **97.2%** | **95.0%** | |
| ND - 263 | ACRE 10 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **117.2** | **17.5** | **99.7** | **95.2%** | **95.0%** | |
| ND - 264 | ACRE 10 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **119.6** | **18.3** | **101.1** | **96.5%** | **95.0%** | |
| ND - 265 | ACRE 1 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **122.5** | **17.2** | **104.5** | **99.7%** | **95.0%** | |
| ND - 266 | ACRE 1 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **123.1** | **17.7** | **104.6** | **99.8%** | **95.0%** | |
| ND - 267 | ACRE 3 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **120.1** | **15.7** | **103.8** | **99.0%** | **95.0%** | |
| ND - 268 | ACRE 3 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **118.9** | **17.7** | **101.0** | **96.4%** | **95.0%** | |
| ND - 269 | ACRE 5 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **120.1** | **16.1** | **103.4** | **98.7%** | **95.0%** | |
| ND - 270 | ACRE 5 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **121.7** | **18.4** | **102.8** | **98.1%** | **95.0%** | |
| ND - 271 | ACRE 7 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **119.0** | **17.7** | **101.1** | **96.5%** | **95.0%** | |
| ND - 272 | ACRE 7 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **118.2** | **16.5** | **101.5** | **96.8%** | **95.0%** | |
| ND - 273 | ACRE 7 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **117.6** | **16.4** | **101.0** | **96.4%** | **95.0%** | |
| ND - 274 | ACRE 7 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **121.3** | **16.9** | **103.8** | **99.0%** | **95.0%** | |
| ND - 275 | ACRE 5 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **119.3** | **15.6** | **103.2** | **98.5%** | **95.0%** | |
| ND - 276 | ACRE 5 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **120.0** | **16.9** | **102.7** | **98.0%** | **95.0%** | |
| ND - 277 | ACRE 3 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **117.1** | **16.5** | **100.5** | **95.9%** | **95.0%** | |
| ND - 278 | ACRE 3 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **120.4** | **19.2** | **101.0** | **96.4%** | **95.0%** | |
| ND - 279 | ACRE 1 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **124.0** | **16.6** | **106.3** | **101.5%** | **95.0%** | |
| ND - 280 | ACRE 1 | LIFT 4 | 6" | 652-07-05 | 104.8 | 17.7 | **122.6** | **20.0** | **102.2** | **97.5%** | **95.0%** | |
| ND - 281 | ACRE 9 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **122.7** | **16.2** | **105.6** | **97.9%** | **95.0%** | |
| ND - 282 | ACRE 9 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **123.5** | **16.0** | **106.5** | **98.7%** | **95.0%** | |
| ND - 283 | ACRE 11 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **121.0** | **17.1** | **103.3** | **95.8%** | **95.0%** | |
| ND - 284 | ACRE 11 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **124.7** | **16.6** | **106.9** | **99.1%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

geotechnics
INTEGRITY IN TESTING

## Onsite Upper Common Fill Moisture / Density Relationships

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652




2200 Westinghouse Blvd. - Suite 103 - Raleigh, NC 27604 - Phone (919) 876-0405 - Fax (919) 876-0460

*Attachment No. 8*

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

Geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-08** | Geotechnics Representative : Jacob R. Buda | Page : 1 of 5 |
| Date (s) : **6.14. - 6.15.10** | Reviewed By : MMS | Date : 3-2-11 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 387 | ACRE 2 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **125.8** | **14.6** | **109.8** | **100.3%** | **95.0%** | |
| ND - 388 | ACRE 2 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **116.2** | **9.3** | **106.3** | **97.2%** | **95.0%** | |
| ND - 389 | ACRE 4 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **115.7** | **9.5** | **105.7** | **96.6%** | **95.0%** | |
| ND - 390 | ACRE 4 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **119.0** | **12.1** | **106.2** | **97.0%** | **95.0%** | |
| ND - 391 | ACRE 6 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **118.8** | **11.0** | **107.0** | **97.8%** | **95.0%** | |
| ND - 392 | ACRE 6 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **123.4** | **12.3** | **109.9** | **100.4%** | **95.0%** | |
| ND - 393 | ACRE 6 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **120.7** | **11.9** | **107.9** | **98.6%** | **95.0%** | |
| ND - 394 | ACRE 6 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **116.1** | **10.6** | **105.0** | **96.0%** | **95.0%** | |
| ND - 395 | ACRE 4 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **122.7** | **16.1** | **105.7** | **96.6%** | **95.0%** | |
| ND - 396 | ACRE 4 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **125.1** | **16.1** | **107.8** | **98.5%** | **95.0%** | |
| ND - 397 | ACRE 2 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **124.0** | **17.8** | **105.3** | **96.2%** | **95.0%** | |
| ND - 398 | ACRE 2 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **123.7** | **14.7** | **107.8** | **98.6%** | **95.0%** | |
| ND - 399 | ACRE 1 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **124.6** | **19.7** | **104.1** | **99.8%** | **95.0%** | |
| ND - 400 | ACRE 1 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **119.6** | **15.6** | **103.5** | **99.2%** | **95.0%** | |
| ND - 401 | ACRE 3 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **125.6** | **18.1** | **106.4** | **102.0%** | **95.0%** | |
| ND - 402 | ACRE 3 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **119.1** | **16.8** | **102.0** | **97.8%** | **95.0%** | |
| ND - 403 | ACRE 5 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **121.5** | **17.3** | **103.6** | **99.3%** | **95.0%** | |
| ND - 404 | ACRE 5 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **119.6** | **13.8** | **105.1** | **100.8%** | **95.0%** | |
| ND - 405 | ACRE 5 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **119.2** | **18.5** | **100.6** | **96.4%** | **95.0%** | |
| ND - 406 | ACRE 5 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **118.5** | **14.3** | **103.7** | **99.4%** | **95.0%** | |
| ND - 407 | ACRE 3 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **117.9** | **18.3** | **99.7** | **95.6%** | **95.0%** | |
| ND - 408 | ACRE 3 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **121.3** | **19.2** | **101.8** | **97.6%** | **95.0%** | |
| ND - 409 | ACRE 1 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **122.1** | **17.3** | **104.1** | **99.8%** | **95.0%** | |
| ND - 410 | ACRE 1 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **122.2** | **17.6** | **103.9** | **99.6%** | **95.0%** | |
| ND - 411 | ACRE 7 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **122.9** | **18.3** | **103.9** | **99.6%** | **95.0%** | |
| ND - 412 | ACRE 7 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **120.7** | **18.8** | **101.6** | **97.4%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

*Attachment No. 9*

# Section 7
# Access and Safety Requirements

## 7.1 Landfill Access and Safety

In accordance with 15A NCAC 13B . 0542(j)(1), the Dare County C&D Landfill must be adequately secured by means of gates, chains, berms, fences and other security measures approved by the Division of Solid Waste Management to prevent unauthorized entry.

The property is located in a relatively remote area of mainland Dare County and is bounded to the east by US Hwy 264 and by the Alligator River National Wildlife Refuge, which is under the administration of the US Fish and Wildlife Service (USFWS) on the remaining sides. Access to the C&D disposal area from US Hwy 264 is provided by a constructed canal crossing that connects Cub Road with US Hwy 264. Secondary access to the site is provided by Link Road, however this access remains closed to the public. Primary access to the C&D disposal area is provided by way of Cub Road.

The eastern ends of Link Road and Cub Road cross a drainage canal before they connect to US Hwy 264. Because of the canal and adjacent forested wetlands, there are no other access points to the site from US Hwy 264 and additional fencing is not required.

An access gate is currently located at the entrance of Cub and Link Road and is locked when the site is closed. All vehicles disposing of waste at the facility will enter and leave through the access control gate at Cub Road. A gate attendant house is located immediately inside the gate on the southern edge of Cub Road. All vehicles carrying waste to the landfill must first be weighed at the scale house before disposing at the landfill.

Access from the western side of the site is limited because all adjacent properties are in the wildlife refuge and the nearest public access (other than Link Road and Cub Road) is approximately five miles away. An access gate is at the western end of Link Road. This gate belongs to the USFWS and is locked at all times when not in use to prevent unauthorized access to the wildlife refuge.

## 7.2 Attendant

In accordance with 15A NCAC 13B .0542(j)(2), an attendant shall be on duty at the site at all times while the facility is open for public use to ensure compliance with operational requirements.

A full-time attendant will be located in the scale house during operating hours. The attendant will verify compliance with operation requirements. In addition, a Facility Supervisor will be present on-site at all times during operation.

## 7.3 Access Road

In accordance with 15A NCAC 13B .0542(j)(3), the access road to the site shall be of all weather construction and maintained in good condition. The all weather access roads at the site include Link Road, Cub Road and the access roads from Link and Cub Road to each of the disposal cells, which are paved with compacted crushed stone. Potholes, ruts, and debris on the roads will receive immediate attention in order to avoid damage to vehicles and maintain all weather access. Access roads will be regraded as necessary to maintain positive slope for adequate drainage.

## 7.4 Dust Control

Per Rule .0542(j)(4), dust control measures shall be implemented when necessary. Minimum dust control will include a water truck for wetting of dusty roads. Sprinklers are also used along some portions of the landfill perimeter access road. Petroleum products shall not be used for dust control.

## 7.5 Signs

In accordance with Rule .0542(j)(5), a sign providing information on disposal procedures, the hours during which the site is open for public use, the permit number and other pertinent information specified in the permit conditions is posted at the site entrance at Cub Road.

In accordance with Rule .0542(j)(6), signs shall be clearly posted stating that no liquid, hazardous and municipal solid waste can be disposed in the C&D landfill.

In accordance with Rule .0542(j)(7), traffic signs or markers are provided to promote an orderly traffic pattern to and from the discharge area and to maintain efficient operating conditions.

## 7.6 Waste Removal Scavenging Policy

Per Rule .0542(j)(8), the removal of solid waste from the C&D landfill is prohibited.

## 7.7 Managing Recyclables

The only recyclables accepted at the Dare County C&D landfill facility are white goods, scrap metal and tires. Upon arrival of these materials at the scale house they are inspected. White goods and scrap metal are directed to an all weather gravel pad located east of the existing transfer station as shown on SD-1. Tires are collected in transfer trailers and hauled by the Dare County Public Works Recycling Department to Emanuel Tire in Waverly Virginia for processing and recycling.

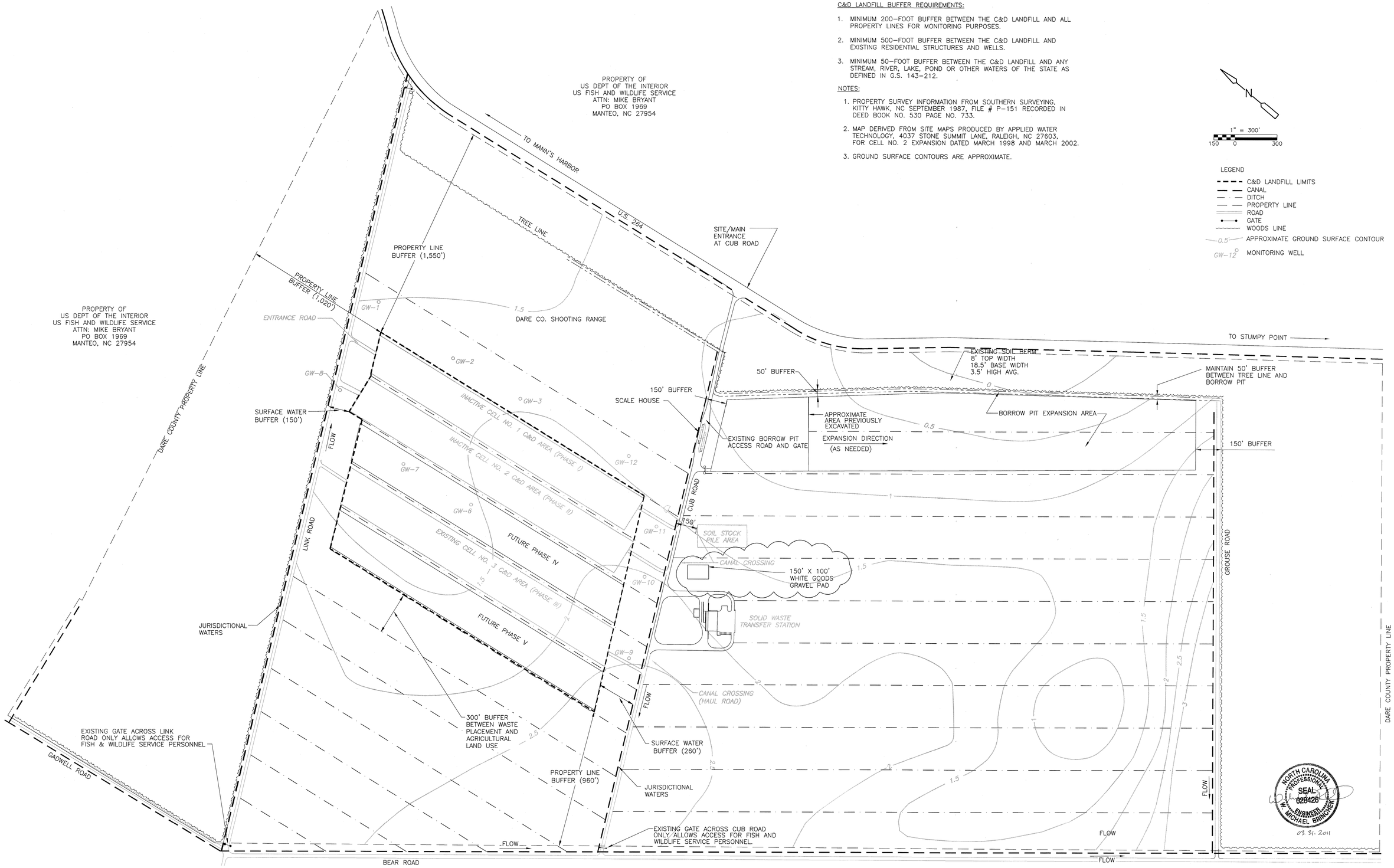
*Attachment No. 10*

C&D LANDFILL BUFFER REQUIREMENTS:

1. MINIMUM 200-FOOT BUFFER BETWEEN THE C&D LANDFILL AND ALL PROPERTY LINES FOR MONITORING PURPOSES.
2. MINIMUM 500-FOOT BUFFER BETWEEN THE C&D LANDFILL AND EXISTING RESIDENTIAL STRUCTURES AND WELLS.
3. MINIMUM 50-FOOT BUFFER BETWEEN THE C&D LANDFILL AND ANY STREAM, RIVER, LAKE, POND OR OTHER WATERS OF THE STATE AS DEFINED IN G.S. 143-212.

NOTES:

1. PROPERTY SURVEY INFORMATION FROM SOUTHERN SURVEYING, KITTY HAWK, NC SEPTEMBER 1987, FILE # P-151 RECORDED IN DEED BOOK NO. 530 PAGE NO. 733.
2. MAP DERIVED FROM SITE MAPS PRODUCED BY APPLIED WATER TECHNOLOGY, 4037 STONE SUMMIT LANE, RALEIGH, NC 27603, FOR CELL NO. 2 EXPANSION DATED MARCH 1998 AND MARCH 2002.
3. GROUND SURFACE CONTOURS ARE APPROXIMATE.




| REV. NO. | DATE | DRWN | CHKD | REMARKS |
|---|---|---|---|---|
| 1 | 3\11 | WPS | WMB | REV. FACILITY PLAN TO INCLUDE RECYCLABLE PAD PER NCDENR COMMENTS |

DESIGNED BY: M. BRINCHEK
DRAWN BY: J. KILLINGSWORTH
SHEET CHK'D BY: P. STOUT
CROSS CHK'D BY: K. YANG
APPROVED BY:
DATE: JULY 2009

CDM
Camp Dresser & McKee
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consulting • engineering • construction • operations

DARE COUNTY
NORTH CAROLINA
CONSTRUCTION & DEMOLITION DEBRIS LANDFILL
PHASE IV PERMIT DRAWINGS

EXISTING CONDITIONS

PROJECT NO. 17952-56960
FILE NAME: SD-1
SHEET NO.
SD-1

NOT FOR CONSTRUCTION

*Attachment No. 11*

# Section 2
# Waste Acceptance and Disposal Requirements

## 2.1 Waste Definitions

**Agricultural Waste** - waste material produced from raising of plants and animals, including animal manures, bedding plant stalks, hulls, and vegetative matter.

**Asbestos Waste** - any waste material that is determined to contain asbestos.

**Asphalt** - in accordance with G.S. 130-294 (m).

**Blood Product** - all bulk blood and blood products.

**Commercial Solid Waste** - all types of solid waste generated by retail stores, offices, restaurants, warehouses, and other non-manufacturing activities, excluding residential waste.

**Construction or Demolition Debris** - solid waste resulting solely from construction, remodeling, repairs or demolition operations on pavement, buildings, or other structures, but does not include inert debris, land-clearing debris or yard debris.

**Hazardous Waste** - any solid waste that is defined as hazardous in 15A NCAC 13A 261.3 and that is not excluded from regulation as a hazardous waste from conditionally exempt small quantity generators as defined within 15A NCAC 13A 261.5.

**Hot Load** - when a waste hauling vehicle is transporting solid waste that is burning or smoldering, it is referred to as a hot load.

**Household Waste** - any solid waste derived from households including hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas.

**Industrial Solid Waste** - solid waste generated by manufacturing processes that is not a hazardous waste regulated under Subtitle C of RCRA. Such waste may include, but is not limited to, waste resulting from the following manufacturing processes: electric power generation; fertilizer/agricultural chemicals; food and related products/by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay, and concrete products; textile manufacturing; transportation equipment; and water treatment. This term does not include mining waste or oil and gas waste.

**Inert Debris** - any solid waste which consists solely of material such as concrete, brick, concrete block, uncontaminated soil, rock, and gravel.

**Infectious Waste** - any solid waste capable of producing an infectious disease. These types of waste include microbiological waste, pathological waste, blood products, and sharps.

**Land-Clearing Debris** - solid waste which is generated solely from land clearing activities such as stumps and trees trunks.

**Liquid Hydrocarbons** - as defined under Article 21A of Chapter 143 of the North Carolina General Statutes: except that any such oils or other liquid hydrocarbons that meet the criteria for hazardous waste under the Federal Resource Conservation and Recovery Act (P.L. 94-580) as amended.

**Liquid Waste** - any waste material that is determined to contain free liquid by Method 9095 (Paint Filter Test).

**Microbiological Waste** - includes cultures and stocks of etiologic agents. The term includes cultures of specimens from medical, pathological, pharmaceutical, research, commercial, and industrial laboratories.

**Oils** - As defined under Article 21A of Chapter 143 of the North Carolina General Statutes: except that any such oils that meet the criteria for hazardous waste under the Federal Resource Conservation and Recovery Act (P.L. 94-580) as amended.

**Pathological Waste** - includes: human tissue, organs, body parts, secretions, and excretions, blood, and body fluids that are removed during surgery and autopsies; the carcasses and body parts of all animals that were exposed to pathogens in research, were used in the production of biological or in the in-vitro testing of pharmaceuticals, or that died of known or suspected infectious disease.

**Polychlorinated Biphenyls (PCB)** - defined as any of several compounds that are produced by replacing hydrogen atoms in biphenyl with chlorine. PCB's were most frequently used as an additive to oil or other liquid in situations where heat is involved. PCB's have been used in paints and lubricants, however the most common application was in electric transformers.

**Radioactive Waste** - any waste that contains radioactivity as defined by the North Carolina Radiation Protection Act, G.S. 104E-1 through 104E-23. Radioactivity is defined as the property possessed by some elements of spontaneously emitting alpha or beta rays and sometimes gamma rays by the disintegration of the nuclei of atoms.

**Sharps** - includes needles, syringes with attached needles, capillary tubes, slides and cover slips, and scalpel blades.

**Spoiled Food** - any food which has been removed from sale by the United States Department of Agriculture, North Carolina Department of Agriculture, Food and Drug Administration, or any other regulatory agency having jurisdiction in determining that food is unfit for consumption.

**Treatment or Processing Waste** - any waste that is a residual solid from a wastewater treatment or pretreatment facility.

**Tires** - rubber tires from vehicles.

**White Goods** - any inoperative and discarded refrigerators, freezers, ranges, washers, dryers, water heaters, and other large domestic commercial appliances.

**Yard Trash** - solid waste resulting from landscaping and yard maintenance such as brush, grass, tree limbs, and similar vegetative material.

## 2.2 Acceptable Waste

In accordance with Rule .0542(c)(1), a C&D landfill shall only accept those solid wastes which it is permitted to dispose of. In accordance with the current Permit to Operate (dated November 30, 2006), the Dare County C&D Landfill is permitted to dispose of the following using normal operating procedures (as defined previously):

- Construction or Demolition Debris;
- Inert Debris;
- Land-Clearing Debris;
- Asphalt; and
- Asbestos (Non-Friable Asbestos Only)

## 2.3 Acceptable Waste Requiring Special Handling

- Non-Friable Asbestos waste is part of the permitted, acceptable waste stream and will require special handling procedures. All approved asbestos loads will be directed to the toe of the landfill slope away from the working face. The location of the primary asbestos disposal area will change along with the landfill development so as to always be away from the working face.

- The asbestos waste shall be managed in accordance with 40 CFR 61. In accordance with Rule .0542(c)(2), the regulated asbestos waste shall be covered immediately with soil in a manner that will not cause airborne conditions and must be disposed of separate and apart from other solid wastes.

- Hot loads arriving at the site should be dumped immediately in the designated primary hot load area located near the working face. The designated area must be

located only on areas containing compacted refuse covered by at least 12 inches of cover material. The location of the primary hot load area will change along with the landfill development so as to always be near the working face. Hot loads should be extinguished immediately after being dumped by applying water to the burning refuse and by covering the refuse with soil from the stockpile area. If problems are encountered, the local fire department should be called. Once extinguished, the hot load should be observed until it is certain that the fire is out. The remaining refuse should then be compacted and buried at the working face.

## 2.4 Prohibited Wastes

The following wastes will be prohibited from disposal at the Dare County C&D Landfill:

- Wastewater treatment sludge;
- Containers such as tubes, drums, barrels, tanks, cans, and bottles unless they are empty and perforated to ensure that no liquid, hazardous or municipal solid waste is contained within;
- Garbage as defined in G.S. 130A-290(a)(7);
- Hazardous waste as defined in G.S. 130A-290(a)(8);
- Industrial solid waste;
- Liquid waste;
- Medical waste as defined in G.S. 130A-290(a)(18);
- Municipal solid waste as defined in G.S. 130A-290(a)(18a);
- Polychlorinated biphenyls (PCB) wastes as defined in 40CFR 761;
- Radioactive waste as defined in G.S. 104E-5(14);
- Septage as defined in G.S. 130A-290(a)(32);
- Sludge as defined in G.S. 130A-290(a)(34);
- Special wastes as defined in G.S. 130A-290(a)(40);
- White goods as defined in G.S. 130A-290(a)(44); and
- Yard trash as defined in G.S. 130A-290(a)(45);
- Tires.

The following wastes cannot be received if separate from C&D landfill waste:

- Lamps or bulbs including but not limited to halogen, incandescent, neon or fluorescent;
- Lighting ballast or fixtures;
- Thermostats and light switches;

- Batteries including but not limited to those from exit and emergency lights and smoke detectors;
- Lead pipes;
- Lead roof flashing;
- Transformers;
- Capacitors; and
- Copper chrome arsenate (CCA) and creosote treated woods.

Waste accepted for disposal in the C&D landfill shall be readily identifiable as C&D waste and shall not have been shredded, pulverized, or processed to such an extent that the composition of the original waste cannot be readily ascertained.

The County shall not knowingly dispose any type or form of C&D waste that is generated within the boundaries of a unit of local government that by ordinance:

- Prohibits generators or collectors of C&D waste from disposing that type or form of C&D waste.
- Requires generators or collectors of C&D waste to recycle that type or form of C&D waste.

## 2.5 Receiving Prohibited Waste

The Dare County C&D Landfill shall only accept those solid wastes that it is permitted to receive. The County will notify the North Carolina Department of Environment and Nature Resources Division of Waste Management (NCDENR DWM) within 24 hours of attempted disposal of any waste the C&D landfill is not permitted to receive.

A report shall be prepared of any attempted delivery of waste of which the landfill is not permitted to receive, including waste from outside the permitted landfill service area. The report will be forwarded to:

Department of Environment and Natural Resources
Division of Waste Management
Solid Waste Section
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

## 2.6 Waste Screening Program

Dare County has adopted a waste screening program at their C&D landfill facility for detecting and preventing the disposal of MSW, hazardous waste, and liquid waste. This program includes:

- Random inspection of incoming loads or other comparable procedures.

- Records of inspection.
- Training of facility personnel to recognize hazardous and liquid waste.
- Development of a contingency plan to properly manage any identified hazardous and liquid waste addressing identification, removal, storage, and final disposition of the waste.

Since Cell No. 4 will be located within the same property as the Dare County C&D Landfill, the existing waste screening program can be effectively used.

CDM
5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
tel: 919 787-5620
fax: 919 781-5730

| Permit No. | Date | Document ID No. |
|---|---|---|
| **28-03** | **February 16, 2011** | **12971** |

RECEIVED
**February 15, 2011 via a mail**
Solid Waste Section
Raleigh Central Office

February 14, 2011

Mr. Ming-Tai Chao
North Carolina Department of Environment and Natural Resources
Solid Waste Section
401 Oberlin Road, Ste. 150
Raleigh, North Carolina 27605

Subject: Dare County, North Carolina
Dare County C&DLF
Phase 4 Construction Quality Assurance Report
Permit No. 28-03

Dear Mr. Mussler:

On behalf of Dare County (County), Camp Dresser & McKee (CDM) is submitting the attached two (2) copies of the Construction Quality Assurance (CQA) report documentation for Phase 4 of the Dare County C&DLF for your review. Also attached are two (2) PDF digital copies on compact disk.

Please accept this letter as the certification statement required by Rule .15A NCAC 13B .0541(d)(4). The testing results and other documentation presented in the attached CQA document have been either reviewed by me or under my direct supervision, and generally reflect the installation and testing observed during construction. To the best of my knowledge, information, and belief, the construction of Phase 4 was completed in general accordance with:

- The approved CQA Plan;
- The conditions of the Permit to Construct;
- The requirements of Rule .0541; and
- Acceptable engineering practices.

CDM
5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
tel: 919 787-5620
fax: 919 781-5730



On March 10, 2010, the Solid Waste Section approved the Permit to Construct for Phase 4. The intent of this submittal is to receive a Permit to Operate for Phase 4.

In addition to this document, there were two conditions of the Permit to Construct that were not complete, which include:

- Alternate tire disposal other than landfilling and
- A new white goods area.

As of January 1, 2011 Dare County has contract for tire disposal and the County is currently working on relocating the white goods disposal area adjacent to the transfer station.

If you have any comments or need additional information for your review, please do not hesitate to contact me at (919) 325-3500.

Very truly yours,

W. Michael Brinchek, P.E.
Camp Dresser & McKee

NORTH CAROLINA PROFESSIONAL SEAL 028426 ENGINEER W. MICHAEL BRINCHEK

02/14/2011

cc: E. Mann, Dare County
File

# Dare County Construction and Demolition Landfill
# Dare County, North Carolina

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## Cell No. 4 Construction and Demolition Debris Landfill
## Construction Quality Assurance Report

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NORTH CAROLINA PROFESSIONAL SEAL 026428 ENGINEER W. MICHAEL BRINCKER

02/11/2011

February 2011

Firm Licensure: F-0412

CDM

Raleigh, North Carolina

# Contents

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**Section 2 Compacted Fill – Base Pad**

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2.2 Site Preparation ..... 2-1
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Appendices

***Appendix A* Compacted Fill – Base Pad**

A-1 Daily CQC Reports
A-2 CQA Summary Report
A-3 Project Meeting Minutes
A-4 Topographic Surveys
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# Section 1
# Introduction

The Dare County Construction and Demolition Debris Landfill (C&DLF) site is located west of US Highway 264 approximately 2.4 miles south of the intersection of US Highway 64/264 in Dare County, North Carolina. The site was issued a Permit to Construct (Permit No. 28-03) by the North Carolina Department of Environment and Natural Resources Solid Waste Section on March 10, 2010. Primary access to the landfill is the existing landfill entrance road and the perimeter access road located off Cub Road.

This report summarizes Construction Quality Assurance (CQA) services performed and provides complete CQA documentation for the Dare County C&DLF – Phase 4 Construction Project (Phase 4). This report contains daily field reports, test results, and discussions of the test results and procedures used during Phase 4 construction of the compacted base pad.

Phase 4 was constructed in accordance with North Carolina Solid Waste Rules, 15A NCAC 13B .0541; the Construction Contract Documents and the approved Dare County C&DLF Permit to Construct Application. The components of Phase 4 are addressed within this report as follows:

- Section 2 – Compacted Base Pad (all earthwork performed associated with the Phase 4 area)

Documentation compiled throughout the construction of the C&DLF, which append the above sections, including the Record Drawings, is provided in Appendix A of this report.

The parties involved in the construction, testing, and construction observation services and their respective roles are summarized in the following table.

| Party | Role |
|---|---|
| Camp Dresser & McKee (CDM) | Engineer and Engineer Field Representative (EFR)—provided general services during construction such as coordination of project meetings, clarification of design issues, troubleshooting of field problems, review of pay requests and shop drawings, issuance of change orders, closing out of the project, and other administrative tasks. |

| | |
|---|---|
| Glover Construction Company, Inc. (Glover) | General construction contractor. |
| GET Solutions, Inc. (GET) | Quality Assurance Laboratory - CQA independent testing laboratory retained by CDM to conduct CQA testing of soils materials and provide additional on-site observation required to fulfill the responsibilities of the EFR. |
| Geotechnics, Inc | Construction Quality Control Laboratory - CQC independent testing laboratory retained by Glover to conduct conformance tests for soils. |

# Section 2
# Compacted Fill – Base Pad

## 2.1 General

Glover Construction Company, Inc. (Contractor) was the general contractor responsible for all aspects of the C&DLF construction. Geotechnics, Inc. was retained by Glover Construction Company, Inc. as the Quality Control Laboratory (QCL) for the geotechnical construction aspects of the project. Camp Dresser & McKee (CDM) retained GET Solutions, Inc. (GET) to conduct Construction Quality Assurance (CQA) observation and field testing for the owner, Dare County.

Earthwork conducted for Phase 4 construction included those work activities required to provide a structurally stable foundation for the 10.3-acre Phase 4 area for both the lower three feet and upper two feet of the C&DLF base pad. Construction activities consisted of site preparation and fill placement.

Based on observations, testing, and review of the certified subgrade elevation surveys provided by the Contractor, the fill for the C&DLF base pad for Phase 4 have been completed in general accordance with the approved CQA Plan and Contract Plans and Specifications. Documentation of the general concurrence of the CQA Plan and Contract Plans is included in the CQC Daily Field Reports and Photos (**Appendix A-1**); CQA Summary Report (**Appendix A-2**) and project meeting minutes (**Appendix A-3**).

## 2.2 Site Preparation

### 2.2.1 Overview

Preparation of the site consisted of clearing and grubbing, topsoil removal, soil excavation and proof-rolling.

### 2.2.2 Clearing, Grubbing, and Topsoil Removal

Periodic observation of site clearing and grubbing was made and the subgrade was observed prior to fill placement to assure that the soil surfaces were generally free of organic matter and other objectionable materials.

### 2.2.3 Proof-rolling

Proof-rolling using a fully loaded dump truck was performed following clearing, grubbing, and topsoil removal and prior to fill placement. All subgrade areas appeared firm during proofrolling.

### 2.2.4 Bridge Lift Installation

Since grade following clearing and grubbing was generally at groundwater elevation, a two-foot bridge lift of relatively free draining sandy soil was placed to allow equipment to operate across the entire base pad. The upper portion of the bridge lift

was compacted and tested to allow subsequent placement of compacted fill in accordance with the Specifications.

## 2.3 Filling – Base Pad Construction

### 2.3.1 Fill Materials

The C&DLF base pad construction required approximately 101,791 cy of material – 67,093 for the lower three feet and 34,698 for the upper two feet. All fill materials were obtained from the County's borrow pit located to the south of the C&DLF.

Based on the results of the testing and surveying performed on the base bad, the constructed base pad conforms to the requirements identified in Section 6.1, Subparagraph (A) of the approved CQA Plan, which include:

- A minimum 35 degree friction angle tested in accordance with ASTM D4767;
- A soil classification of SM, SC, ML, CL, MH and CH for the upper two feet of the base pad in accordance with ASTM D2487; and
- A 5-foot-thick constructed pad as verified by topographic survey.

Topographic surveys certified project quantities are provided in **Appendix A-4**.

### 2.3.2 Conformance Testing

Initial QAL conformance samples for the compacted fill materials were obtained by GET. The initial QAL samples were taken and tested in accordance with Section 6.2, Subparagraph (A) of the approved CQA Plan using the following methods: Soil Classification (ASTM D2487); Sieve Analysis (ASTM D422); Atterberg Limits (ASTM 4318); Moisture-Density (ASTM D698 and D1557); and Natural Moisture (ASTM D2216) and Shear Test (ASTM D4767). A minimum of two QAL conformance test were required – one for the lower three feet of fill and one for the upper two feet of fill. The results of the QAL testing indicated that soil materials generally met the requirements for the compacted fill materials. The results of the initial conformance tests are provided in **Appendix A-5**.

Periodic conformance samples for compacted fill materials were collected by the QCL and tested in accordance with Section 6.2, Subparagraph (B) of the approved CQA plan using the following methods: Grain Size (ASTM D422); Atterberg Limits (ASTM D4318); moisture-density relationship determinations (ASTM D698); Natural Moisture (ASTM D2216); and Soil Classification (ASTM D2487). A minimum of 51 Grain Size, Atterberg Limits, Natural Moisture tests and Soil Classification and 21 Moisture/Density were required. The QCL conducted 51 Grain Size, Atterberg Limits, Natural Moisture tests and Soil Classification and 24 Moisture/Density. The results of the QCL testing indicated that soil materials generally met the requirements

for the compacted fill material. The results of the periodic conformance testing conducted by the QCL are provided in **Appendix A-6**.

### 2.3.3 CQC and CQA Testing

As noted above, approximately 101,791 cy of fill material were required for Phase 4 construction. In addition to the conformance samples collected and tested by the CQC and CQA tests were performed on the in-place compacted fill materials by the QAL and QCL in accordance with Section 6.4, subparagraph A of the approved CQA plan and as modified below.

The approved CQA Plan identified the QAL as the responsible entity to perform field CQA testing on the in-place compacted fill material at a frequency four tests per acre per lift. When the contract specifications were developed for the construction project, the earthwork specification required the Contractor's QCL perform CQC testing at four tests per acre per lift, which is the same frequency as required by the CQA Plan. Since this was provided in the Contractors bid, a variance request to the CQA plan was submitted to NCDENR SWS on May 7, 2010 to allow the Contractor's QCL to perform the required CQA testing as provided in Section 6.4 of the approved CQA plan provided the QAL agent monitored testing and fill placement and performed a minimum of one test per acre per lift.

Compacted fill material was monitored such that:

- In-Place Density - Compacted to a minimum of 95% of the maximum dry density of the soil as determined by ASTM D698
- Loose Lift Thickness - 8 inches maximum

Based on observations, compacted fill materials were generally placed in 8-inch-thick loose lifts; spread with CAT D6H and D8H bulldozers and compacted with a roller pulled by a farm tractor. Compacted fill placement was continuously monitored by the QCL and observed periodically by GET technicians. The materials were also checked to verify the absence of topsoil, roots, ice, and other deleterious materials. Lift thicknesses were monitored to verify that maximum thickness requirement was not exceeded.

Both QAL and QCL personnel performed CQA and CQC density and moisture content tests to evaluate the compaction (percent of maximum dry density) of the base pad soils. 450 CQC and 81 CQA Field density tests were performed at the top of the bridge lift and on every subsequent lift of fill to meet the minimum frequency of one test per 10,000 square feet of fill placed. The results of the field density/moisture tests for the QCL and QAL are included in **Appendix A-7** and **A-8** respectively.

### 2.3.4 Base Pad Construction – Upper Two Feet

Materials for the upper two feet of the base pad must possess the following characteristics:

- A soil classification of SM, SC, ML, CL, MH and CH in accordance with ASTM D2487; and

All QAL and QCL material testing identified herein show that base pad materials were classified as either SP or SM in accordance with ASTM D2487. Materials were segregated as encountered in the stockpile and borrow pit to ensure that no material classified as SP was placed in the upper two feet of the base pad.

# *Appendix A-1*

| | |
|---|---|
| **Day:** | **Mon.** |
| **Date:** | **4.5.10** |
| **Log No.:** | **01** |
| **Page:** | **1 of 1** |

Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 12:30pm<br>**Departed:** 5:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| CDM | Dan Forbes |

| | | | |
|---|---|---|---|
| **Weather Conditions:** | Sunny | **Temperature:** | 70 - 80's |

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 Dozers, 5 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Forman, 8 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site and made contact with Glover and CDM reps.
- Glover continued mobilization activities.
- Glover began stripping and grubbing of vegetation within the Phase 4 limits.
- F & R began abandonment of existing monitoring wells.
- Glover began hauling Common Fill to repair and re-grade the existing haul road adjacent to inactive Cells 1 and 2.
- Custom Carolina Contractors began installation of the perimeter silt fence.
- Geotechnics Rep. departed the site.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Prepared By:** | JRB | **Date:** | 4.5.10 | **Checked By:** | [illegible] | **Date:** | 4-14-10 |

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| | |
|---|---|
| **Day:** | **Tues.** |
| **Date:** | **4.6.10** |
| **Log No.:** | **02** |
| **Page:** | **1 of 1** |

Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:45am<br>**Departed:** 5:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

| | | | |
|---|---|---|---|
| **Weather Conditions:** | Sunny | **Temperature:** | 70 - 80's |

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 Dozers, 5 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Forman, 8 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued mobilization activities.
- Glover continued stripping and grubbing of vegetation within the Phase 4 limits.
- F & R continued abandonment of existing monitoring wells.
- Custom Carolina Contractors began installation of the perimeter silt fence.
- Glover continued placement of Common Fill inside the Phase 4 limits. Glover will place a two foot bridge lift across the entire Phase 4 footprint per Addendum No.1.
- Geotechnics Rep. performed CQC Moisture / Density testing by Nuclear and Sandcone methods on placed and compacted Common Fill Bridge Lift material (see CMFDR-01 for results).
- Geotechnics Rep. departed the site.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Prepared By:** | JRB | **Date:** | 4.6.10 | **Checked By:** | MM | **Date:** | 4-14-10 |

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| | |
|---|---|
| **Day:** | **Wed.** |
| **Date:** | **4.7.10** |
| **Log No.:** | **03** |
| **Page:** | **1 of 1** |

Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:45am<br>**Departed:** 6:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

| | | | |
|---|---|---|---|
| **Weather Conditions:** | Sunny, Windy | **Temperature:** | 70 - 80's |

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 Dozers, 5 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Forman, 8 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued mobilization activities.
- Glover continued stripping and grubbing of vegetation within the Phase 4 limits.
- F & R completed abandonment of existing monitoring wells.
- Custom Carolina Contractors completed installation of the perimeter silt fence.
- Glover continued placement of Common Fill Bridge Lift inside the Phase 4 limits.
- Geotechnics Rep. performed CQC Moisture / Density testing by Nuclear and Sandcone methods on placed and compacted Common Fill Bridge Lift material (see CMFDR-01 for results).
- A change in Common Fill Maximum Dry Density was noticed during one-point proctor testing and a Bulk sample of Common Fill (CF-04) was obtained.
- Geotechnics Rep. departed the site.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Prepared By:** | JRB | **Date:** | 4.7.10 | **Checked By:** | [illegible] | **Date:** | 4-14-10 |

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| | |
|---|---|
| **Day:** | **Thurs.** |
| **Date:** | **4.8.10** |
| **Log No.:** | **04** |
| **Page:** | **1 of 1** |

Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 7:00am<br>**Departed:** 6:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

| | | | |
|---|---|---|---|
| **Weather Conditions:** | Sunny, Windy | **Temperature:** | 60 - 70's |

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 Dozers, 5 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Forman, 8 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued mobilization activities.
- Glover continued stripping and grubbing of vegetation within the Phase 4 limits.
- Glover continued placement of Common Fill inside the Phase 4 limits.
- Geotechnics Rep. performed CQC Moisture / Density testing by Nuclear and Sandcone methods on placed and compacted Common Fill Bridge Lift material (see CMFDR-01 for results).
- Geotechnics Rep. departed the site.

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|---|---|---|---|---|---|---|---|
| **Prepared By:** | JRB | **Date:** | 4.8.10 | **Checked By:** | MWS | **Date:** | 4-15-10 |

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|---|---|
| **Day:** | **Fri.** |
| **Date:** | **4.9.10** |
| **Log No.:** | **05** |
| **Page:** | **1 of 1** |

Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 8:30am |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

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|---|---|---|---|
| **Weather Conditions:** | Overcast, Rain | **Temperature:** | 60 - 70's |

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 Dozers, 5 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Forman, 8 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued stripping and grubbing of vegetation within the Phase 4 limits.
- Glover continued placement of Common Fill inside the Phase 4 limits.
- Glover terminated work at approx. 8:00am due to wet site conditions from adverse weather (rain). Approximately .8" of rain accumulated in the onsite rain gauge.
- Geotechnics Rep. departed the site.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Prepared By:** | JRB | **Date:** | 4.9.10 | **Checked By:** | MM | **Date:** | 4-15-10 |

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|---|---|
| **Day:** | **Sat.** |
| **Date:** | **4.10.10** |
| **Log No.:** | **06** |
| **Page:** | **1 of 1** |

Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** NA<br>**Departed:** NA |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny, Windy **Temperature:** 70 - 80's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 Dozers, 5 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 2 Operators / Laborers

**Description of Daily Activities & Events**

- Glover continued stripping and grubbing operations.
- Geotechnics Rep. was not on site today.

**Prepared By:** JRB **Date:** 4.10.10 **Checked By:** MMS **Date:** 4-15-10

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|---|---|
| **Day:** | **Mon.** |
| **Date:** | **4.12.10** |
| **Log No.:** | **07** |
| **Page:** | **1 of 1** |

geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 10:00am<br>**Departed:** 5:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny **Temperature:** 70 - 80's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 Dozers, 5 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 8 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued stripping and grubbing of vegetation within the Phase 4 limits.
- Glover continued placement and compaction of Common Fill material.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.12.10 **Checked By:** [illegible] **Date:** 4-26-10

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| **Day:** | **Tues.** |
| **Date:** | **4.13.10** |
| **Log No.:** | **08** |
| **Page:** | **1 of 1** |

geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 5:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

| | | | |
|---|---|---|---|
| **Weather Conditions:** | Sunny | **Temperature:** | 70 - 80's |

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 Dozers, 5 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 8 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued stripping and grubbing of vegetation within the Phase 4 limits.
- Glover continued placement and compaction of Common Fill material.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-01 for results).
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.13.10 **Checked By:** MMT **Date:** 4-26-10

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|---|---|
| **Day:** | **Wed.** |
| **Date:** | **4.14.10** |
| **Log No.:** | **09** |
| **Page:** | **1 of 1** |

geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 5:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Overcast, AM Rain **Temperature:** 50's - 60's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 Dozers, 5 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 8 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued stripping and grubbing of vegetation within the Phase 4 limits.
- Glover resumed placement and compaction of Common Fill material at approx. 12:30pm. Common Fill placement was delayed due to wet site conditions from AM adverse weather (~ .3" of rain).
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-01 for results).
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.14.10 **Checked By:** MPS **Date:** 4-26-10

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|---|---|
| **Day:** | **Thurs.** |
| **Date:** | **4.15.10** |
| **Log No.:** | **10** |
| **Page:** | **1 of 1** |

geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 7:00am<br>**Departed:** 5:00pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

| | | | |
|---|---|---|---|
| **Weather Conditions:** | Sunny | **Temperature:** | 60's - 70's |

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 Dozers, 5 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 8 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued stripping and grubbing of vegetation within the Phase 4 limits.
- Glover continued placement and compaction of Common Fill material.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-01 for results).
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.15.10 **Checked By:** MMB **Date:** 4-26-10

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|---|---|
| **Day:** | **Fri.** |
| **Date:** | **4.16.10** |
| **Log No.:** | **11** |
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Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

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|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 7:00am<br>**Departed:** 10:00am |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

| | | | |
|---|---|---|---|
| **Weather Conditions:** | Sunny | **Temperature:** | 60's - 70's |

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 Dozers, 5 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 8 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued stripping and grubbing of vegetation within the Phase 4 limits.
- Glover continued placement and compaction of Common Fill material.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-01 for results).
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.16.10 **Checked By:** MPS **Date:** 4-26-10

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|---|---|
| **Day:** | **Mon.** |
| **Date:** | **4.19.10** |
| **Log No.:** | **12** |
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Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 10:00am<br>**Departed:** 5:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Partly Cloudy **Temperature:** 60 - 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued stripping and grubbing of vegetation within the Phase 4 limits.
- Glover continued placement and compaction of Common Fill material.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.19.10 **Checked By:** [illegible] **Date:** 5-6-10

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|---|---|
| **Day:** | **Tues.** |
| **Date:** | **4.20.10** |
| **Log No.:** | **13** |
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geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 7:00am<br>**Departed:** 5:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Partly Cloudy **Temperature:** 60 - 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued placement and compaction of Common Fill material.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-02 for results).
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.20.10 **Checked By:** RWS **Date:** 5-6-10

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|---|---|
| **Day:** | **Wed.** |
| **Date:** | **4.21.10** |
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geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:45am<br>**Departed:** 5:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Overcast, Light Rain **Temperature:** 60's - 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued placement and compaction of Common Fill material.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-02 for results).
- Dare Co. Subcontractor for crushing and stockpiling concrete debris from Phase 4 limits mobilized
- Glover has completed grubbing / stripping operations and bridge lift placement up to the concrete debris area.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.21.10 **Checked By:** MPS **Date:** 5-6-10

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|---|---|
| **Day:** | **Thurs.** |
| **Date:** | **4.22.10** |
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geotechnics
INTEGRITY IN TESTING

# Daily Field Report

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|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 5:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny **Temperature:** 60's - 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued placement and compaction of Common Fill material.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-02 for results).
- Glover began fine grading the subgrade of the southern half of Phase 4.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.22.10 **Checked By:** MM **Date:** 5-6-10

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|---|---|
| **Day:** | **Fri.** |
| **Date:** | **4.23.10** |
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geotechnics
INTEGRITY IN TESTING

# Daily Field Report

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|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 12:00pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| CDM | Mike Brinchek, P.E. |

| | | | |
|---|---|---|---|
| **Weather Conditions:** | Sunny | **Temperature:** | 60's - 70's |

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued placement and compaction of Common Fill material.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-02 for results).
- Glover continued fine grading the subgrade of the southern half of Phase 4.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.23.10 **Checked By:** MMS **Date:** 5-6-10

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|---|---|
| **Day:** | **Mon.** |
| **Date:** | **4.26.10** |
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Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** NA<br>**Departed:** NA |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Partly Cloudy, Windy **Temperature:** 60 - 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Glover continued fine grading operations.
- Dare Co. subcontractor began crushing operations of existing concrete debris pile.
- Geotechnics Rep. was not on site today.

**Prepared By:** JRB **Date:** 4.26.10 **Checked By:** [illegible] **Date:** 5-14-2010

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|---|---|
| **Day:** | **Tues.** |
| **Date:** | **4.27.10** |
| **Log No.:** | **18** |
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geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 9:30am<br>**Departed:** 5:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny, Windy **Temperature:** 60 - 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-03 for results).
- Survey Solutions was on site to perform survey of graded subgrade.
- Glover began placement of upper two feet of Phase 4 subgrade. Subgrade material has a high moisture content and is highly silty. Further borrow source evaluation is needed as the remaining soil material could create workability issues.
- Dare Co. subcontractor continued crushing operations of existing concrete debris pile.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.27.10 **Checked By:** MPS **Date:** 5-14-2010

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|---|---|
| **Day:** | **Wed.** |
| **Date:** | **4.28.10** |
| **Log No.:** | **19** |
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Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

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|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:45am<br>**Departed:** 6:00pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| CDM | Mike Brinchek, P.E. |

**Weather Conditions:** Sunny, Windy **Temperature:** 60's - 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-03 for results).
- Glover began installation of 36" Corrugated HDPE Canal Crossing Pipes.
- Dare Co. subcontractor continued crushing operations of existing concrete debris pile.
- Glover began backfilling of canal crossing pipes.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.28.10 **Checked By:** MAPS **Date:** 5-14-2010

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|---|---|
| **Day:** | **Thurs.** |
| **Date:** | **4.29.10** |
| **Log No.:** | **20** |
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geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 5:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny **Temperature:** 60's - 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-03 for results).
- Glover began grading the south entrance road and canal crossing.
- Dare Co. subcontractor continued crushing operations of existing concrete debris pile.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.29.10 **Checked By:** MBPS **Date:** 5-14-2010

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| **Day:** | **Fri.** |
| **Date:** | **4.30.10** |
| **Log No.:** | **21** |
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Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 8:00pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny **Temperature:** 60's - 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued grading the south entrance road and canal crossing.
- Dare Co. subcontractor continued crushing operations of existing concrete debris pile.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 4.30.10 **Checked By:** RMB **Date:** 5-14-2010

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| **Day:** | **Wed.** |
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Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 1:00pm<br>**Departed:** 5:00pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| CDM | Mike Brinchek. P.E. |

**Weather Conditions:** Sunny **Temperature:** 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent

**Description of Daily Activities & Events**

- Geotechnics Rep. arrived on site.
- Geotechnics Rep. performed CQC Moisture / Density testing on the previously placed and compacted Common Fill for the South Access Road (see CFFDR-04 for results).
- CDM, Dare. Co., Glover and Geotechnics Reps. met at the Dare Co. C&D Landfill to discuss options for expanding the existing Borrow Pit in order to obtain enough common fill material to complete construction of Phase No. 4.
- Samples were obtained for the proposed expansion area for Laboratory Classification testing to determine if material is suitable for the upper two feet of the Phase No. 4 pad.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 5.19.10 **Checked By:** MMS **Date:** 6-7-2010

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| **Day:** | **Thurs.** |
| **Date:** | **5.20.10** |
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geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** NA<br>**Departed:** NA |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny **Temperature:** 60 - 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Glover Construction resumed placement of the upper two feet of the Phase 4 C&D Disposal Area.
- Geotechnics Rep. was not on site today.

**Prepared By:** JRB **Date:** 5.20.10 **Checked By:** MJM **Date:** 6-2-2010

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| **Day:** | **Fri.** |
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geotechnics
INTEGRITY IN TESTING

# Daily Field Report

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|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 9:00am<br>**Departed:** 7:00pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny, Windy **Temperature:** 60's - 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued placement of upper Common Fill materail for the Phase 4 C&D Disposal Area.
- Geotechncis Rep. observed that Common Fill materail was to wet of optimum to obtain compaction requirments. Glover was instructed to dry materail by discing before compaction.
- Geotechncis Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill materail (see CFFDR-04 for results).
- Geotechncis Rep. obtained bulk samples for Laboratory Proctor and Classification testing.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 5.21.10 **Checked By:** MMS **Date:** 6-2-2010

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| **Day:** | **Sat.** |
| **Date:** | **5.22.10** |
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geotechnics
INTEGRITY IN TESTING

# Daily Field Report

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|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:00am<br>**Departed:** 1:00pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

| | | | |
|---|---|---|---|
| **Weather Conditions:** | Sunny | **Temperature:** | 60's - 70's |

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued placement of upper Common Fill materail for the Phase 4 C&D Disposal Area.
- Glover continued drying operations of Common Fill materail.
- Geotechncis Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill materail (see CFFDR-04 for results).
- Geotechncis Rep. obtained bulk samples for Laboratory Proctor and Classification testing.
- Geotechnics Rep. departed the site.

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|---|---|---|---|---|---|---|---|
| **Prepared By:** | JRB | **Date:** | 5.22.10 | **Checked By:** | MCS | **Date:** | 6-7-2010 |

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|---|---|
| **Day:** | **Mon.** |
| **Date:** | **5.24.10** |
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geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** NA<br>**Departed:** NA |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Overcast **Temperature:** 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent

**Description of Daily Activities & Events**

- Glover continued drying operations of previously placed Common Fill material.
- Glover began hauling and placement of ABC base course for the canal crossing entrance road.
- Glover resumed upper Common Fill placement.
- Geotechnics Rep. was not on site today.

**Prepared By:** JRB **Date:** 5.24.10 **Checked By:** MBS **Date:** 6-9-2010

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|---|---|
| **Day:** | **Tues.** |
| **Date:** | **5.25.10** |
| **Log No.:** | **27** |
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INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 9:30am<br>**Departed:** 6:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Overcast **Temperature:** 70's - 80's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued placement of upper Common Fill material for the Phase 4 C&D Disposal Area.
- Glover continued drying operations of Common Fill material.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-05 for results).
- Geotechnics Rep. obtained bulk samples for Laboratory Proctor and Classification testing.
- GET Rep. was onsite to perform CQA Moisture / Density on previously placed Common Fill material.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 5.25.10 **Checked By:** MAS **Date:** 6-9-2010

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|---|---|
| **Day:** | **Wed.** |
| **Date:** | **5.26.10** |
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Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 6:00pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny, Windy **Temperature:** 70's - 80's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover resumed placement of the Common Fill Bridge Lift in acres 15 and 16.
- Glover continued drying operations of previously placed upper Common Fill material.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 5.26.10 **Checked By:** RMB **Date:** 6-9-2010

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|---|---|
| **Day:** | **Thurs.** |
| **Date:** | **5.27.10** |
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geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 6:00pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny **Temperature:** 70's - 80's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued placement of the Common Fill Bridge Lift in acres 15 and 16.
- Glover continued drying operations of previously placed upper Common Fill material.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 5.27.10 **Checked By:** MMS **Date:** 6-9-2010

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|---|---|
| **Day:** | **Fri.** |
| **Date:** | **5.28.10** |
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Geotechnics
INTEGRITY IN TESTING

# Daily Field Report

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|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 9:00am |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny **Temperature:** 70's - 80's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued placement of the Common Fill Bridge Lift in acres 15 and 16.
- Geotechncis Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-05 for results).
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 5.28.10 **Checked By:** MMS **Date:** 6-9-2010

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| **Day:** | **Tues.** |
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INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 9:30am<br>**Departed:** 6:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny **Temperature:** 70's - 80's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent

**Description of Daily Activities & Events**

- Geotechnics Rep. arrived on site.
- Glover continued placement of Common Fill in acres 15 and 16.
- Glover performed drying operations of previously placed upper Common Fill.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 6.1.10 **Checked By:** MMS **Date:** 6-25-10

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|---|---|
| **Day:** | **Wed.** |
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INTEGRITY IN TESTING

# Daily Field Report

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|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 6:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny, PM Rain **Temperature:** 70's - 80's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued drying operations of previously placed upper Common Fill material.
- Geotechnics Rep. performed CQC Moisture / Density testing of Common Fill in acres 15 and 16 (see CFFDR-06 for results).
- Glover fine graded the remaining acres of the Phase 4 subgrade.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 6.2.10 **Checked By:** MMS **Date:** 6-28-10

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|---|---|
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| **Date:** | **6.3.10** |
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geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 5:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Overcast **Temperature:** 70's - 80's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued drying operations of previously placed upper Common Fill material.
- Glover placed upper Common Fill in acres 15 and 16.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 6.3.10 **Checked By:** MOJ **Date:** 6-28-10

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| | |
|---|---|
| **Day:** | **Fri.** |
| **Date:** | **6.4.10** |
| **Log No.:** | **34** |
| **Page:** | **1 of 1** |

geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 1:00pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny **Temperature:** 70's - 80's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Glover continued drying operations of previously placed upper Common Fill material.
- Geotechnics Rep. performed CQC testing of previously placed upper Common Fill material (see CFFDR-06 for results).
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 6.4.10 **Checked By:** MBJ **Date:** 6-28-10

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| | |
|---|---|
| **Day:** | **Mon.** |
| **Date:** | **6.7.10** |
| **Log No.:** | **35** |
| **Page:** | **1 of 1** |

geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** NA<br>**Departed:** NA |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Overcast **Temperature:** 70's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent

**Description of Daily Activities & Events**

- Geotechnics Rep. arrived on site.
- Glover made no progress due to wet site conditions from adverse weather over the weekend. Approximately 2.5" of rain has accumulated.
- Glover performed drying operations of previously placed upper Common Fill material.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 6.7.10 **Checked By:** MBS **Date:** 6-29-10

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| | |
|---|---|
| **Day:** | **Thurs.** |
| **Date:** | **6.10.10** |
| **Log No.:** | **36** |
| **Page:** | **1 of 1** |

geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 9:30am<br>**Departed:** 6:00pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny **Temperature:** 80's - 90's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-07 for results).
- Glover resumed upper Common Fill material placement.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 6.10.10 **Checked By:** RPS **Date:** 6-29-10

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| | |
|---|---|
| **Day:** | **Fri.** |
| **Date:** | **6.11.10** |
| **Log No.:** | **37** |
| **Page:** | **1 of 1** |

geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 6:00pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny, Windy **Temperature:** 80's - 90's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-07 for results).
- Glover continued upper Common Fill material placement.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 6.11.10 **Checked By:** MMS **Date:** 6-29-10

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| | |
|---|---|
| **Day:** | **Sat.** |
| **Date:** | **6.12.10** |
| **Log No.:** | **38** |
| **Page:** | **1 of 1** |

geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 9:30am |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

| | | | |
|---|---|---|---|
| **Weather Conditions:** | Sunny | **Temperature:** | 80's - 90's |

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-07 for results).
- Glover began fine grading the Phase 4 pad.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 6.12.10 **Checked By:** MPS **Date:** 6-29-10

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| | |
|---|---|
| **Day:** | **Mon.** |
| **Date:** | **6.14.10** |
| **Log No.:** | **39** |
| **Page:** | **1 of 1** |

geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 12:00pm<br>**Departed:** 5:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny **Temperature:** 80's - 90's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent

**Description of Daily Activities & Events**

- Geotechnics Rep. arrived on site.
- Glover continued fine grading operations.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-08 for results).
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 6.14.10 **Checked By:** [illegible] **Date:** 6-24-30

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| | |
|---|---|
| **Day:** | **Tues.** |
| **Date:** | **6.15.10** |
| **Log No.:** | **40** |
| **Page:** | **1 of 1** |

geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 7:30pm |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

**Weather Conditions:** Sunny **Temperature:** 80's - 90's

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. arrived on site.
- Glover continued fine grading operations.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted Common Fill material (see CFFDR-08 for results).
- Survey Solutions was on site to survey final grade.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 6.15.10 **Checked By:** MMB **Date:** 6-29-10

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| | |
|---|---|
| **Day:** | **Wed.** |
| **Date:** | **6.16.10** |
| **Log No.:** | **41** |
| **Page:** | **1 of 1** |

geotechnics
INTEGRITY IN TESTING

# Daily Field Report

| | | | |
|---|---|---|---|
| **Project Name:** | Dare Co. C&D LF - Phase No. 4 | **Project No.:** | 2010-652 |
| **Client Name:** | Glover Construction | **Client Contact:** | Ruben Williams |
| **Site Location:** | Manteo, NC | **Time on Site:** | **Arrived:** 6:30am<br>**Departed:** 7:30am |
| **General Contractor:** | Glover Construction | **Superintendent:** | Ruben Williams |

**Other Firms / Sub-Contractor Represented On Site**

| Firm / Sub-Contractor | Representative's Name and Title |
|---|---|
| | |

| | | | |
|---|---|---|---|
| **Weather Conditions:** | Sunny | **Temperature:** | 80's - 90's |

**Contractor's Equipment:** 1 CAT 345 Trackhoe, 1 CAT 325 Trackhoe, 2 CAT D6 & 1 D5 Dozers, 7 Volvo Articulated Dump trucks, 1 CAT 683E Vibratory Smoothdrum Roller, 1 CAT 938G Frontend Loader, 1 New Holland TJ 450 Farm Tractor with Smoothdrum Roller and 1 Water Truck

**Contractor's Personnel:** 1 Superintendent, 1 Foreman, 9 Operators / Laborers and 1 Mechanic

**Description of Daily Activities & Events**

- Geotechnics Rep. Jacob R. Buda arrived on site.
- Geotechnics Rep. performed CQC Moisture / Density testing of placed and compacted ABC Base Course material.
- Geotechnics Rep. departed the site.

**Prepared By:** JRB **Date:** 6.16.10 **Checked By:** MBS **Date:** 6-29-10

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# *Appendix A-2*

July 2, 2010

TO: **CDM**
400 Glenwood Avenue
Suite 300
Raleigh, NC 27612

Attn: Mr. Michael Brinchek, P.E.

RE: Report of Quality Assurance Construction Materials Testing Services
**Dare County Landfill – Phase (Cell) 4**
Dare County, North Carolina
**GET** Project No: EC10-166T

Dear Mr. Brinchek:

As requested and as coordinated by the on-site representative of Glover Construction, a representative of **GET Solutions, Inc.** visited the above stated site between the dates of April 27, 2010 and June 21, 2010. The purpose of our site visits was to perform construction materials testing services in accordance with the Quality Assurance (QA) testing program outlined in the project specifications for the proposed expansion of the existing facility. These evaluations were performed by completing the following tasks:

- Specifications Section 6.2.A: Collected bulk soil samples and returned them to our laboratory for Standard Proctor (ASTM D 698), Classification testing (including moisture content, sieve/gradation, and Atterberg Limits testing), and three (3) point Triaxial Shear testing. These samples included on-site excavated soils for use as select fill for the construction areas.

- Specifications Section 6.2.B: Collected bulk soil samples and returning them to our laboratory for Standard Proctor (ASTM D 698) and Classification testing (including moisture content, sieve/gradation, and Atterberg Limits testing). These samples included on-site excavated soils for use as select fill for the construction areas.

- Specifications Section 6.4.1A: Performed field density tests in accordance with (ASTM D 6938) to verify degree of compaction for the fill soils used for establishing the design grades for the project site. As required by the project specifications, the field compaction testing services were to be performed at a frequency of at least four (4) tests per acre for each lift of fill, which would have resulted in at least 53 tests per lift of fill. Subsequently, as indicated by CDM, it was approved to decrease this frequency to one (1) test per acre for each lift of fill.

- Specifications Section 6.4.1.A: Obtained bulk soil samples from each compaction test location and performed laboratory moisture content testing (ASTM D2216). As required by the project specifications, the laboratory moisture content testing was to be performed at a frequency of at least four (4) tests per acre for each lift of fill, which would have resulted in at least 53 tests per lift of fill. Subsequently, as indicated by CDM, it was approved to decrease this frequency to one (1) test per acre for each lift of fill.

## Bulk Soil Samples

During our site visits between the dates of April 27 and May 25, 2010, a total of six (6) bulk soil samples were collected by the **G E T Solutions, Inc.** representative from the project site and returned to our laboratory for Standard Proctor, Natural Moisture, and –#200 Sieve Wash testing and analysis. Additionally, a total of four (4) of the bulk soil samples were subjected to 3-point Triaxial Shear testing procedures. Each of the samples were collected from the in-place on-site excavated soils utilized as select fill to establish the design grade elevations for the landfill expansion. Based on our laboratory test results from Proctor No. 1 through Proctor No. 6, the on-site excavated soils were classified to consist of Tan or Gray poorly graded fine to medium SAND (SP) or Silty fine to medium SAND (SM) with varying amounts of silt and/or clay.

Additionally, a total of eighty one (81) bulk soil samples were collected by the **G E T Solutions, Inc.** representative from the compaction test locations (1 per compaction test location) of the in place select fill and returned to our laboratory for Natural Moisture content testing. These laboratory test results indicated an in-place moisture content generally ranging from 6.7% to 24.6%. As necessary to provide stable conditions and to prepare the filled areas for compaction, the contractor scarified each lift of in place fill materials and allowed the materials to air dry.

The results of these laboratory tests as well as the laboratory test results discussed above are summarized on the “Comprehensive Laboratory Test Results” sheets, included with this report. Additionally, information regarding the laboratory testing procedures is also provided on the attached “Moisture Density Relationship (Proctor Curve)” sheets, “Particle Size Distribution Report” sheets, and the “Triaxial Shear Test Report” sheets.

## Field Density (Compaction) Testing:

During our site visits between the dates of April 29, 2010 and June 17, 2010, field density (compaction) testing was performed on the in-place select fill materials utilized to establish the design grade elevations for the proposed landfill expansion (Cell 4). This was accomplished by performing field density testing at the established grade elevations during our site visits throughout the proposed cell area. Periodically, it was indicated by the contractor that fill materials placed prior to our arrival ranged in thickness from 1 to 3 feet. Therefore, in order to observe the compaction of the deeper select fill soils, compaction testing procedures were also performed within the base of test pit excavations ranging from 1 to 3 feet deep, which were excavated at approximate 12-inch intervals.

As indicated in the project specifications, the select fill materials placed within the cell area were required to be compacted to at least 95% of the Standard Proctor maximum dry density (ASTM D 698). The results of our field and laboratory testing procedures indicated that the in place materials were compacted to at least 95% of the Standard Proctor (ASTM D698) maximum dry density. The results and locations of our field testing procedures are identified on the attached "Compaction Test Report" sheets.

We appreciate the opportunity to offer our services to you, and trust that you will call our Elizabeth City office with any questions that you may have.

Respectfully Submitted,
**G E T Solutions, Inc.**

Joshua E. Treakle
Project Manager

Gerald W. Stalls Jr., P.E.
Senior Project Engineer
NC Lic. #034336

Attachments: Comprehensive Laboratory Test Results
Moisture Density Relationship (Proctor Curve)
Particle Size Distribution Report(s)
Triaxial Shear Test Report(s)
Compaction Test Report(s)

NORTH CAROLINA PROFESSIONAL SEAL 034336 ENGINEER GERALD W. STALLS, JR.

# *Appendix A-3*

**DARE COUNTY**
**C&D LANDFILL**
**CELL 4 CONSTRUCTION PROJECT**
**PROJECT NO. 17952-56960**

**CONSTRUCTION PROGRESS MEETING NO. 1**
**TUESDAY, APRIL 27**
**MINUTES**

1. Minutes of Previous Meeting (Pre-construction Meeting):
   - Pre-construction meeting minutes have been distributed.

2. Report on Work Performed Since Last Meeting:
   - Mobilized equipment.
   - Began removing vegetative cover.
   - Began placement and compaction of fill material.
   - Subcontractor for concrete rubble mobilized.

3. Forecast of Work to be Performed in the Next 30 Days:
   - Complete removing vegetative cover.
   - Complete bridge lift installation and continue base pad construction.

4. Field Observations, Problems, and Conflicts:
   - Glover needs concrete material crushed and removed from Cell 4 limits.

5. Submittals:
   - Submittals are up-to-date.

6. Schedule:
   - Base pad construction scheduled for completion by end of June

7. Change Order Status:
   - No Change Orders have been submitted.

8. Complaint Resolution Status:
   - There have been no complaints received.

9. Other Business
   - No other business

**DARE COUNTY**
**C&D LANDFILL**
**CELL 4 CONSTRUCTION PROJECT**
**PROJECT NO. 17952-56960**

**CONSTRUCTION PROGRESS MEETING NO. 2**
**WEDNESDAY, MAY 19**
**NOTES**

1. Minutes of Previous Meeting:
   - No comments

2. Report on Work Performed Since Last Meeting:
   - Lower 3 feet of the southern area of the base pad constructed and surveyed.
   - Entrance road and canal crossing completed.
   - Construction of upper two feet of base pad started.

3. Forecast of Work to be Performed in the Next 30 Days:
   - Complete base pad.

4. Field Observations, Problems, and Conflicts:
   - Acceptable borrow material is limited. Sufficient material is left for the remaining lower three feet of base pad and roads, but there is not enough material to complete the upper two feet of base pad construction.
   - Project team identified additional material in the stockpile area to be used for the upper two feet of the base pad.

5. Submittals:
   - Submittals are up-to-date.

6. Schedule:
   - Base pad construction on schedule for completion by end of June

7. Change Order Status:
   - Glover to provide CDM with Change Order for additional base pad material.

8. Complaint Resolution Status:
   - There have been no complaints received.

9. Other Business
   - No other business

# *Appendix A-4*

# Dare County Construction and Demolition Landfill
# Dare County, North Carolina

---

## Cell No. 4 Construction and Demolition Debris Landfill
## Construction Quality Assurance Report

---

NORTH CAROLINA PROFESSIONAL SEAL 026428 ENGINEER W. MICHAEL BRINCKER

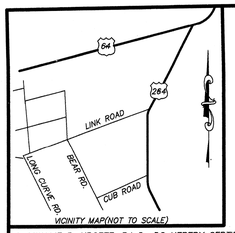
02/11/2011

February 2011

Firm Licensure: F-0412

CDM

Raleigh, North Carolina




VICINITY MAP(NOT TO SCALE)

I, DWAYNE R. KROEZE, P.L.S., DO HEREBY CERTIFY THAT THE AS-BUILT ELEVATIONS SHOWN ON THIS MAP WERE OBTAINED BY FIELD SURVEYS CONDUCTED UNDER MY SUPERVISION AND ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

6/28/2010

DWAYNE R. KROEZE, P.L.S. L-3911 DATE

NORTH CAROLINA PROFESSIONAL SEAL L-3911 LAND SURVEYOR DWAYNE R. KROEZE

**SURVEY CONTROL REFERENCE**

THE FOLLOWING N.C. GRID MONUMENT WERE USED TO ESTABLISH SURVEY CONTROL ON THE SITE. THE COORDINATES ARE BASED ON NAD 83 AND THE VERTICAL DATUM IS NAVD 88.

**TWO PINES**
(BENCHMARK FOR THE SITE)
N=780987.91
E=2947699.81
ELEV.=1.35

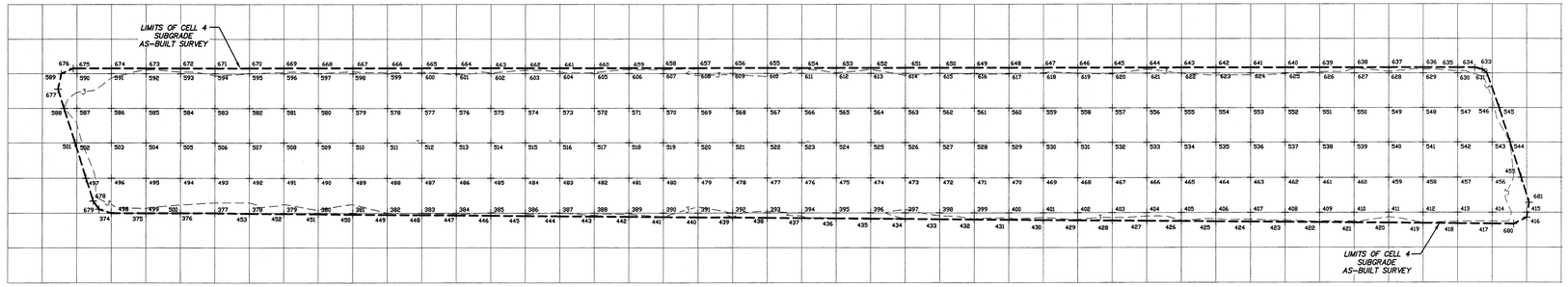
**TELEPHONE**
N=784290.29
E=2950250.55

**CONSTRUCTION PLAN REFERENCE**

PLANS TITLED "DARE COUNTY-CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL CELL NO 4", PREPARED BY CDM, DATED DECEMBER 2009.

**NOTES**

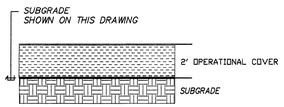
1. SEE SHEET 2 FOR GRID REFERENCE POINT COORDINATES AND ELEVATIONS.



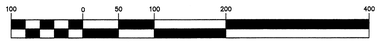

**LEGEND**

1378 GRID REFERENCE NUMBER
—100— INDEX CONTOUR
— — INTERMEDIATE CONTOUR

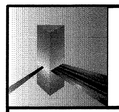
**CELL CROSS SECTION DETAIL**




GRAPHIC SCALE



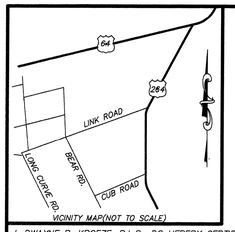

( IN FEET )
1 inch = 100 ft.



SURVEYING SOLUTIONS, P.C. C-1948
5401 HILLSBOROUGH ST. P.O. BOX 33324
RALEIGH, NC 27636
(919)-854-4833

AS-BUILT SURVEY OF THE
SUBGRADE
DARE COUNTY CONSTRUCTION AND DEMOLITION LANDFILL
CELL 4

| | | | | | |
|---|---|---|---|---|---|
| DRAWN BY: DK | CHECKED BY: JT | SURVEYED BY: DK, JT | CROATAN TOWNSHIP | DARE COUNTY | NORTH CAROLINA |
| SHEET 1 OF 2 | | | SCALE 1"=100' | SURVEY DATE: JUNE 2, 2010 | PROJECT 10-020 |




I, DWAYNE R. KROEZE, P.L.S., DO HEREBY CERTIFY THAT THE AS-BUILT ELEVATIONS SHOWN ON THIS MAP WERE OBTAINED BY FIELD SURVEYS CONDUCTED UNDER MY SUPERVISION AND ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DWAYNE R. KROEZE, P.L.S. L-3911 — DATE 6/08/2010

NORTH CAROLINA PROFESSIONAL SEAL L-3911 LAND SURVEYOR DWAYNE R. KROEZE

SURVEY CONTROL REFERENCE

THE FOLLOWING N.C. GRID MONUMENT WERE USED TO ESTABLISH SURVEY CONTROL ON THE SITE. THE COORDINATES ARE BASED ON NAD 83 AND THE VERTICAL DATUM IS NAVD 88.

TWO PINES
(BENCHMARK FOR THE SITE)
N=780587.91
E=2947699.81
ELEV.=1.35

TELEPHONE
N=784290.29
E=2950250.55

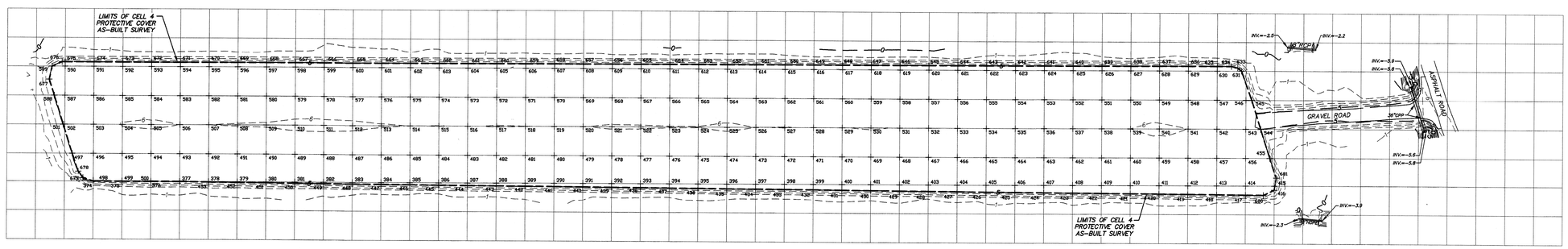
CONSTRUCTION PLAN REFERENCE

PLANS TITLED "DARE COUNTY-CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL CELL NO 4", PREPARED BY CDM, DATED DECEMBER 2009.

| GRID REFERENCE NUMBER | NORTHING | EASTING | DESIGN ELEVATION | AS-BUILT SUBGRADE ELEVATION | DIFFERENCE FROM DESIGN ELEVATION | AS-BUILT PROTECTIVE COVER ELEVATION | DIFFERENCE FROM DESIGN ELEVATION |
|---|---|---|---|---|---|---|---|
| 382 | 774474.79 | 2942532.98 | 5.02 | 3.00 | -2.02 | 5.03 | 0.01 |
| 383 | 774425.40 | 2942540.77 | 5.03 | 3.01 | -2.01 | 5.08 | 0.05 |
| 384 | 774376.01 | 2942548.56 | 5.03 | 3.02 | -2.02 | 5.06 | 0.03 |
| 385 | 774326.62 | 2942556.36 | 5.03 | 2.99 | -2.04 | 5.08 | 0.04 |
| 386 | 774277.23 | 2942564.15 | 5.04 | 3.01 | -2.03 | 5.07 | 0.03 |
| 387 | 774227.84 | 2942571.94 | 5.04 | 3.00 | -2.05 | 5.08 | 0.04 |
| 388 | 774178.45 | 2942579.74 | 5.05 | 3.02 | -2.02 | 5.10 | 0.05 |
| 389 | 774129.06 | 2942587.53 | 5.05 | 3.04 | -2.00 | 5.12 | 0.07 |
| 390 | 774079.68 | 2942595.32 | 5.05 | 3.05 | -2.01 | 5.15 | 0.10 |
| 391 | 774030.29 | 2942603.12 | 5.06 | 2.91 | -2.16 | 5.09 | 0.04 |
| 392 | 773980.90 | 2942610.91 | 5.06 | 3.01 | -2.05 | 5.10 | 0.04 |
| 393 | 773931.51 | 2942618.71 | 5.06 | 2.98 | -2.09 | 5.16 | 0.09 |
| 394 | 773882.12 | 2942626.50 | 5.07 | 3.01 | -2.06 | 5.12 | 0.05 |
| 395 | 773832.73 | 2942634.29 | 5.07 | 3.06 | -2.01 | 5.20 | 0.13 |
| 396 | 773783.34 | 2942642.09 | 5.07 | 3.04 | -2.03 | 5.18 | 0.11 |
| 397 | 773733.95 | 2942649.88 | 5.08 | 2.95 | -2.13 | 5.18 | 0.10 |
| 398 | 773684.56 | 2942657.67 | 5.08 | 3.06 | -2.02 | 5.12 | 0.04 |
| 399 | 773635.18 | 2942665.47 | 5.08 | 3.08 | -2.00 | 5.15 | 0.07 |
| 400 | 773585.79 | 2942673.26 | 5.09 | 3.03 | -2.06 | 5.12 | 0.03 |
| 401 | 773536.40 | 2942681.06 | 5.09 | 3.09 | -2.00 | 5.16 | 0.07 |
| 402 | 773487.01 | 2942688.85 | 5.10 | 3.07 | -2.02 | 5.13 | 0.03 |
| 403 | 773437.62 | 2942696.64 | 5.10 | 3.07 | -2.02 | 5.12 | 0.02 |
| 404 | 773388.23 | 2942704.44 | 5.10 | 3.07 | -2.03 | 5.12 | 0.02 |
| 405 | 773338.84 | 2942712.23 | 5.10 | 3.07 | -2.03 | 5.12 | 0.02 |
| 406 | 773289.45 | 2942720.02 | 5.11 | 3.07 | -2.03 | 5.12 | 0.01 |
| 407 | 773240.07 | 2942727.82 | 5.11 | 3.11 | -2.00 | 5.11 | 0.00 |
| 408 | 773190.68 | 2942735.61 | 5.11 | 3.08 | -2.03 | 5.16 | 0.05 |
| 409 | 773141.29 | 2942743.40 | 5.12 | 3.10 | -2.02 | 5.17 | 0.05 |
| 410 | 773091.90 | 2942751.20 | 5.12 | 3.06 | -2.06 | 5.16 | 0.03 |
| 411 | 773042.51 | 2942758.99 | 5.12 | 3.07 | -2.06 | 5.19 | 0.06 |
| 412 | 772993.12 | 2942766.79 | 5.13 | 3.13 | -2.00 | 5.16 | 0.03 |
| 413 | 772943.73 | 2942774.58 | 5.13 | 3.13 | -2.00 | 5.14 | 0.00 |
| 414 | 772894.34 | 2942782.37 | 5.13 | 3.11 | -2.02 | 5.25 | 0.12 |
| 415 | 772844.95 | 2942790.17 | 5.01 | 2.91 | -2.10 | 5.06 | 0.05 |
| 416 | 772843.89 | 2942783.43 | 5.00 | 2.87 | -2.13 | 5.01 | 0.01 |
| 417 | 772891.89 | 2942768.81 | 5.00 | 2.97 | -2.03 | 5.05 | 0.05 |
| 418 | 772941.34 | 2942759.42 | 5.00 | 2.97 | -2.03 | 5.00 | 0.00 |
| 419 | 772990.79 | 2942752.05 | 5.00 | 2.99 | -2.01 | 5.01 | 0.01 |
| 420 | 773040.25 | 2942744.67 | 5.00 | 2.91 | -2.09 | 5.03 | 0.03 |
| 421 | 773089.71 | 2942737.31 | 5.00 | 2.99 | -2.01 | 5.00 | 0.00 |
| 422 | 773139.17 | 2942729.91 | 5.00 | 2.99 | -2.01 | 5.00 | 0.00 |
| 423 | 773188.61 | 2942722.55 | 5.00 | 2.98 | -2.02 | 5.00 | 0.00 |
| 424 | 773238.07 | 2942715.17 | 5.00 | 2.96 | -2.04 | 5.01 | 0.01 |
| 425 | 773287.53 | 2942707.77 | 5.00 | 2.97 | -2.03 | 5.02 | 0.02 |
| 426 | 773336.96 | 2942700.39 | 5.00 | 2.99 | -2.01 | 5.00 | 0.00 |
| 427 | 773386.43 | 2942693.04 | 5.00 | 2.90 | -2.10 | 5.00 | 0.00 |
| 428 | 773435.96 | 2942685.62 | 5.00 | 2.95 | -2.05 | 5.00 | 0.00 |
| 429 | 773485.34 | 2942678.25 | 5.00 | 2.99 | -2.01 | 5.01 | 0.01 |
| 430 | 773534.79 | 2942670.87 | 5.00 | 2.95 | -2.05 | 5.00 | 0.00 |
| 431 | 773584.25 | 2942663.53 | 5.00 | 2.99 | -2.01 | 5.02 | 0.02 |
| 432 | 773633.71 | 2942656.16 | 5.00 | 2.99 | -2.01 | 5.02 | 0.02 |
| 433 | 773683.11 | 2942648.74 | 5.00 | 2.93 | -2.07 | 5.01 | 0.01 |
| 434 | 773732.62 | 2942641.43 | 5.00 | 3.00 | -2.00 | 5.03 | 0.03 |
| 435 | 773782.09 | 2942633.97 | 5.00 | 2.99 | -2.01 | 5.08 | 0.08 |
| 436 | 773831.61 | 2942626.60 | 5.00 | 3.00 | -2.00 | 5.05 | 0.05 |
| 437 | 773880.97 | 2942618.21 | 5.00 | 2.99 | -2.01 | 5.04 | 0.04 |
| 438 | 773930.42 | 2942611.83 | 5.00 | 2.98 | -2.02 | 5.02 | 0.02 |
| 439 | 773979.88 | 2942604.45 | 5.00 | 3.00 | -2.00 | 5.03 | 0.03 |
| 440 | 774029.33 | 2942597.07 | 5.00 | 2.97 | -2.03 | 5.08 | 0.08 |
| 441 | 774078.79 | 2942589.69 | 5.00 | 2.99 | -2.01 | 5.11 | 0.11 |
| 442 | 774128.24 | 2942582.31 | 5.00 | 2.91 | -2.09 | 5.05 | 0.05 |
| 443 | 774177.69 | 2942574.93 | 5.00 | 2.99 | -2.01 | 5.08 | 0.08 |
| 444 | 774227.15 | 2942567.55 | 5.00 | 2.97 | -2.03 | 5.03 | 0.03 |
| 445 | 774276.60 | 2942560.17 | 5.00 | 2.99 | -2.01 | 5.09 | 0.09 |
| 446 | 774326.06 | 2942552.79 | 5.00 | 2.85 | -2.15 | 5.09 | 0.09 |
| 447 | 774375.51 | 2942545.41 | 5.00 | 2.99 | -2.02 | 5.09 | 0.09 |
| 448 | 774424.97 | 2942538.03 | 5.00 | 2.96 | -2.04 | 5.06 | 0.06 |
| 449 | 774474.42 | 2942530.65 | 5.00 | 2.89 | -2.11 | 5.01 | 0.01 |
| 455 | 772860.59 | 2942838.32 | 5.00 | 2.86 | -2.14 | 5.00 | 0.00 |
| 456 | 772902.14 | 2942831.76 | 5.40 | 3.38 | -2.02 | 5.43 | 0.03 |
| 457 | 772951.53 | 2942823.97 | 5.56 | 3.54 | -2.01 | 5.58 | 0.02 |
| 458 | 773000.91 | 2942816.17 | 5.55 | 3.53 | -2.02 | 5.60 | 0.05 |
| 459 | 773050.30 | 2942808.38 | 5.55 | 3.55 | -2.00 | 5.56 | 0.01 |
| 460 | 773099.69 | 2942800.59 | 5.55 | 3.54 | -2.01 | 5.60 | 0.05 |
| 461 | 773149.08 | 2942792.79 | 5.55 | 3.51 | -2.04 | 5.61 | 0.06 |
| 462 | 773198.47 | 2942786.00 | 5.55 | 3.45 | -2.10 | 5.57 | 0.03 |
| 463 | 773247.86 | 2942777.21 | 5.55 | 3.53 | -2.01 | 5.56 | 0.01 |
| 464 | 773297.25 | 2942769.41 | 5.54 | 3.53 | -2.01 | 5.57 | 0.02 |
| 465 | 773346.64 | 2942761.62 | 5.54 | 3.48 | -2.06 | 5.56 | 0.01 |
| 466 | 773396.03 | 2942753.83 | 5.54 | 3.53 | -2.01 | 5.54 | 0.00 |
| 467 | 773445.41 | 2942746.03 | 5.54 | 3.53 | -2.01 | 5.54 | 0.00 |
| 468 | 773494.80 | 2942738.24 | 5.54 | 3.49 | -2.05 | 5.55 | 0.01 |
| 469 | 773544.19 | 2942730.44 | 5.54 | 3.52 | -2.02 | 5.55 | 0.01 |
| 470 | 773593.58 | 2942722.65 | 5.53 | 3.53 | -2.00 | 5.54 | 0.01 |
| 471 | 773642.97 | 2942714.86 | 5.53 | 3.52 | -2.02 | 5.54 | 0.01 |
| 472 | 773692.36 | 2942707.06 | 5.53 | 3.52 | -2.01 | 5.56 | 0.03 |
| 473 | 773741.75 | 2942699.27 | 5.53 | 3.53 | -2.00 | 5.55 | 0.02 |
| 474 | 773791.14 | 2942691.48 | 5.53 | 3.44 | -2.09 | 5.54 | 0.01 |
| 475 | 773840.52 | 2942683.68 | 5.53 | 3.39 | -2.13 | 5.53 | 0.00 |
| 476 | 773889.91 | 2942675.89 | 5.52 | 3.51 | -2.02 | 5.53 | 0.01 |
| 477 | 773939.30 | 2942668.09 | 5.52 | 3.50 | -2.02 | 5.54 | 0.02 |
| 478 | 773988.69 | 2942660.30 | 5.52 | 3.43 | -2.09 | 5.62 | 0.10 |
| 479 | 774038.08 | 2942652.51 | 5.52 | 3.46 | -2.06 | 5.62 | 0.10 |
| 480 | 774087.47 | 2942644.71 | 5.52 | 3.49 | -2.03 | 5.57 | 0.06 |
| 481 | 774136.86 | 2942636.92 | 5.51 | 3.40 | -2.11 | 5.63 | 0.11 |
| 482 | 774186.25 | 2942629.13 | 5.51 | 3.48 | -2.03 | 5.51 | 0.00 |
| 483 | 774235.64 | 2942621.33 | 5.51 | 3.45 | -2.06 | 5.58 | 0.06 |
| 484 | 774285.02 | 2942613.54 | 5.51 | 3.51 | -2.00 | 5.61 | 0.10 |
| 485 | 774334.41 | 2942605.75 | 5.51 | 3.37 | -2.14 | 5.61 | 0.10 |
| 486 | 774383.80 | 2942597.95 | 5.51 | 3.49 | -2.02 | 5.54 | 0.03 |
| 487 | 774433.19 | 2942590.16 | 5.50 | 3.45 | -2.06 | 5.59 | 0.09 |
| 488 | 774482.58 | 2942582.36 | 5.50 | 3.49 | -2.02 | 5.62 | 0.12 |
| 511 | 774490.37 | 2942631.75 | 5.98 | 3.90 | -2.08 | 6.10 | 0.12 |

| GRID REFERENCE NUMBER | NORTHING | EASTING | DESIGN ELEVATION | AS-BUILT SUBGRADE ELEVATION | DIFFERENCE FROM DESIGN ELEVATION | AS-BUILT PROTECTIVE COVER ELEVATION | DIFFERENCE FROM DESIGN ELEVATION |
|---|---|---|---|---|---|---|---|
| 512 | 774440.98 | 2942639.55 | 5.98 | 3.97 | -2.01 | 6.09 | 0.11 |
| 513 | 774391.60 | 2942647.34 | 5.98 | 3.98 | -2.00 | 6.03 | 0.05 |
| 514 | 774342.21 | 2942655.13 | 5.98 | 3.97 | -2.01 | 5.99 | 0.01 |
| 515 | 774292.82 | 2942662.93 | 5.98 | 3.97 | -2.01 | 6.00 | 0.02 |
| 516 | 774243.43 | 2942670.72 | 5.98 | 3.97 | -2.01 | 5.98 | 0.00 |
| 517 | 774194.04 | 2942678.52 | 5.98 | 3.96 | -2.02 | 6.01 | 0.03 |
| 518 | 774144.65 | 2942686.31 | 5.98 | 3.92 | -2.06 | 6.00 | 0.02 |
| 519 | 774095.26 | 2942694.10 | 5.98 | 3.90 | -2.08 | 5.99 | 0.01 |
| 520 | 774045.87 | 2942701.90 | 5.98 | 3.96 | -2.02 | 5.99 | 0.01 |
| 521 | 773996.49 | 2942709.69 | 5.98 | 3.91 | -2.07 | 6.03 | 0.05 |
| 522 | 773947.10 | 2942717.48 | 5.98 | 3.95 | -2.03 | 6.03 | 0.05 |
| 523 | 773897.71 | 2942725.28 | 5.98 | 3.96 | -2.02 | 6.01 | 0.03 |
| 524 | 773848.32 | 2942733.07 | 5.98 | 3.90 | -2.08 | 6.01 | 0.03 |
| 525 | 773798.93 | 2942740.86 | 5.98 | 3.98 | -2.00 | 6.07 | 0.09 |
| 526 | 773749.54 | 2942748.66 | 5.98 | 3.87 | -2.11 | 5.99 | 0.01 |
| 527 | 773700.16 | 2942756.45 | 5.98 | 3.96 | -2.02 | 6.01 | 0.03 |
| 528 | 773650.76 | 2942764.25 | 5.98 | 3.89 | -2.09 | 5.98 | 0.00 |
| 529 | 773601.37 | 2942772.04 | 5.98 | 3.97 | -2.01 | 5.99 | 0.01 |
| 530 | 773551.99 | 2942779.83 | 5.98 | 3.91 | -2.07 | 6.03 | 0.05 |
| 531 | 773502.60 | 2942787.63 | 5.98 | 3.95 | -2.03 | 5.98 | 0.00 |
| 532 | 773453.21 | 2942795.42 | 5.98 | 3.95 | -2.03 | 5.99 | 0.01 |
| 533 | 773403.82 | 2942803.21 | 5.98 | 3.95 | -2.03 | 5.99 | 0.01 |
| 534 | 773354.43 | 2942811.01 | 5.98 | 3.94 | -2.04 | 5.99 | 0.01 |
| 535 | 773305.04 | 2942818.80 | 5.98 | 3.95 | -2.03 | 5.99 | 0.01 |
| 536 | 773255.65 | 2942826.60 | 5.98 | 3.92 | -2.06 | 5.99 | 0.01 |
| 537 | 773206.26 | 2942834.39 | 5.98 | 3.94 | -2.04 | 5.98 | 0.00 |
| 538 | 773156.87 | 2942842.18 | 5.98 | 3.91 | -2.07 | 5.99 | 0.01 |
| 539 | 773107.49 | 2942849.98 | 5.98 | 3.92 | -2.06 | 6.00 | 0.02 |
| 540 | 773058.10 | 2942857.77 | 5.98 | 3.95 | -2.03 | 6.12 | 0.14 |
| 541 | 773008.71 | 2942865.56 | 5.98 | 3.93 | -2.05 | 5.99 | 0.01 |
| 542 | 772959.32 | 2942873.36 | 5.72 | 3.70 | -2.02 | 5.74 | 0.02 |
| 543 | 772909.93 | 2942881.15 | 5.35 | 3.22 | -2.03 | 5.35 | 0.00 |
| 544 | 772884.26 | 2942885.20 | 5.00 | 3.00 | -2.00 | 5.03 | 0.03 |
| 545 | 772907.77 | 2942932.11 | 5.00 | 2.90 | -2.10 | 5.02 | 0.02 |
| 546 | 772917.72 | 2942930.54 | 5.10 | 3.05 | -2.05 | 5.15 | 0.07 |
| 547 | 772967.11 | 2942922.75 | 5.62 | 3.51 | -2.00 | 5.54 | 0.02 |
| 548 | 773016.50 | 2942914.95 | 5.63 | 3.51 | -2.02 | 5.54 | 0.01 |
| 549 | 773065.89 | 2942907.16 | 5.63 | 3.45 | -2.08 | 5.53 | 0.00 |
| 550 | 773115.28 | 2942899.36 | 5.63 | 3.50 | -2.03 | 5.58 | 0.05 |
| 551 | 773164.67 | 2942891.57 | 5.63 | 3.39 | -2.14 | 5.54 | 0.01 |
| 552 | 773214.06 | 2942883.78 | 5.63 | 3.40 | -2.13 | 5.53 | 0.00 |
| 553 | 773263.45 | 2942875.98 | 5.63 | 3.60 | -2.03 | 5.54 | 0.01 |
| 554 | 773312.84 | 2942868.19 | 5.63 | 3.45 | -2.08 | 5.59 | 0.06 |
| 555 | 773362.22 | 2942860.40 | 5.63 | 3.44 | -2.09 | 5.53 | 0.01 |
| 556 | 773411.61 | 2942852.60 | 5.63 | 3.47 | -2.06 | 5.58 | 0.05 |
| 557 | 773461.00 | 2942844.81 | 5.63 | 3.52 | -2.01 | 5.54 | 0.01 |
| 558 | 773510.39 | 2942837.02 | 5.63 | 3.52 | -2.01 | 5.53 | 0.00 |
| 559 | 773559.78 | 2942829.22 | 5.63 | 3.48 | -2.05 | 5.53 | 0.01 |
| 560 | 773609.17 | 2942821.43 | 5.63 | 3.48 | -2.05 | 5.54 | 0.02 |
| 561 | 773658.56 | 2942813.63 | 5.63 | 3.49 | -2.03 | 5.53 | 0.00 |
| 562 | 773707.95 | 2942805.84 | 5.63 | 3.51 | -2.02 | 5.57 | 0.05 |
| 563 | 773757.33 | 2942798.05 | 5.63 | 3.52 | -2.01 | 5.57 | 0.04 |
| 564 | 773806.72 | 2942790.25 | 5.63 | 3.50 | -2.02 | 5.56 | 0.04 |
| 565 | 773856.11 | 2942782.46 | 5.63 | 3.51 | -2.02 | 5.57 | 0.04 |
| 566 | 773905.50 | 2942774.67 | 5.63 | 3.52 | -2.00 | 5.54 | 0.01 |
| 567 | 773954.89 | 2942766.87 | 5.63 | 3.50 | -2.02 | 5.57 | 0.05 |
| 568 | 774004.28 | 2942759.08 | 5.63 | 3.47 | -2.06 | 5.53 | 0.11 |
| 569 | 774053.67 | 2942751.28 | 5.63 | 3.41 | -2.11 | 5.58 | 0.06 |
| 570 | 774103.06 | 2942743.49 | 5.63 | 3.48 | -2.05 | 5.56 | 0.03 |
| 571 | 774152.45 | 2942735.70 | 5.63 | 3.40 | -2.13 | 5.58 | 0.05 |
| 572 | 774201.83 | 2942727.90 | 5.63 | 3.39 | -2.14 | 5.58 | 0.06 |
| 573 | 774251.22 | 2942720.11 | 5.63 | 3.49 | -2.03 | 5.56 | 0.04 |
| 574 | 774300.61 | 2942712.32 | 5.63 | 3.43 | -2.09 | 5.54 | 0.01 |
| 575 | 774350.00 | 2942704.52 | 5.63 | 3.52 | -2.00 | 5.56 | 0.03 |
| 576 | 774399.39 | 2942696.73 | 5.63 | 3.48 | -2.05 | 5.54 | 0.01 |
| 577 | 774448.78 | 2942688.94 | 5.63 | 3.39 | -2.14 | 5.57 | 0.05 |
| 578 | 774498.17 | 2942681.14 | 5.63 | 3.51 | -2.01 | 5.60 | 0.07 |
| 579 | 774505.96 | 2942730.53 | 5.07 | 3.04 | -2.03 | 5.10 | 0.03 |
| 580 | 774456.57 | 2942738.32 | 5.07 | 3.03 | -2.04 | 5.08 | 0.01 |
| 581 | 774407.18 | 2942746.12 | 5.07 | 2.98 | -2.09 | 5.08 | 0.01 |
| 582 | 774357.79 | 2942753.91 | 5.07 | 3.02 | -2.05 | 5.18 | 0.11 |
| 583 | 774308.41 | 2942761.71 | 5.07 | 3.07 | -2.00 | 5.12 | 0.04 |
| 584 | 774259.02 | 2942769.50 | 5.07 | 3.02 | -2.05 | 5.19 | 0.11 |
| 585 | 774209.63 | 2942777.29 | 5.07 | 3.02 | -2.05 | 5.20 | 0.12 |
| 586 | 774160.24 | 2942785.09 | 5.07 | 3.05 | -2.02 | 5.11 | 0.04 |
| 587 | 774110.85 | 2942792.88 | 5.07 | 3.04 | -2.03 | 5.11 | 0.04 |
| 588 | 774061.46 | 2942800.67 | 5.07 | 2.98 | -2.10 | 5.12 | 0.05 |
| 589 | 774012.07 | 2942808.47 | 5.07 | 2.98 | -2.09 | 5.08 | 0.01 |
| 610 | 773962.68 | 2942816.26 | 5.07 | 2.95 | -2.12 | 5.10 | 0.03 |
| 611 | 773913.29 | 2942824.05 | 5.07 | 3.04 | -2.03 | 5.15 | 0.07 |
| 612 | 773863.91 | 2942831.85 | 5.07 | 3.02 | -2.05 | 5.09 | 0.02 |
| 613 | 773814.52 | 2942839.64 | 5.07 | 3.07 | -2.01 | 5.17 | 0.09 |
| 614 | 773765.13 | 2942847.44 | 5.07 | 2.97 | -2.10 | 5.08 | 0.01 |
| 615 | 773715.74 | 2942855.23 | 5.07 | 3.00 | -2.07 | 5.12 | 0.05 |
| 616 | 773666.35 | 2942863.02 | 5.07 | 2.99 | -2.08 | 5.17 | 0.10 |
| 617 | 773616.96 | 2942870.82 | 5.07 | 2.99 | -2.08 | 5.07 | 0.00 |
| 618 | 773567.57 | 2942878.61 | 5.07 | 3.01 | -2.06 | 5.07 | 0.00 |
| 619 | 773518.18 | 2942886.40 | 5.07 | 3.00 | -2.07 | 5.09 | 0.02 |
| 620 | 773468.80 | 2942894.20 | 5.07 | 2.99 | -2.09 | 5.07 | 0.00 |
| 621 | 773419.41 | 2942901.99 | 5.07 | 3.06 | -2.02 | 5.09 | 0.02 |
| 622 | 773370.02 | 2942909.79 | 5.07 | 3.00 | -2.08 | 5.12 | 0.04 |
| 623 | 773320.63 | 2942917.58 | 5.07 | 2.97 | -2.10 | 5.08 | 0.01 |
| 624 | 773271.24 | 2942925.37 | 5.07 | 2.97 | -2.10 | 5.09 | 0.01 |
| 625 | 773221.86 | 2942933.17 | 5.07 | 2.99 | -2.08 | 5.15 | 0.08 |
| 626 | 773172.46 | 2942940.96 | 5.07 | 3.05 | -2.02 | 5.07 | 0.00 |
| 627 | 773123.07 | 2942948.76 | 5.07 | 3.06 | -2.02 | 5.09 | 0.02 |
| 628 | 773073.68 | 2942956.55 | 5.07 | 3.07 | -2.01 | 5.12 | 0.04 |
| 629 | 773024.30 | 2942964.34 | 5.07 | 3.06 | -2.02 | 5.08 | 0.01 |
| 630 | 772974.91 | 2942972.13 | 5.07 | 3.06 | -2.01 | 5.08 | 0.01 |
| 631 | 772933.19 | 2942976.70 | 5.00 | 2.93 | -2.07 | 5.00 | 0.00 |
| 633 | 772940.65 | 2942982.98 | 5.00 | 2.98 | -2.02 | 5.00 | 0.01 |
| 634 | 772951.80 | 2942983.97 | 5.00 | 2.90 | -2.10 | 5.02 | 0.02 |
| 635 | 772976.17 | 2942980.12 | 5.00 | 2.89 | -2.11 | 5.01 | 0.01 |

| GRID REFERENCE NUMBER | NORTHING | EASTING | DESIGN ELEVATION | AS-BUILT SUBGRADE ELEVATION | DIFFERENCE FROM DESIGN ELEVATION | AS-BUILT PROTECTIVE COVER ELEVATION | DIFFERENCE FROM DESIGN ELEVATION |
|---|---|---|---|---|---|---|---|
| 636 | 773025.55 | 2942972.31 | 5.00 | 2.97 | -2.03 | 5.03 | 0.03 |
| 637 | 773074.94 | 2942964.51 | 5.00 | 2.85 | -2.15 | 5.03 | 0.03 |
| 638 | 773124.33 | 2942956.70 | 5.00 | 2.99 | -2.01 | 5.06 | 0.06 |
| 639 | 773173.71 | 2942948.90 | 5.00 | 2.86 | -2.14 | 5.00 | 0.00 |
| 640 | 773223.10 | 2942941.09 | 5.00 | 2.97 | -2.03 | 5.01 | 0.01 |
| 641 | 773272.49 | 2942933.29 | 5.00 | 2.87 | -2.13 | 5.04 | 0.04 |
| 642 | 773321.88 | 2942925.48 | 5.00 | 3.00 | -2.00 | 5.01 | 0.01 |
| 643 | 773371.26 | 2942917.68 | 5.00 | 2.93 | -2.07 | 5.00 | 0.00 |
| 644 | 773420.65 | 2942909.88 | 5.00 | 2.98 | -2.02 | 5.05 | 0.05 |
| 645 | 773470.04 | 2942902.07 | 5.00 | 3.00 | -2.00 | 5.03 | 0.03 |
| 646 | 773519.42 | 2942894.27 | 5.00 | 2.96 | -2.04 | 5.01 | 0.01 |
| 647 | 773568.81 | 2942886.46 | 5.00 | 2.88 | -2.12 | 5.02 | 0.02 |
| 648 | 773618.20 | 2942878.66 | 5.00 | 2.85 | -2.15 | 5.00 | 0.00 |
| 649 | 773667.59 | 2942870.85 | 5.00 | 2.93 | -2.07 | 5.14 | 0.14 |
| 650 | 773716.97 | 2942863.05 | 5.00 | 2.87 | -2.13 | 5.05 | 0.05 |
| 651 | 773766.36 | 2942855.24 | 5.00 | 2.91 | -2.09 | 5.02 | 0.02 |
| 652 | 773815.75 | 2942847.44 | 5.00 | 2.97 | -2.03 | 5.03 | 0.03 |
| 653 | 773865.13 | 2942839.64 | 5.00 | 2.91 | -2.09 | 5.06 | 0.06 |
| 654 | 773914.62 | 2942831.83 | 5.00 | 2.99 | -2.01 | 5.02 | 0.02 |
| 655 | 773963.91 | 2942824.03 | 5.00 | 2.97 | -2.03 | 5.09 | 0.09 |
| 656 | 774013.30 | 2942816.22 | 5.00 | 2.88 | -2.12 | 5.02 | 0.02 |
| 657 | 774062.68 | 2942808.42 | 5.00 | 3.00 | -2.00 | 5.07 | 0.07 |
| 658 | 774112.07 | 2942800.61 | 5.00 | 2.98 | -2.02 | 5.05 | 0.05 |
| 659 | 774161.46 | 2942792.81 | 5.00 | 2.98 | -2.02 | 5.04 | 0.04 |
| 660 | 774210.84 | 2942785.00 | 5.00 | 2.88 | -2.12 | 5.01 | 0.01 |
| 661 | 774260.23 | 2942777.20 | 5.00 | 2.95 | -2.05 | 5.04 | 0.04 |
| 662 | 774309.62 | 2942769.39 | 5.00 | 2.96 | -2.04 | 5.02 | 0.02 |
| 663 | 774359.01 | 2942761.59 | 5.00 | 2.89 | -2.11 | 5.02 | 0.02 |
| 664 | 774408.39 | 2942753.79 | 5.00 | 2.96 | -2.04 | 5.11 | 0.11 |
| 665 | 774457.78 | 2942745.98 | 5.00 | 2.93 | -2.07 | 5.04 | 0.04 |
| 666 | 774507.17 | 2942738.18 | 5.00 | 2.86 | -2.14 | 5.04 | 0.04 |
| 680 | 772861.01 | 2942771.42 | 5.00 | 2.96 | -2.04 | 5.00 | 0.00 |
| 681 | 772843.68 | 2942804.63 | 5.00 | 2.87 | -2.13 | 5.00 | 0.00 |




NC GRID(NAD 83)

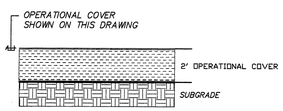
LEGEND

+1378 GRID REFERENCE NUMBER

—100— INDEX CONTOUR

— — — INTERMEDIATE CONTOUR

CELL CROSS SECTION DETAIL




GRAPHIC SCALE

100 0 50 100 200 400

( IN FEET )
1 inch = 100 ft.

SURVEYING SOLUTIONS, P.C. C-1948
5401 HILLSBOROUGH ST. P.O. BOX 33324
RALEIGH, NC 27636
(919)-854-4833

AS-BUILT SURVEY OF THE
OPERATIONAL COVER
DARE COUNTY CONSTRUCTION AND DEMOLITION LANDFILL
CELL 4

| | | | | |
|---|---|---|---|---|
| DRAWN BY: DK | CHECKED BY: JT | SURVEYED BY: DK, JT | CROATAN TOWNSHIP | DARE COUNTY | NORTH CAROLINA |
| SHEET 2 OF 2 | | | SCALE 1"=100' | SURVEY DATE: JUNE 15, 2010 | PROJECT 10-020 |

Surveying Solutions, PC
License C-1948
5401 Hillsborough St
P.O. Box 33324
Raleigh, NC 27636
Phone: 919-854-4833
Fax: 919-854-4834

June 28, 2010

Glover Construction Company, Inc.
Attn: Ed Marks
P.O. Box 40
Highway 301 N.
Pleasant Hill, NC 27866

Re: Quantities, Dare County – Construction and Demolition Debris Landfill, Cell 4

Mr. Marks,

Per your request, listed below are the computed fill quantities for the above listed site for the month of June and final quantity summaries for the project:

**Cell 4 area**

| | |
|---|---|
| Total amount of fill to date | 107,429 Cubic yards |
| Amount of fill for April (letter dated May 10, 2010) | 53,809 Cubic yards |
| Amount of fill for May (letter dated June 10, 2010) | 37,751 Cubic yards |
| Amount of fill for June | 15,869 Cubic yards |

**Breakdown of June fill, Cell 4 area:**

| | |
|---|---|
| Amount of fill to subgrade (up to 2' below final grade and including road) | 5,638 Cubic yards |
| Amount of fill for final grade (2' minimum final lift) | 10,231 Cubic yards |

**Cell 4 area final quantity summary:**

| | |
|---|---|
| Total amount of fill to subgrade | 67,093 Cubic yards |
| Total amount of fill for final grade (2' minimum final lift) | 34,698 Cubic yards |

**Note**: Quantity calculations for Cell 4 are computed using topographic information provided by the contractor for the following:
Topographic information of the cell area after stripping

**Borrow area fill:**

| | |
|---|---|
| Total amount of fill | 43,035 Cubic yards |

**Note**: Quantity calculations for the borrow area fill are computed using topographic information provided by the contractor for the following:
Topographic information of the additional borrow area after excavation
Topographic information of the additional borrow area after filling

All information shown was computed from field information obtained under my direct supervision except as noted. The date of the final survey for the site was June 15, 2010. All quantity information provided is true and correct to the best of my knowledge and belief.

_____
Dwayne R, Kroeze, P.L.S. L-3911

# *Appendix A-5*

# COMPREHENSIVE LABORATORY TEST RESULTS

**Project:** Dare County Landfill; Cell 4

**Project Location:** Dare County, North Carolina

**Client:** CDM

**GET Project Number:** EC10-166T

| Sample Location | Sample Type | Sample Number | Sample Depth (ft) | Sample Date | USCS Classification | AASHTO Classification | Natural Moisture Content (%) | Atterberg Limits (LL/PL/PI) | Passing #200 Sieve (%) | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Northwest Quadrant | Bulk | Proctor No. 1 | 3' BFG | 4/27/2010 | SM | A-2-4(0) | 12.2 | NP/NL | 16.0 | 103.4 | 16.6 |
| Northeast Quadrant | Bulk | Proctor No. 2 | 3' BFG | 4/27/2010 | SP | A-3 | 11.8 | NP/NL | 3.5 | 98.7 | 17.8 |
| Southeast Quadrant | Bulk | Proctor No. 3 | 3' BFG | 4/27/2010 | SM | A-2-4(0) | 15.2 | NP/NL | 12.1 | 105.3 | 14.3 |
| Southwest Quadrant | Bulk | Proctor No. 4 | 3' BFG | 4/27/2010 | SM | A-2-4(0) | 12.2 | NP/NL | 12.5 | 103.7 | 13.2 |
| 35º 49.944' N / 75º 49.098' W | Hand Auger | D-1 | 3' BFG | 4/30/2010 | NT | NT | 13.6 | NT | NT | NT | NT |
| 35º 49.944' N / 75º 49.098' W | Hand Auger | D-2 | 4' BFG | 4/30/2010 | NT | NT | 12.7 | NT | NT | NT | NT |
| 35º 49.944' N / 75º 49.098' W | Hand Auger | D-3 | 5' BFG | 4/30/2010 | NT | NT | 15.9 | NT | NT | NT | NT |
| 35º 50.001' N / 75º 49.107' W | Hand Auger | D-4 | 3' BFG | 4/30/2010 | NT | NT | 9.8 | NT | NT | NT | NT |
| 35º 50.001' N / 75º 49.107' W | Hand Auger | D-5 | 4' BFG | 4/30/2010 | NT | NT | 11.6 | NT | NT | NT | NT |
| 35º 50.042' N / 75º 49.113' W | Hand Auger | D-6 | 3' BFG | 4/30/2010 | NT | NT | 13.0 | NT | NT | NT | NT |
| 35º 50.042' N / 75º 49.113' W | Hand Auger | D-7 | 4' BFG | 4/30/2010 | NT | NT | 13.2 | NT | NT | NT | NT |
| 35º 50.100' N / 75º 49.122' W | Hand Auger | D-8 | 3' BFG | 4/30/2010 | NT | NT | 15.1 | NT | NT | NT | NT |
| 35º 50.100' N / 75º 49.122' W | Hand Auger | D-9 | 4' BFG | 4/30/2010 | NT | NT | 14.7 | NT | NT | NT | NT |
| 35º 50.100' N / 75º 49.122' W | Hand Auger | D-10 | 5' BFG | 4/30/2010 | NT | NT | 14.5 | NT | NT | NT | NT |
| 35º 50.142' N / 75º 49.127' W | Hand Auger | D-11 | 3' BFG | 4/30/2010 | NT | NT | 10.6 | NT | NT | NT | NT |
| 35º 50.142' N / 75º 49.127' W | Hand Auger | D-12 | 4' BFG | 4/30/2010 | NT | NT | 13.2 | NT | NT | NT | NT |
| 35º 50.188' N / 75º 49.134' W | Hand Auger | D-13 | 3' BFG | 4/30/2010 | NT | NT | 11.6 | NT | NT | NT | NT |
| 35º 50.188' N / 75º 49.134' W | Hand Auger | D-14 | 4' BFG | 4/30/2010 | NT | NT | 11.3 | NT | NT | NT | NT |
| 35º 50.188' N / 75º 49.134' W | Hand Auger | D-15 | 5' BFG | 4/30/2010 | NT | NT | 14.1 | NT | NT | NT | NT |
| 35º 50.177' N / 75º 49.162' W | Hand Auger | D-16 | 3' BFG | 4/30/2010 | NT | NT | 15.6 | NT | NT | NT | NT |

NT = Not Tested

BFG = Below Finished Grade

NP/NL = Non Plastic/Non Liquid



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106 Capital Trace; Unit E
Elizabeth City, NC 27909
Tel: 252-335-9765 Fax: 252-335-9766

# COMPREHENSIVE LABORATORY TEST RESULTS

**Project:** Dare County Landfill; Cell 4 **Project Location:** Dare County, North Carolina

**Client:** CDM **GET Project Number:** EC10-166T

| Sample Location | Sample Type | Sample Number | Sample Depth (ft) | Sample Date | USCS Classification | AASHTO Classification | Natural Moisture Content (%) | Atterberg Limits (LL/PL/PI) | Passing #200 Sieve (%) | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 35º 50.177' N / 75º 49.162' W | Hand Auger | D-17 | 4' BFG | 4/30/2010 | NT | NT | 12.7 | NT | NT | NT | NT |
| 35º 50.131' N / 75º 49.157' W | Hand Auger | D-18 | 3' BFG | 4/30/2010 | NT | NT | 13.1 | NT | NT | NT | NT |
| 35º 50.131' N / 75º 49.157' W | Hand Auger | D-19 | 4' BFG | 4/30/2010 | NT | NT | 14.4 | NT | NT | NT | NT |
| 35º 50.131' N / 75º 49.157' W | Hand Auger | D-20 | 5' BFG | 4/30/2010 | NT | NT | 11.3 | NT | NT | NT | NT |
| 35º 50.086' N / 75º 49.153' W | Hand Auger | D-21 | 3' BFG | 4/30/2010 | NT | NT | 18.2 | NT | NT | NT | NT |
| 35º 50.086' N / 75º 49.153' W | Hand Auger | D-22 | 4' BFG | 4/30/2010 | NT | NT | 14.3 | NT | NT | NT | NT |
| 35º 50.031' N / 75º 49.145' W | Hand Auger | D-23 | 3' BFG | 4/30/2010 | NT | NT | 12.9 | NT | NT | NT | NT |
| 35º 50.031' N / 75º 49.145' W | Hand Auger | D-24 | 4' BFG | 4/30/2010 | NT | NT | 12.9 | NT | NT | NT | NT |
| 35º 50.044' N / 75º 49.125' W | Hand Auger | D-25 | 3' BFG | 4/30/2010 | NT | NT | 11.4 | NT | NT | NT | NT |
| 35º 50.044' N / 75º 49.125' W | Hand Auger | D-26 | 4' BFG | 4/30/2010 | NT | NT | 11.6 | NT | NT | NT | NT |
| 35º 50.095' N / 75º 49.134' W | Hand Auger | D-27 | 3' BFG | 4/30/2010 | NT | NT | 14.7 | NT | NT | NT | NT |
| 35º 50.095' N / 75º 49.134' W | Hand Auger | D-28 | 4' BFG | 4/30/2010 | NT | NT | 15.6 | NT | NT | NT | NT |
| 35º 50.182' N / 75º 49.134' W | Hand Auger | D-29 | 2' BFG | 4/29/2010 | NT | NT | 11.6 | NT | NT | NT | NT |
| 35º 50.182' N / 75º 49.149' W | Hand Auger | D-30 | 2' BFG | 4/29/2010 | NT | NT | 6.9 | NT | NT | NT | NT |
| 35º 50.181' N / 75º 49.160' W | Hand Auger | D-31 | 2' BFG | 4/29/2010 | NT | NT | 6.7 | NT | NT | NT | NT |
| 35º 50.148' N / 75º 49.129' W | Hand Auger | D-32 | 2' BFG | 4/29/2010 | NT | NT | 11.9 | NT | NT | NT | NT |
| 35º 50.146' N / 75º 49.142' W | Hand Auger | D-33 | 2' BFG | 4/29/2010 | NT | NT | 12.0 | NT | NT | NT | NT |
| 35º 50.146' N / 75º 49.155' W | Hand Auger | D-34 | 2' BFG | 4/29/2010 | NT | NT | 11.7 | NT | NT | NT | NT |
| 35º 50.094' N / 75º 49.123' W | Hand Auger | D-35 | 2' BFG | 4/29/2010 | NT | NT | 10.3 | NT | NT | NT | NT |
| 35º 50.094' N / 75º 49.137' W | Hand Auger | D-36 | 2' BFG | 4/29/2010 | NT | NT | 12.2 | NT | NT | NT | NT |

NT = Not Tested

BFG = Below Finished Grade



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# COMPREHENSIVE LABORATORY TEST RESULTS

**Project:** Dare County Landfill; Cell 4

**Project Location:** Dare County, North Carolina

**Client:** CDM

**GET Project Number:** EC10-166T

| Sample Location | Sample Type | Sample Number | Sample Depth (ft) | Sample Date | USCS Classification | AASHTO Classification | Natural Moisture Content (%) | Atterberg Limits (LL/PL/PI) | Passing #200 Sieve (%) | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 35º 50.094' N / 75º 49.137' W | Hand Auger | D-37 | 2' BFG | 4/29/2010 | NT | NT | 11.0 | NT | NT | NT | NT |
| 35º 50.055' N / 75º 49.115' W | Hand Auger | D-38 | 2' BFG | 4/29/2010 | NT | NT | 9.1 | NT | NT | NT | NT |
| 35º 50.052' N / 75º 49.127' W | Hand Auger | D-39 | 2' BFG | 4/29/2010 | NT | NT | 7.2 | NT | NT | NT | NT |
| 35º 49.946' N / 75º 49.096' W | Hand Auger | D-40 | 2' BFG | 4/29/2010 | NT | NT | 7.7 | NT | NT | NT | NT |
| 35º 50.022' N / 75º 49.141' W | Hand Auger | D-41 | 2' BFG | 4/29/2010 | NT | NT | 11.4 | NT | NT | NT | NT |
| 35º 49.950' N / 75º 49.125' W | Hand Auger | D-42 | 1' BFG | 5/25/2010 | NT | NT | 19.4 | NT | 33.9 | NT | NT |
| 35º 49.950' N / 75º 49.125' W | Hand Auger | D-43 | 2' BFG | 5/25/2010 | NT | NT | 24.6 | NT | 32.0 | NT | NT |
| 35º 49.996' N / 75º 49.132' W | Hand Auger | D-44 | 1' BFG | 5/25/2010 | NT | NT | 20.0 | NT | 30.4 | NT | NT |
| 35º 49.996' N / 75º 49.132' W | Hand Auger | D-45 | 2' BFG | 5/25/2010 | NT | NT | 22.4 | NT | 45.9 | NT | NT |
| 35º 50.040' N / 75º 49.138' W | Hand Auger | D-46 | 1' BFG | 5/25/2010 | NT | NT | 18.0 | NT | 36.2 | NT | NT |
| 35º 50.040' N / 75º 49.138' W | Hand Auger | D-47 | 2' BFG | 5/25/2010 | NT | NT | 10.2 | NT | 14.3 | NT | NT |
| 35º 50.084' N / 75º 49.145' W | Hand Auger | D-48 | 1' BFG | 5/25/2010 | NT | NT | 22.8 | NT | 32.9 | NT | NT |
| 35º 50.084' N / 75º 49.145' W | Hand Auger | D-49 | 2' BFG | 5/25/2010 | NT | NT | 23.0 | NT | 15.6 | NT | NT |
| 35º 50.128' N / 75º 49.151' W | Hand Auger | D-50 | 1' BFG | 5/25/2010 | NT | NT | 20.8 | NT | 25.5 | NT | NT |
| 35º 50.128' N / 75º 49.151' W | Hand Auger | D-51 | 2' BFG | 5/25/2010 | NT | NT | 18.4 | NT | 28.6 | NT | NT |
| 35º 50.173' N / 75º 49.157' W | Hand Auger | D-52 | 1' BFG | 5/25/2010 | NT | NT | 19.6 | NT | 19.0 | NT | NT |
| 35º 50.173' N / 75º 49.157' W | Hand Auger | D-53 | 2' BFG | 5/25/2010 | NT | NT | 18.9 | NT | 28.0 | NT | NT |
| 35º 50.216' N / 75º 49.164' W | Hand Auger | D-54 | 1' BFG | 5/25/2010 | NT | NT | 22.0 | NT | 28.3 | NT | NT |
| 35º 50.216' N / 75º 49.164' W | Hand Auger | D-55 | 2' BFG | 5/25/2010 | NT | NT | 18.4 | NT | 27.2 | NT | NT |
| 35º 50.027' N / 75º 49.115' W | Hand Auger | D-56 | FG | 6/11/2010 | NT | NT | 16.6 | NT | NT | NT | NT |

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# COMPREHENSIVE LABORATORY TEST RESULTS

**Project:** Dare County Landfill; Cell 4

**Project Location:** Dare County, North Carolina

**Client:** CDM

**GET Project Number:** EC10-166T

| Sample Location | Sample Type | Sample Number | Sample Depth (ft) | Sample Date | USCS Classification | AASHTO Classification | Natural Moisture Content (%) | Atterberg Limits (LL/PL/PI) | Passing #200 Sieve (%) | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 35º 50.027' N / 75º 49.137' W | Hand Auger | D-57 | FG | 6/11/2010 | NT | NT | 12.5 | NT | NT | NT | NT |
| 35º 50.070' N / 75º 49.117' W | Hand Auger | D-58 | FG | 6/11/2010 | NT | NT | 16.2 | NT | NT | NT | NT |
| 35º 50.068' N / 75º 49.140' W | Hand Auger | D-59 | FG | 6/11/2010 | NT | NT | 12.7 | NT | NT | NT | NT |
| 35º 50.121' N / 75º 49.122' W | Hand Auger | D-60 | FG | 6/11/2010 | NT | NT | 16.9 | NT | NT | NT | NT |
| 35º 50.119' N / 75º 49.147' W | Hand Auger | D-61 | FG | 6/11/2010 | NT | NT | 11.3 | NT | NT | NT | NT |
| 35º 49.969' N / 75º 49.101' W | Hand Auger | D-62 | FG | 6/14/2010 | NT | NT | 18.4 | NT | NT | NT | NT |
| 35º 49.969' N / 75º 49.101' W | Hand Auger | D-63 | 1' BFG | 6/14/2010 | NT | NT | 18.8 | NT | NT | NT | NT |
| 35º 50.000' N / 75º 49.110' W | Hand Auger | D-64 | FG | 6/14/2010 | NT | NT | 14.5 | NT | NT | NT | NT |
| 35º 50.000' N / 75º 49.110' W | Hand Auger | D-65 | 1' BFG | 6/14/2010 | NT | NT | 19.9 | NT | NT | NT | NT |
| 35º 50.053' N / 75º 49.115' W | Hand Auger | D-66 | FG | 6/14/2010 | NT | NT | 13.4 | NT | NT | NT | NT |
| 35º 50.053' N / 75º 49.115' W | Hand Auger | D-67 | 1' BFG | 6/14/2010 | NT | NT | 16.8 | NT | NT | NT | NT |
| 35º 50.084' N / 75º 49.123' W | Hand Auger | D-68 | FG | 6/14/2010 | NT | NT | 14.3 | NT | NT | NT | NT |
| 35º 50.084' N / 75º 49.123' W | Hand Auger | D-69 | 1' BFG | 6/14/2010 | NT | NT | 19.5 | NT | NT | NT | NT |
| 35º 50.137' N / 75º 49.127' W | Hand Auger | D-70 | FG | 6/14/2010 | NT | NT | 11.0 | NT | NT | NT | NT |
| 35º 50.137' N / 75º 49.127' W | Hand Auger | D-71 | 1' BFG | 6/14/2010 | NT | NT | 15.2 | NT | NT | NT | NT |
| 35º 50.166' N / 75º 49.158' W | Hand Auger | D-72 | FG | 6/17/2010 | NT | NT | 14.2 | NT | NT | NT | NT |
| 35º 50.211' N / 75º 49.164' W | Hand Auger | D-73 | FG | 6/17/2010 | NT | NT | 14.8 | NT | NT | NT | NT |
| 35º 50.258' N / 75º 49.146' W | Hand Auger | D-74 | FG | 6/17/2010 | NT | NT | 12.5 | NT | NT | NT | NT |
| 35º 50.258' N / 75º 49.146' W | Hand Auger | D-75 | 1' BFG | 6/17/2010 | NT | NT | 14.8 | NT | NT | NT | NT |
| 35º 50.258' N / 75º 49.146' W | Hand Auger | D-76 | 2' BFG | 6/17/2010 | NT | NT | 14.6 | NT | NT | NT | NT |

NT = Not Tested

BFG = Below Finished Grade

FG = Finished Grade



GET Solutions, Inc.
Geotechnical • Environmental • Testing
106 Capital Trace; Unit E
Elizabeth City, NC 27909
Tel: 252-335-9765 Fax: 252-335-9766

# COMPREHENSIVE LABORATORY TEST RESULTS

**Project:** Dare County Landfill; Cell 4

**Project Location:** Dare County, North Carolina

**Client:** CDM

**GET Project Number:** EC10-166T

| Sample Location | Sample Type | Sample Number | Sample Depth (ft) | Sample Date | USCS Classification | AASHTO Classification | Natural Moisture Content (%) | Atterberg Limits (LL/PL/PI) | Passing #200 Sieve (%) | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 35º 50.258' N / 75º 49.146' W | Hand Auger | D-77 | 3' BFG | 6/17/2010 | NT | NT | 14.9 | NT | NT | NT | NT |
| 35º 50.253' N / 75º 49.171' W | Hand Auger | D-78 | FG | 6/17/2010 | NT | NT | 11.9 | NT | NT | NT | NT |
| 35º 50.253' N / 75º 49.171' W | Hand Auger | D-79 | 1' BFG | 6/17/2010 | NT | NT | 13.8 | NT | NT | NT | NT |
| 35º 50.253' N / 75º 49.171' W | Hand Auger | D-80 | 2' BFG | 6/17/2010 | NT | NT | 14.8 | NT | NT | NT | NT |
| 35º 50.253' N / 75º 49.171' W | Hand Auger | D-81 | 3' BFG | 6/17/2010 | NT | NT | 14.3 | NT | NT | NT | NT |
| Lot 4 | Bulk | Proctor #5 | 2' BFG | 5/25/2010 | SM | A-2-4 | 24.5 | NP/NL | 28.1 | 108.5 | 16.0 |
| Lot 1 | Bulk | Proctor #6 | 1' BFG | 5/25/2010 | SM | A-2-4 | 23.5 | NP/NL | 12.5 | 103.4 | 14.1 |

NT = Not Tested
BFG = Below Finished Grade
FG = Finished Grade
NP/NL = Non Plastic/Non Liquid

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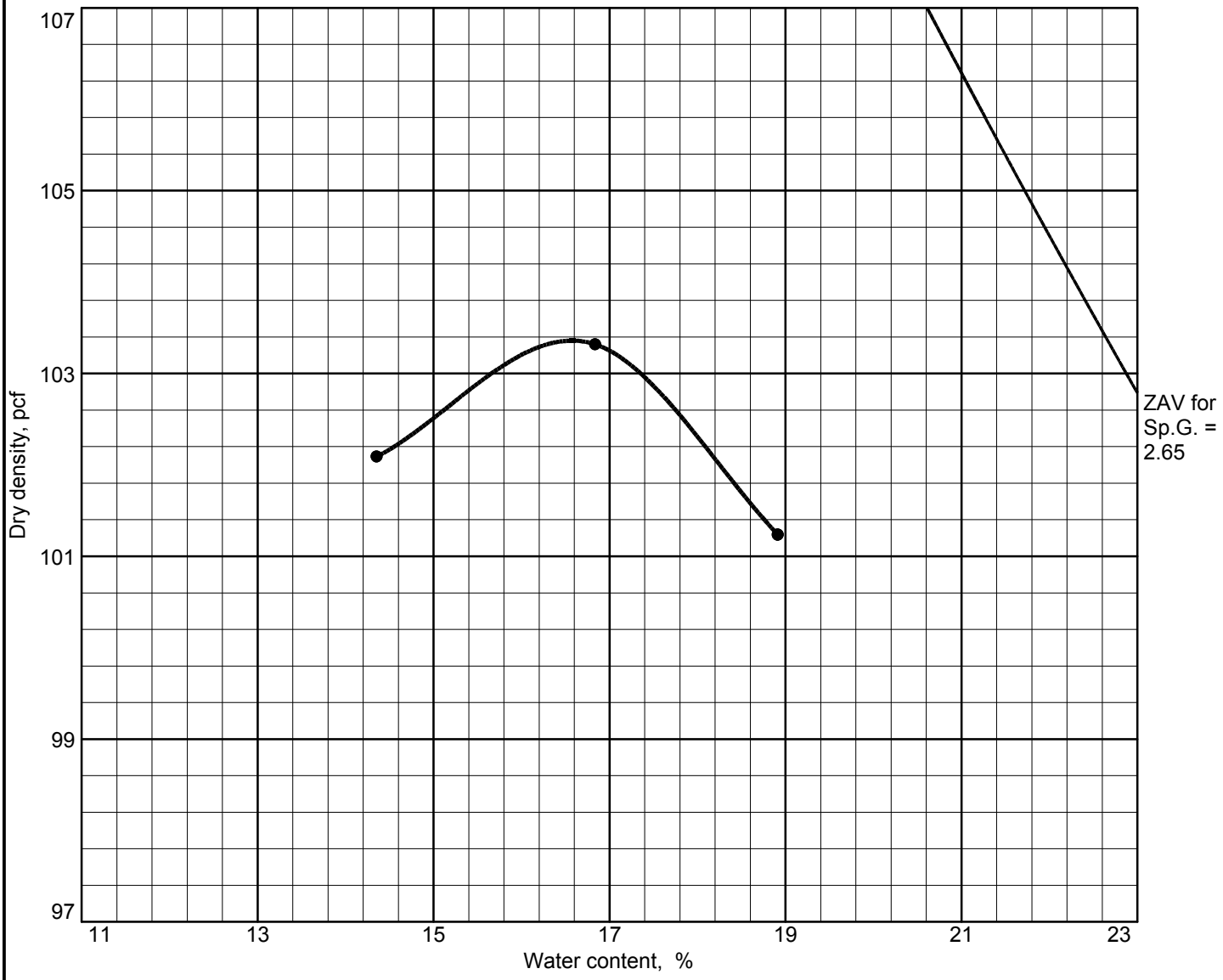
# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)




Test specification: ASTM D 698-00a Method A Standard

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > No.4 | % < No.200 |
|---|---|---|---|---|---|---|---|---|
| | USCS | AASHTO | | | | | | |
| | SM | A-2-4(0) | 12.2 | | NP | NP | 0.0 | 16.0 |

| TEST RESULTS | MATERIAL DESCRIPTION |
|---|---|
| Maximum dry density = 103.4 pcf<br>Optimum moisture = 16.6 % | Tan Silty fine SAND (SM) |

**Project No.** EC10-166T **Client:** CDM

**Project:** Dare County Landfill Phase {CELL} 4

● **Location:** App170'South from Northend and app 82'West from East edge

**Remarks:**

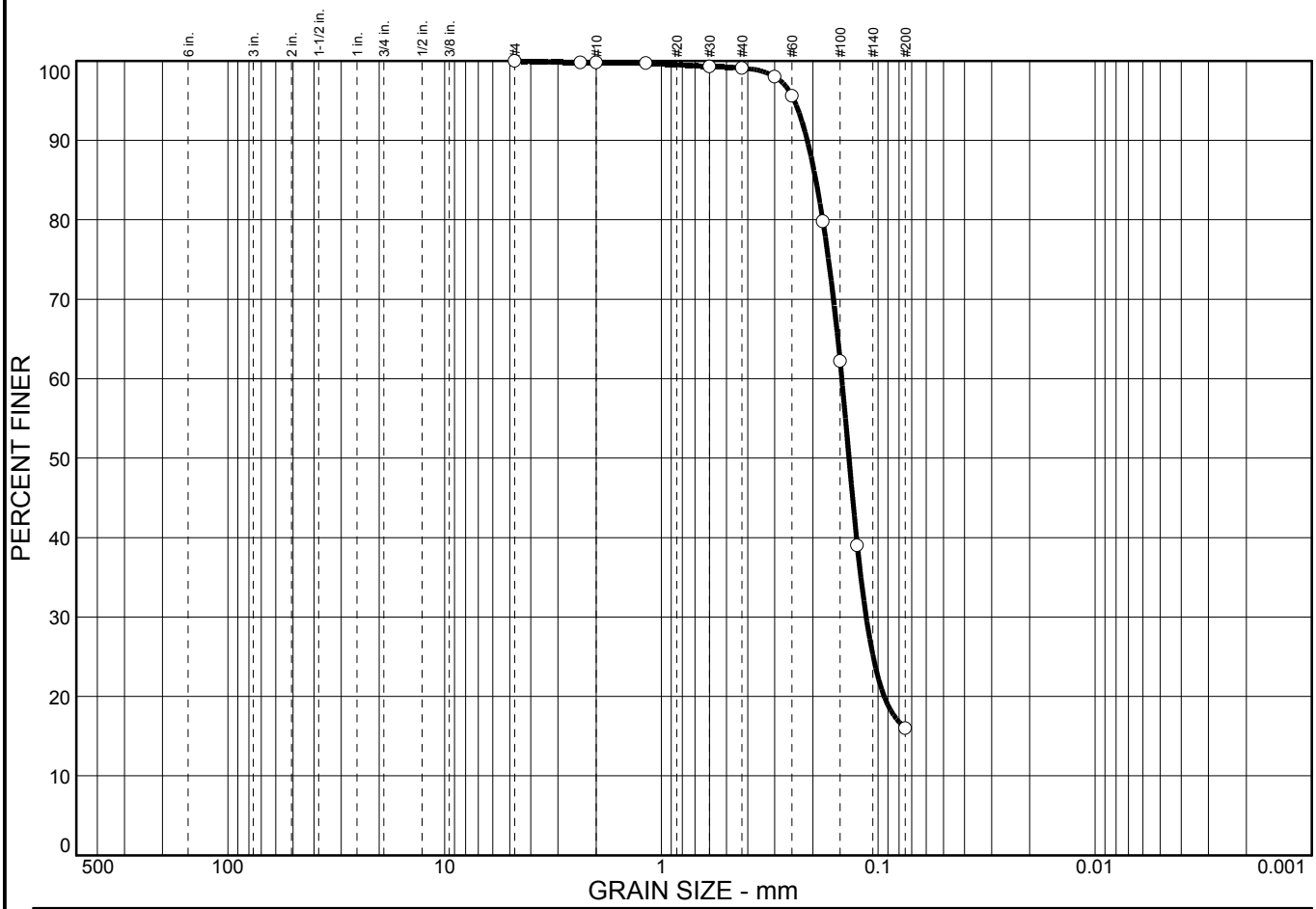
Proctor-#1

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

**GET SOLUTIONS, INC.**

**Figure**

# Particle Size Distribution Report




| % COBBLES | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|
| 0.0 | 0.0 | 84.0 | 16.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| #4 | 100.0 | | |
| #8 | 99.8 | | |
| #10 | 99.8 | | |
| #16 | 99.7 | | |
| #30 | 99.3 | | |
| #40 | 99.1 | | |
| #50 | 98.0 | | |
| #60 | 95.6 | | |
| #80 | 79.8 | | |
| #100 | 62.2 | | |
| #120 | 39.0 | | |
| #200 | 16.0 | | |

* (no specification provided)

**Soil Description**

Tan Silty fine SAND (SM)

**Atterberg Limits**

PL= LL= NP PI= NP

**Coefficients**

$D_{85}$= 0.194 $D_{60}$= 0.147 $D_{50}$= 0.137
$D_{30}$= 0.114 $D_{15}$= $D_{10}$=
$C_u$= $C_c$=

**Classification**

USCS= SM AASHTO= A-2-4(0)

**Remarks**

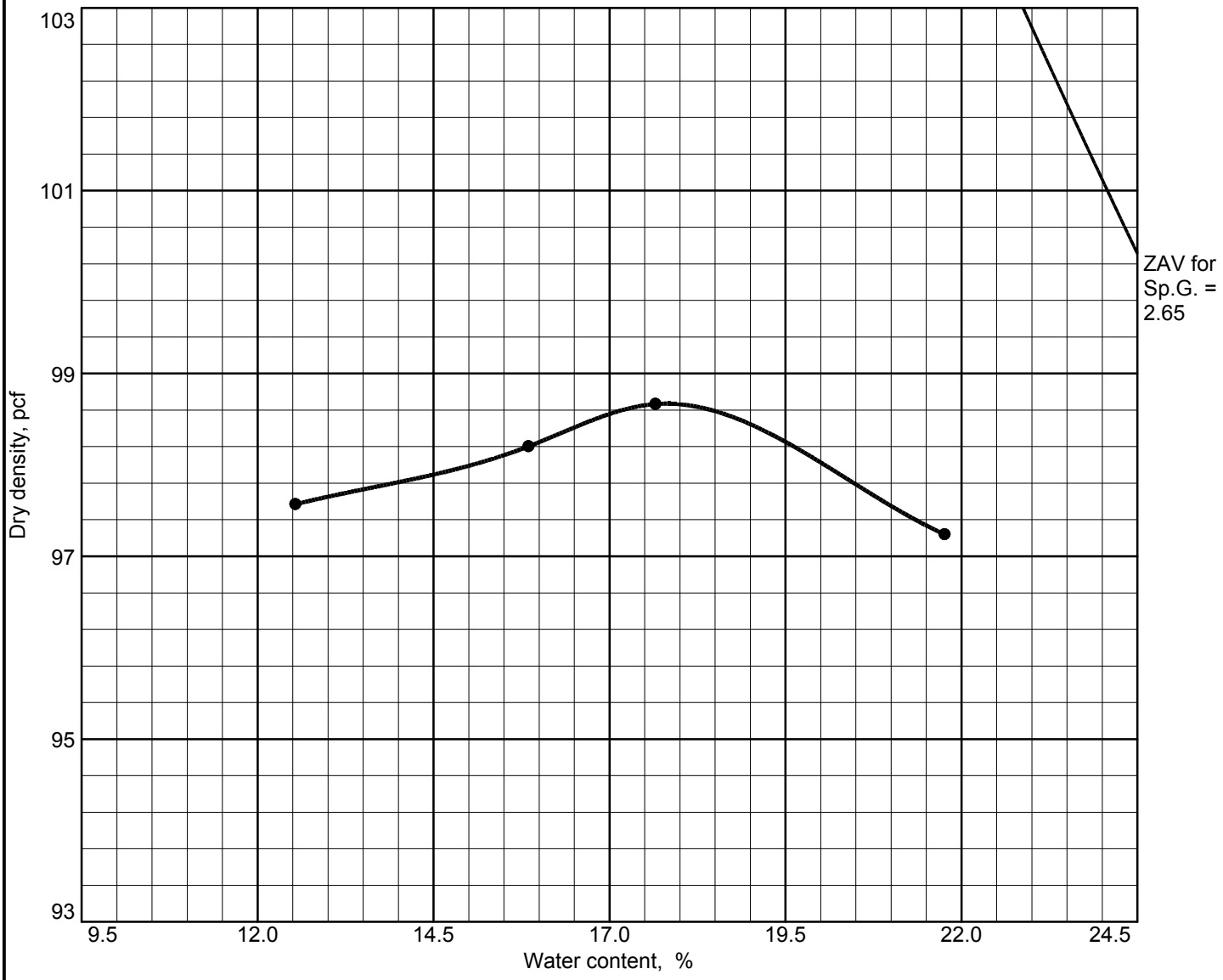
Proctor No. 1
F.M.=0.41

**Sample No.:** 1 **Source of Sample:** **Date:**
**Location:** App170'South from Northend and app 82'West from East edge **Elev./Depth:**

**GET SOLUTIONS, INC.**

**Client:** CDM
**Project:** Dare County Landfill Phase {CELL} 4
**Project No:** EC10-166T **Figure**

# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)




Test specification: ASTM D 698-00a Method A Standard

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > No.4 | % < No.200 |
|---|---|---|---|---|---|---|---|---|
| | USCS | AASHTO | | | | | | |
| | SP | A-3 | 11.8 | | NP | NP | 0.0 | 3.5 |

| TEST RESULTS | MATERIAL DESCRIPTION |
|---|---|
| Maximum dry density = 98.7 pcf<br>Optimum moisture = 17.8 % | Gray poorly graded fine to medium SAND (SP) |

**Project No.** EC10-166T **Client:** CDM

**Project:** Dare County Landfill Phase {CELL} 4

● **Location:** App 55' South from Northend and app 20'East from West edge

**Remarks:**

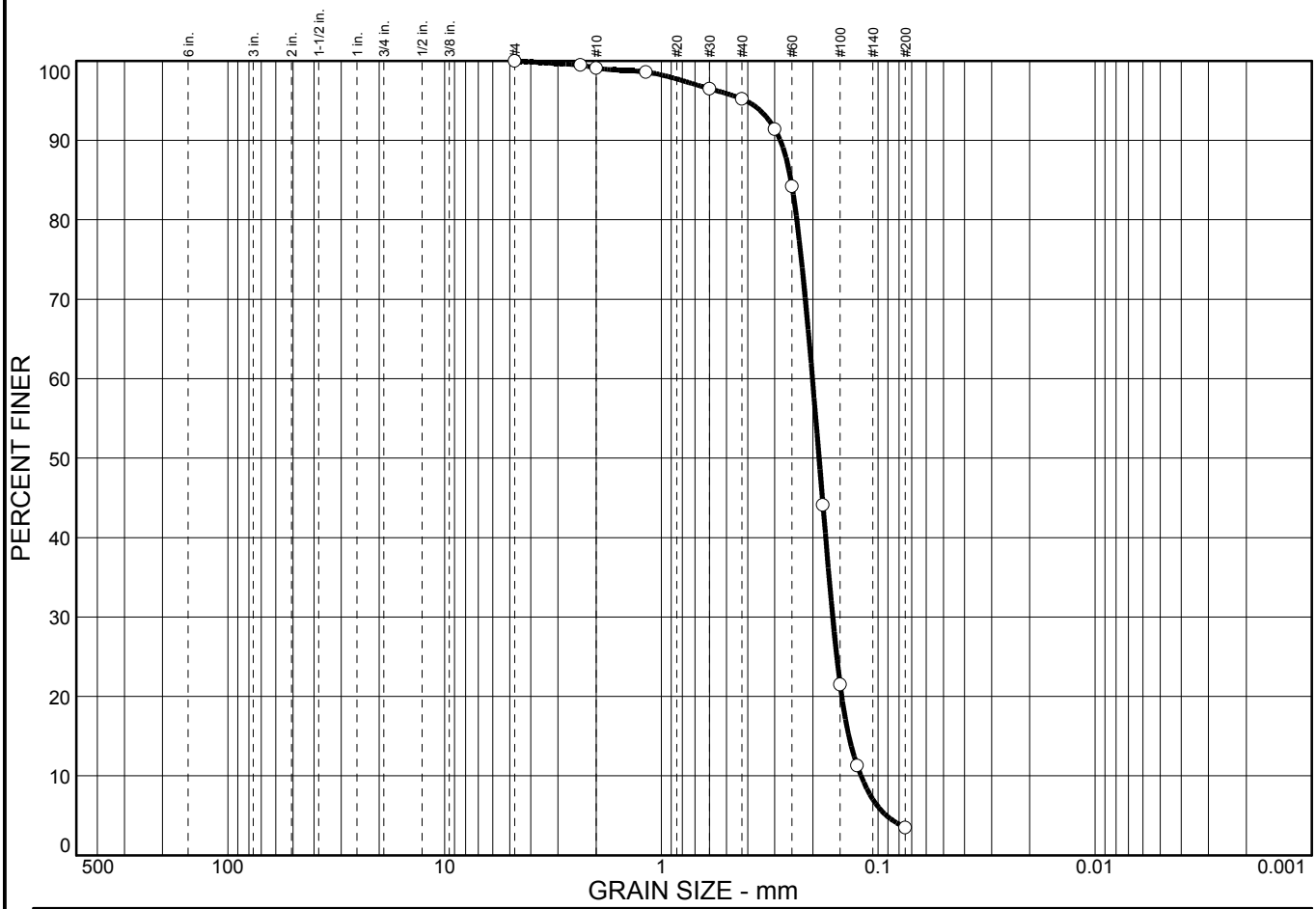
Proctor-#2

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

**GET SOLUTIONS, INC.**

**Figure**

# Particle Size Distribution Report




| % COBBLES | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|
| 0.0 | 0.0 | 96.5 | 3.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| #4 | 100.0 | | |
| #8 | 99.5 | | |
| #10 | 99.1 | | |
| #16 | 98.6 | | |
| #30 | 96.5 | | |
| #40 | 95.2 | | |
| #50 | 91.4 | | |
| #60 | 84.2 | | |
| #80 | 44.1 | | |
| #100 | 21.5 | | |
| #120 | 11.3 | | |
| #200 | 3.5 | | |

* (no specification provided)

**Soil Description**

Gray poorly graded fine to medium SAND (SP)

**Atterberg Limits**

PL= NP LL= NP PI= NP

**Coefficients**

$D_{85}$= 0.253 $D_{60}$= 0.201 $D_{50}$= 0.188
$D_{30}$= 0.162 $D_{15}$= 0.137 $D_{10}$= 0.120
$C_u$= 1.68 $C_c$= 1.09

**Classification**

USCS= SP AASHTO= A-3

**Remarks**

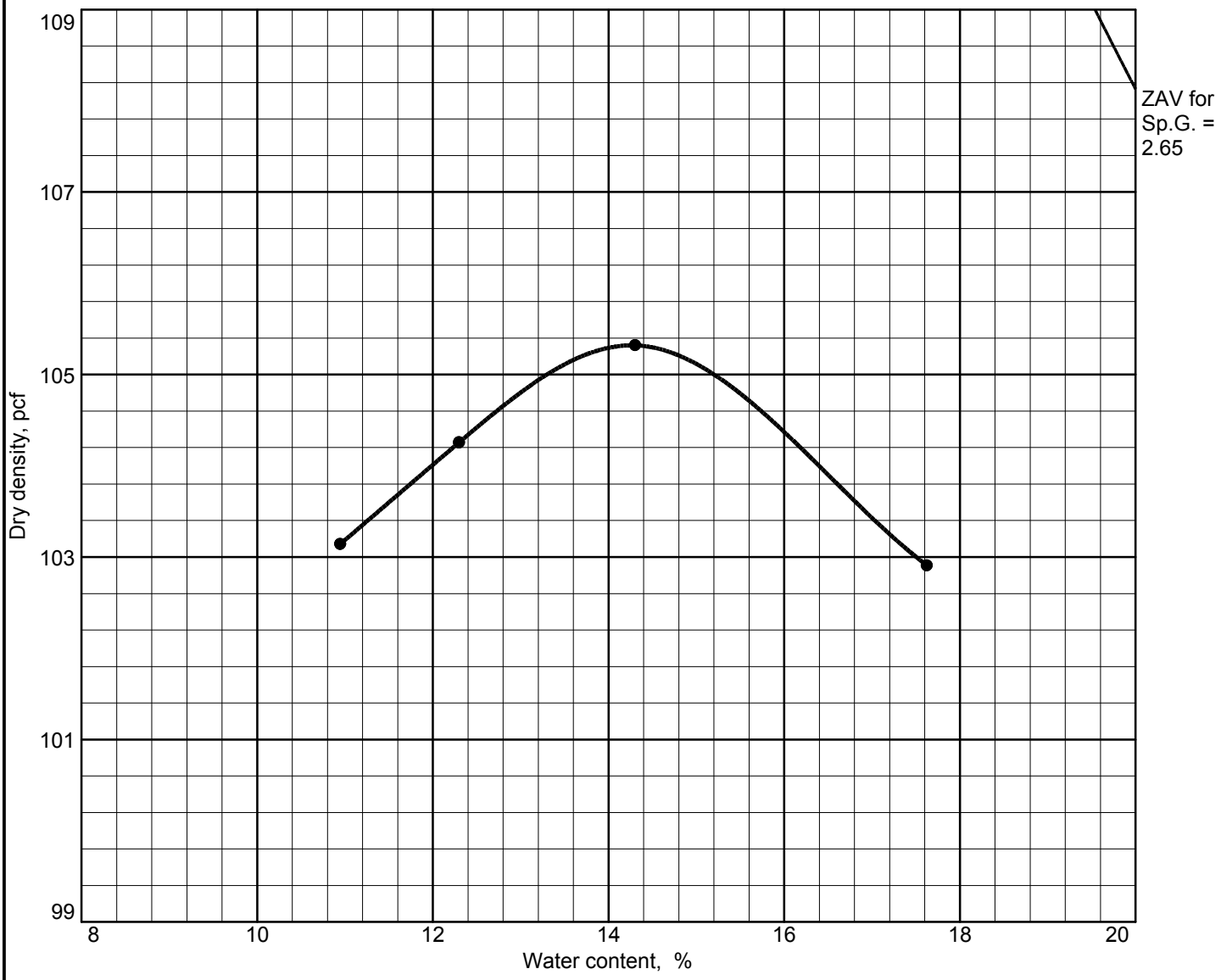
Proctor No. 2
F.M.=0.93

**Sample No.:** 2 **Source of Sample:** **Date:**
**Location:** App 55' South from Northend and app 20'East from West edge **Elev./Depth:**

**GET SOLUTIONS, INC.**

**Client:** CDM
**Project:** Dare County Landfill Phase {CELL} 4
**Project No:** EC10-166T **Figure**

# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)




Test specification: ASTM D 698-00a Method A Standard

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > No.4 | % < No.200 |
|---|---|---|---|---|---|---|---|---|
| | USCS | AASHTO | | | | | | |
| | SM | A-2-4(0) | 15.2 | | NP | NP | 0.0 | 12.1 |

| TEST RESULTS | MATERIAL DESCRIPTION |
|---|---|
| Maximum dry density = 105.3 pcf<br>Optimum moisture = 14.3 % | Gray Silty fine to medium SAND (SM) with marine shell fragments |

**Project No.** EC10-166T **Client:** CDM

**Project:** Dare County Landfill Phase {CELL} 4

● **Location:** App 937'South from Northend and 95'West of East edge

**Remarks:**

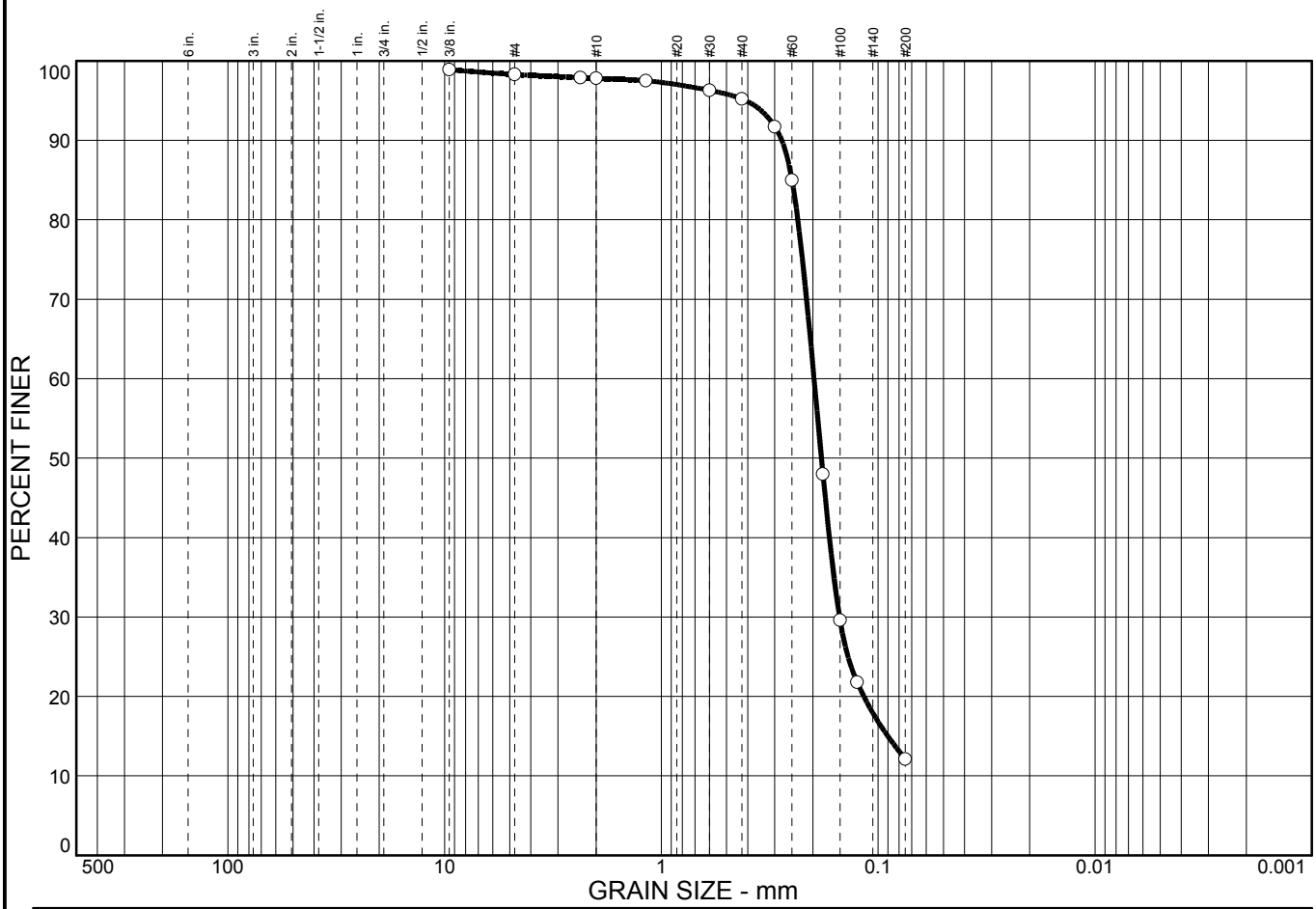
Proctor-#3

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

**GET SOLUTIONS, INC.**

**Figure**

# Particle Size Distribution Report




| % COBBLES | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|
| | | 86.2 | 12.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 in. | 98.9 | | |
| #4 | 98.3 | | |
| #8 | 97.9 | | |
| #10 | 97.8 | | |
| #16 | 97.5 | | |
| #30 | 96.3 | | |
| #40 | 95.2 | | |
| #50 | 91.7 | | |
| #60 | 85.0 | | |
| #80 | 48.0 | | |
| #100 | 29.6 | | |
| #120 | 21.8 | | |
| #200 | 12.1 | | |

* (no specification provided)

**Soil Description**

Gray Silty fine to medium SAND (SM) with marine shell fragments

**Atterberg Limits**

PL= NP LL= NP PI= NP

**Coefficients**

$D_{85}$= 0.250 $D_{60}$= 0.198 $D_{50}$= 0.183
$D_{30}$= 0.151 $D_{15}$= 0.0904 $D_{10}$=
$C_u$= $C_c$=

**Classification**

USCS= SM AASHTO= A-2-4(0)

**Remarks**

Proctor No. 3
F.M.=0.90

**Sample No.:** 3 **Source of Sample:** **Date:**
**Location:** App 937'South from Northend and 95'West of East edge **Elev./Depth:**

**GET SOLUTIONS, INC.**

**Client:** CDM
**Project:** Dare County Landfill Phase {CELL} 4
**Project No:** EC10-166T **Figure**

# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

Test specification: ASTM D 698-00a Method A Standard

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > No.4 | % < No.200 |
|---|---|---|---|---|---|---|---|---|
| | USCS | AASHTO | | | | | | |
| | | A-2-4(0) | 12.2 | | NP | NP | 0.0 | 12.5 |

| TEST RESULTS | MATERIAL DESCRIPTION |
|---|---|
| Maximum dry density = 103.7 pcf<br>Optimum moisture = 13.2 % | Gray-Tan Silty fine SAND (SM) with Clay |

**Project No.** EC10-166T **Client:** CDM

**Project:** Dare County Landfill Phase {CELL} 4

● **Location:** App 156'North from Southend and app 51' East from West edge

**Remarks:**

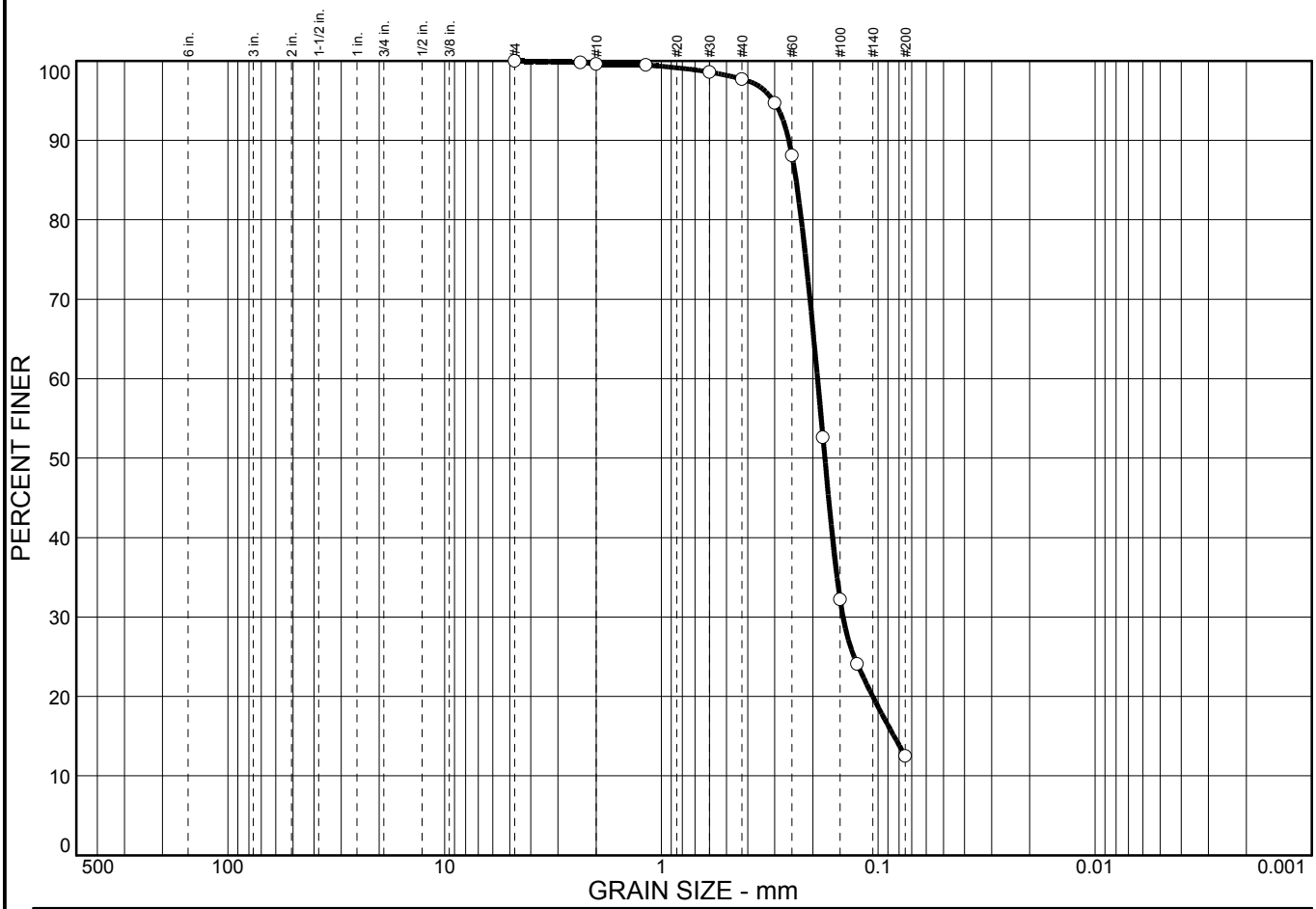
Proctor-#4

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

**GET SOLUTIONS, INC.**

**Figure**

# Particle Size Distribution Report




| % COBBLES | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|
| 0.0 | 0.0 | 87.5 | 12.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| #4 | 100.0 | | |
| #8 | 99.8 | | |
| #10 | 99.6 | | |
| #16 | 99.5 | | |
| #30 | 98.6 | | |
| #40 | 97.7 | | |
| #50 | 94.7 | | |
| #60 | 88.1 | | |
| #80 | 52.6 | | |
| #100 | 32.2 | | |
| #120 | 24.1 | | |
| #200 | 12.5 | | |

* (no specification provided)

**Soil Description**

Gray-Tan Silty fine SAND (SM) with Clay

**Atterberg Limits**

PL= NP LL= NP PI= NP

**Coefficients**

$D_{85}$= 0.239 $D_{60}$= 0.191 $D_{50}$= 0.176
$D_{30}$= 0.145 $D_{15}$= 0.0845 $D_{10}$=
$C_u$= $C_c$=

**Classification**

USCS= SM AASHTO= A-2-4(0)

**Remarks**

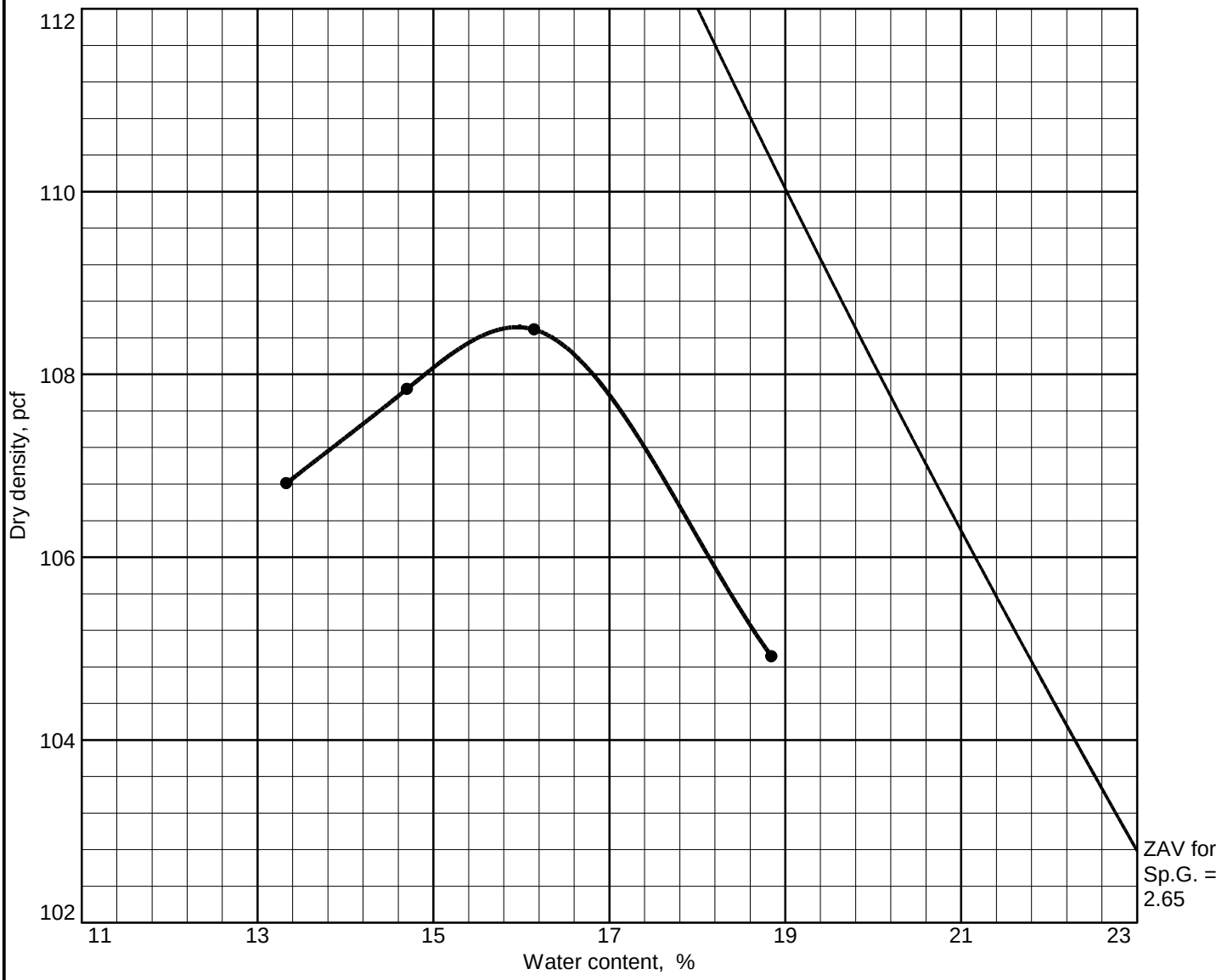
Proctor No. 4
F.M.=0.75

**Sample No.:** 4 **Source of Sample:** **Date:**
**Location:** App 156'North from Southend and app 51' East from West edge **Elev./Depth:**

**GET SOLUTIONS, INC.**

**Client:** CDM
**Project:** Dare County Landfill Phase {CELL} 4
**Project No:** EC10-166T **Figure**

# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)




Test specification: ASTM D 698-00a Method A Standard

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > No.4 | % < No.200 |
|---|---|---|---|---|---|---|---|---|
| | USCS | AASHTO | | | | | | |
| 2' BFG | SM | | 24.5 | | NP | NP | 0.0 | 28.1 |

| TEST RESULTS | MATERIAL DESCRIPTION |
|---|---|
| Maximum dry density = 108.5 pcf<br>Optimum moisture = 16.0 % | Dark Brown Silty fine SAND (SM) with Clay |

**Project No.** EC10-166T **Client:** CDM

**Project:** Dare County Landfill Phase {CELL} 4

● **Location:** Center of Lot#10

**Remarks:**

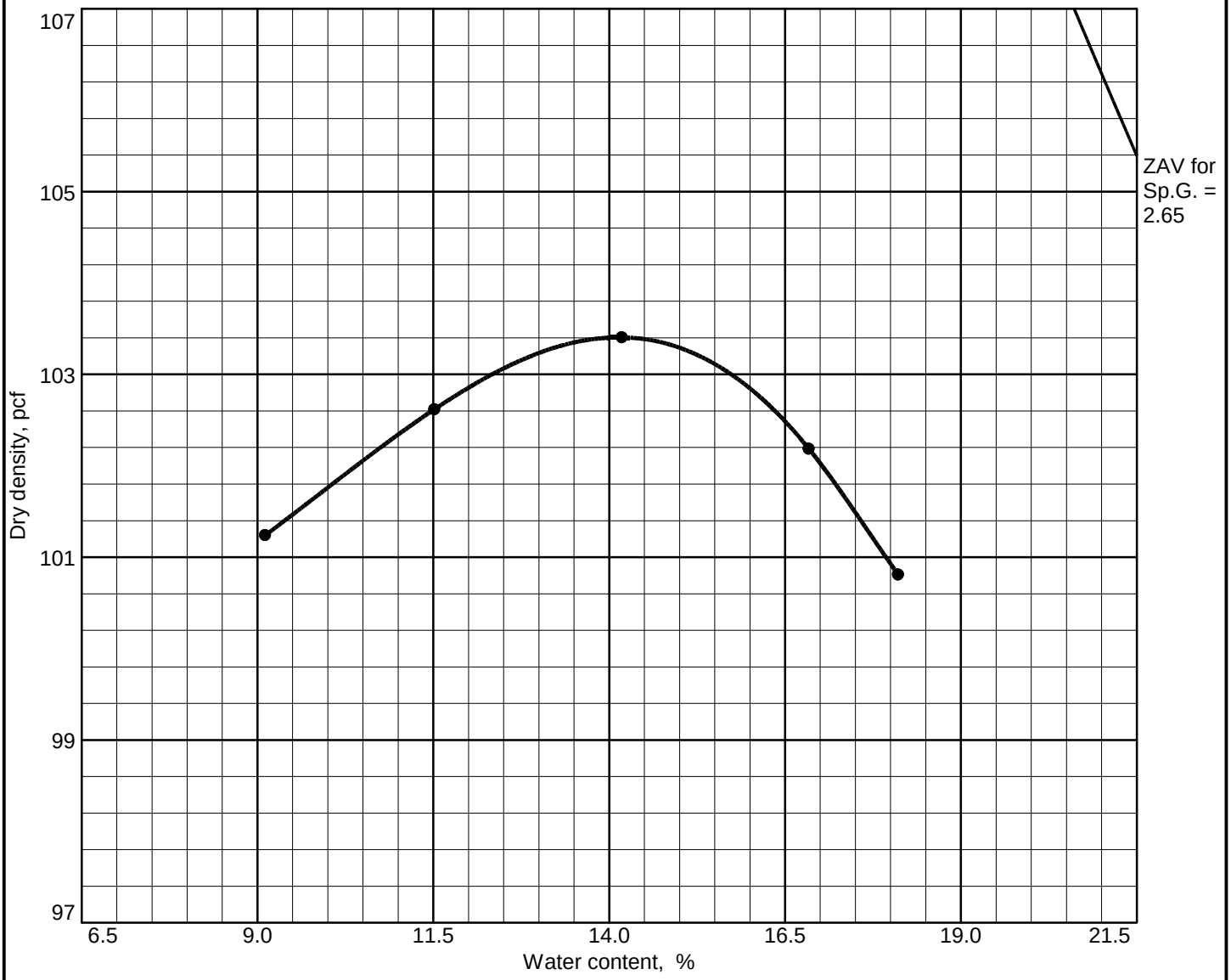
Proctor-#5

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

**GET SOLUTIONS, INC.**

**Figure**

# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)




Test specification: ASTM D 698-00a Method A Standard

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > No.4 | % < No.200 |
|---|---|---|---|---|---|---|---|---|
| | USCS | AASHTO | | | | | | |
| 1'BFG | SM | | 23.5 | | NP | NP | 0.0 | 12.5 |

| TEST RESULTS | MATERIAL DESCRIPTION |
|---|---|
| Maximum dry density = 103.4 pcf<br>Optimum moisture = 14.1 % | Gray-Tan Silty fine SAND with trace clay |

**Project No.** EC10-166T **Client:** CDM

**Project:** Dare County Landfill Phase {CELL} 4

● **Location:** Center of Lot-#1

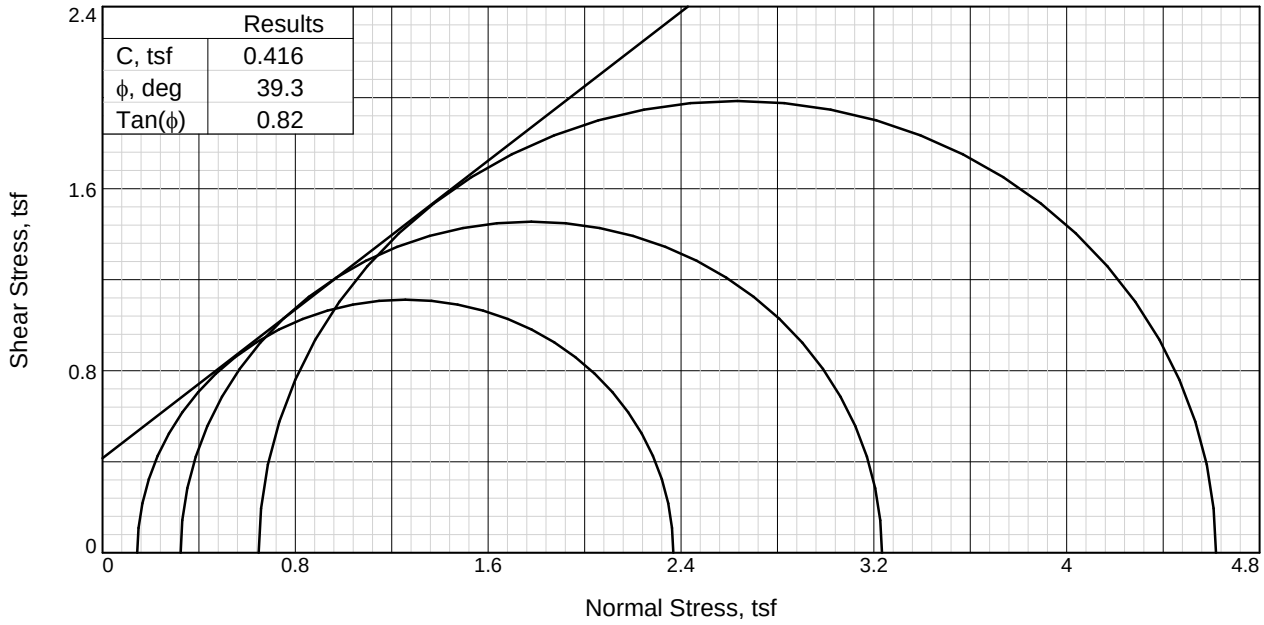
**Remarks:**

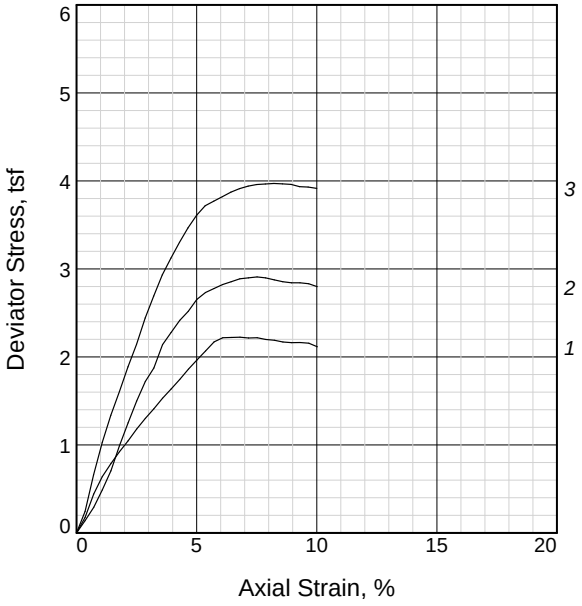
Proctor-#6

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

**GET SOLUTIONS, INC.**

**Figure**




| Sample No. | | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 16.6 | 16.6 | 16.6 |
| | Dry Density, pcf | 98.3 | 98.2 | 98.2 |
| | Saturation, % | 64.5 | 64.4 | 64.4 |
| | Void Ratio | 0.6835 | 0.6841 | 0.6839 |
| | Diameter, in. | 2.80 | 2.80 | 2.80 |
| | Height, in. | 5.60 | 5.60 | 5.60 |
| At Test | Water Content, % | 25.3 | 25.4 | 25.8 |
| | Dry Density, pcf | 99.1 | 98.8 | 98.2 |
| | Saturation, % | 100.0 | 100.0 | 100.0 |
| | Void Ratio | 0.6700 | 0.6742 | 0.6839 |
| | Diameter, in. | 2.79 | 2.79 | 2.80 |
| | Height, in. | 5.59 | 5.59 | 5.60 |
| Strain rate, in./min. | | 0.06 | 0.06 | 0.06 |
| Back Pressure, tsf | | 0.07 | 0.11 | 0.22 |
| Cell Pressure, tsf | | 0.22 | 0.43 | 0.86 |
| Fail. Stress, tsf | | 2.22 | 2.91 | 3.97 |
| Ult. Stress, tsf | | | | |
| $\sigma_1$ Failure, tsf | | 2.37 | 3.23 | 4.62 |
| $\sigma_3$ Failure, tsf | | 0.14 | 0.32 | 0.65 |

**Type of Test:**
Consolidated Undrained
**Sample Type:** Recompacted
**Description:** Tan Silty fine SAND (SM)

**Assumed Specific Gravity=** 2.65
**Remarks:**

**Client:** CDM

**Project:** Dare County Landfill Phae (Cell) 4

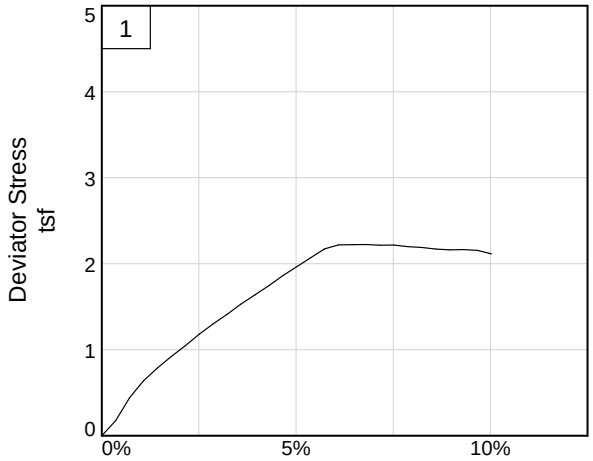
**Location:** App170'South from North End and 82'West from East Edge
**Sample Number:** Proctor No. 1
**Proj. No.:** EC10-166T **Date Sampled:**

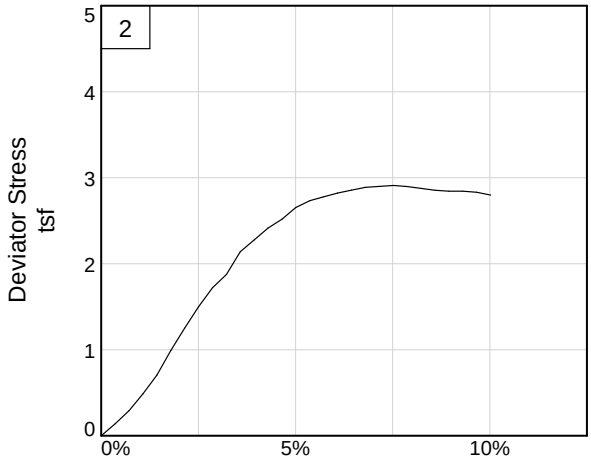
TRIAXIAL SHEAR TEST REPORT

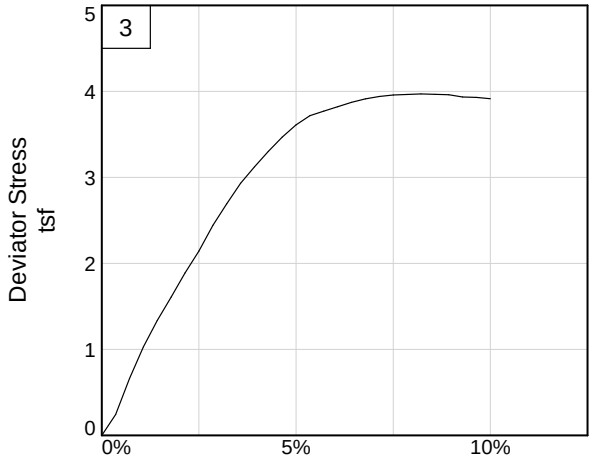
GET SOLUTIONS, INC.

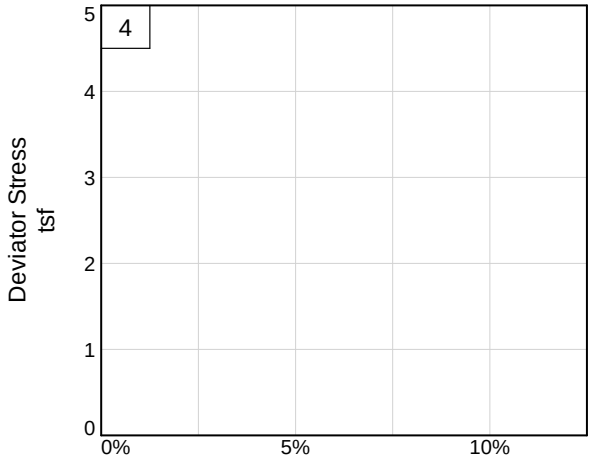
**Figure** T1

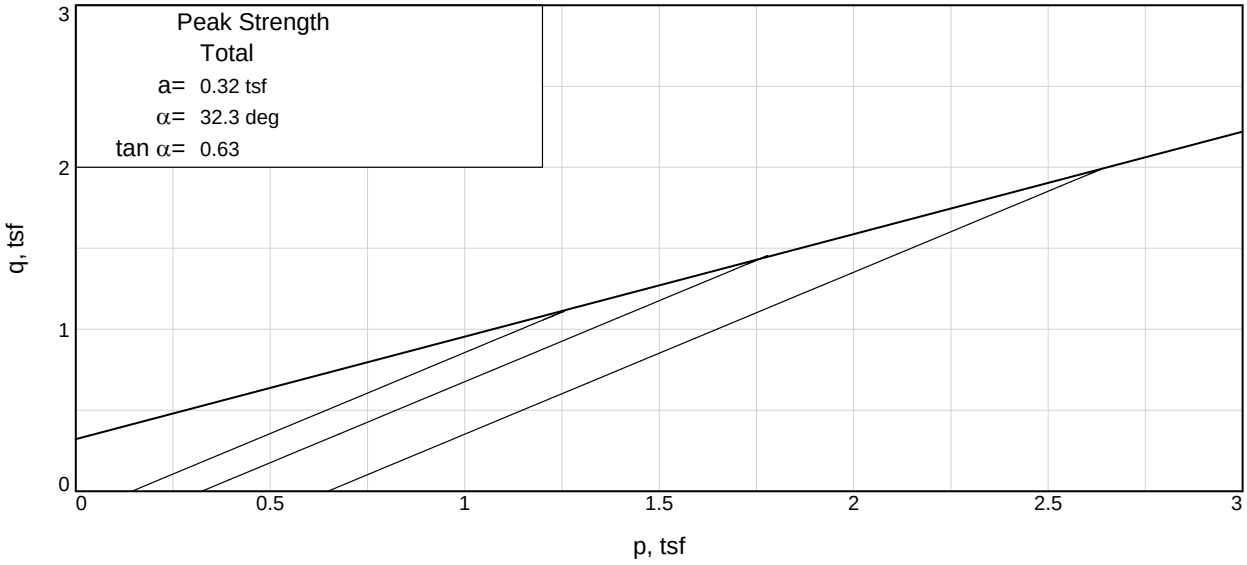
**Tested By:** PB **Checked By:** GS



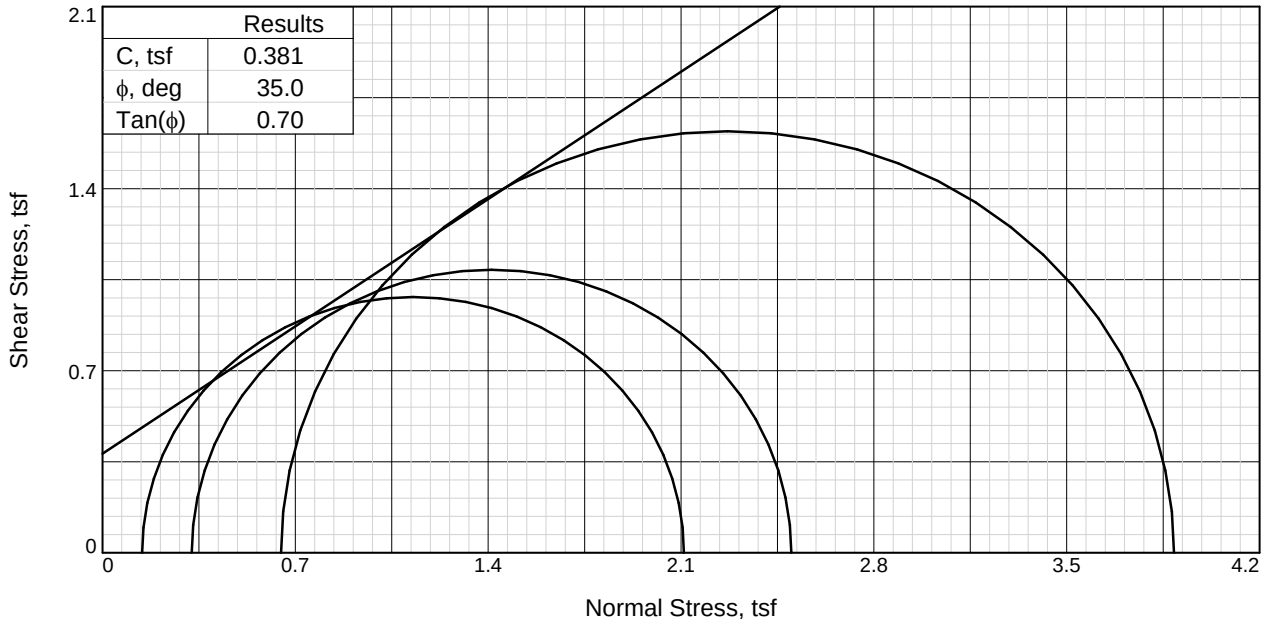



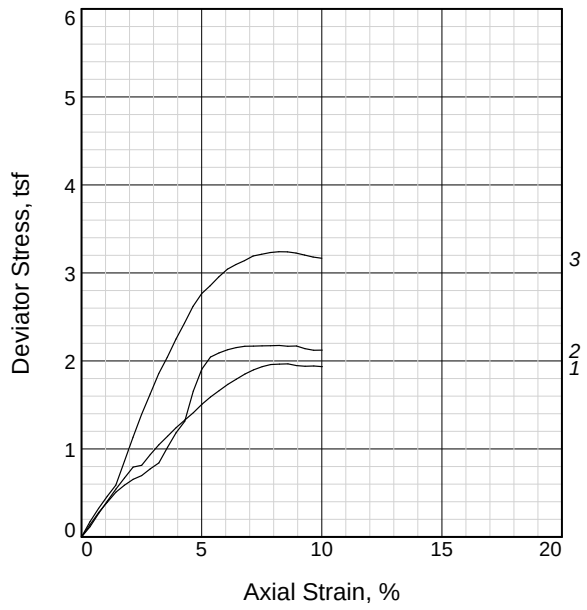




**Client:** CDM
**Project:** Dare County Landfill Phae (Cell) 4
**Location:** App170'South from North End and 82'West from East Edge
**Sample Number:** Proctor No. 1
**Project No.:** EC10-166T
**Figure** _____

**GET Solutions, Inc.**

**Tested By:** PB **Checked By:** GS




| Sample No. | | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 17.8 | 17.8 | 17.8 |
| | Dry Density, pcf | 93.8 | 93.8 | 93.9 |
| | Saturation, % | 61.9 | 61.8 | 62.0 |
| | Void Ratio | 0.7629 | 0.7645 | 0.7623 |
| | Diameter, in. | 2.80 | 2.80 | 2.80 |
| | Height, in. | 5.60 | 5.60 | 5.60 |
| At Test | Water Content, % | 28.3 | 28.5 | 28.8 |
| | Dry Density, pcf | 94.6 | 94.3 | 93.9 |
| | Saturation, % | 100.0 | 100.0 | 100.0 |
| | Void Ratio | 0.7488 | 0.7542 | 0.7623 |
| | Diameter, in. | 2.79 | 2.79 | 2.80 |
| | Height, in. | 5.58 | 5.59 | 5.60 |
| Strain rate, in./min. | | 0.06 | 0.06 | 0.06 |
| Back Pressure, tsf | | 0.07 | 0.11 | 0.22 |
| Cell Pressure, tsf | | 0.22 | 0.43 | 0.86 |
| Fail. Stress, tsf | | 1.97 | 2.18 | 3.24 |
| Ult. Stress, tsf | | | | |
| $\sigma_1$ Failure, tsf | | 2.11 | 2.50 | 3.89 |
| $\sigma_3$ Failure, tsf | | 0.14 | 0.32 | 0.65 |

**Type of Test:**
Consolidated Undrained
**Sample Type:** Recompacted
**Description:** Gray Poorly Graded fine to medium SAND (SP)

**Assumed Specific Gravity=** 2.65
**Remarks:**

**Client:** CDM

**Project:** Dare County Landfill Phae (Cell) 4

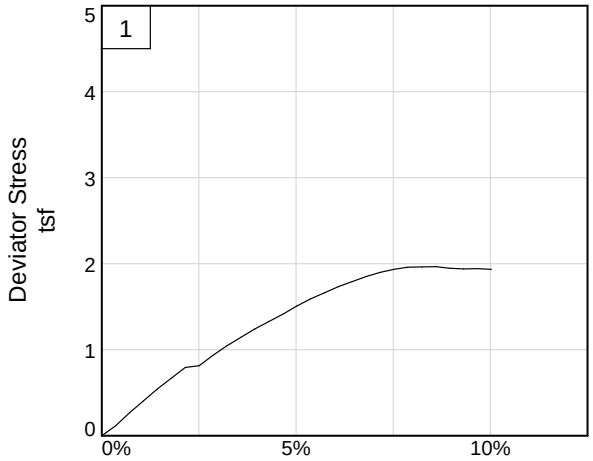
**Location:** App55'South from North End and 20'East from West Edge
**Sample Number:** Proctor No. 2
**Proj. No.:** EC10-166T **Date Sampled:**

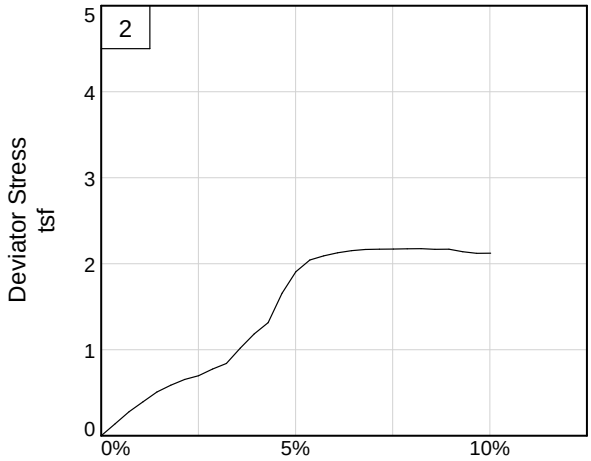
TRIAXIAL SHEAR TEST REPORT

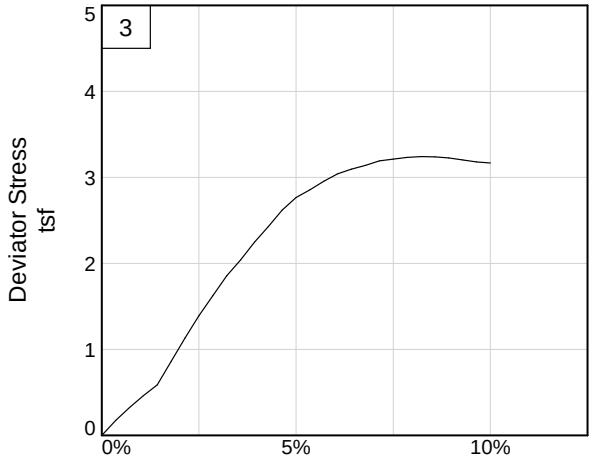
GET SOLUTIONS, INC.

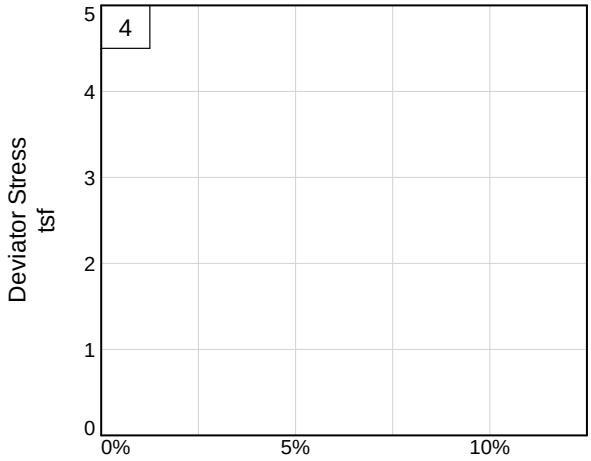
**Figure** T2

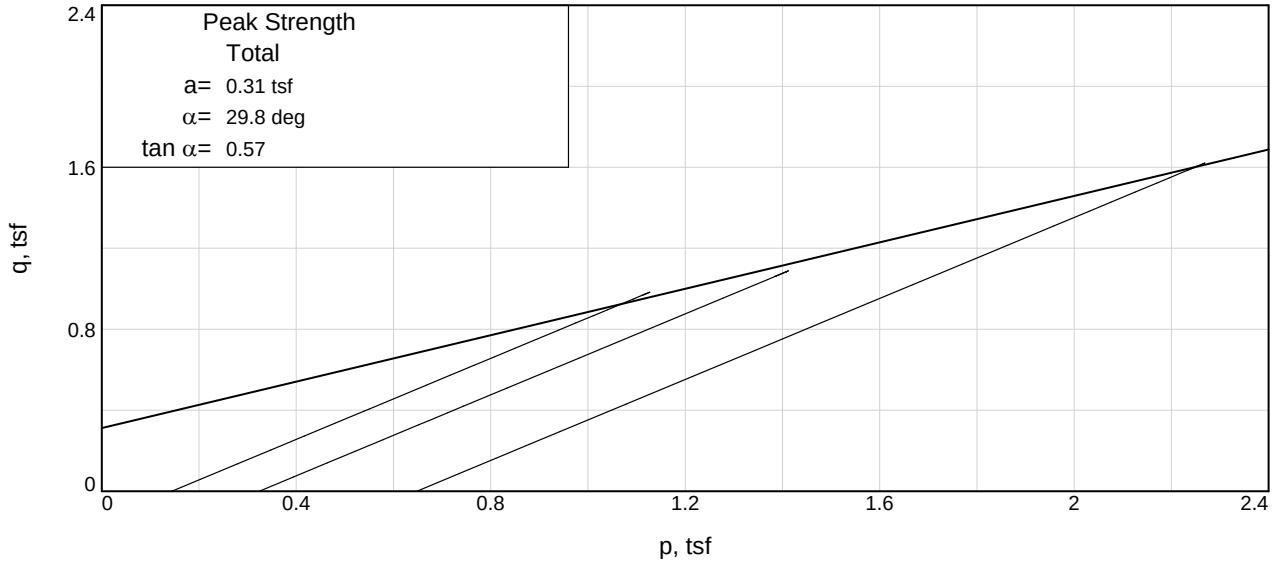
**Tested By:** PB **Checked By:** GS



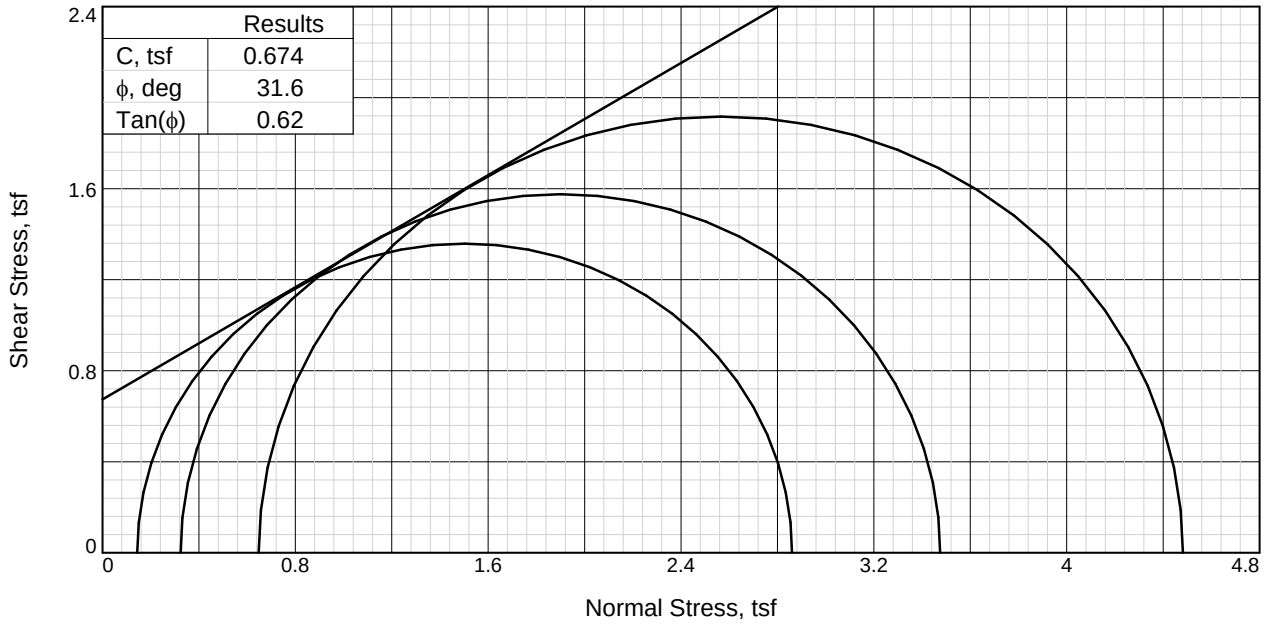



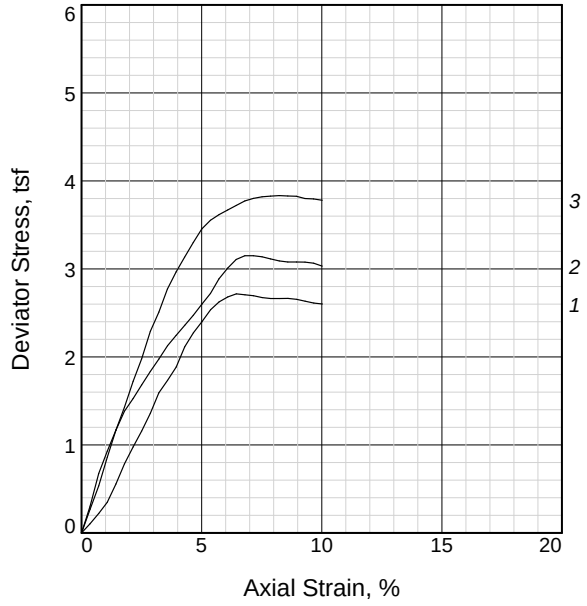




**Client:** CDM
**Project:** Dare County Landfill Phae (Cell) 4
**Location:** App55'South from North End and 20'East from West Edge
**Sample Number:** Proctor No. 2
**Project No.:** EC10-166T
**Figure** _____

**GET Solutions, Inc.**

**Tested By:** PB **Checked By:** GS




| Sample No. | | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 14.3 | 14.3 | 14.3 |
| | Dry Density, pcf | 100.1 | 100.0 | 100.0 |
| | Saturation, % | 57.8 | 57.8 | 57.7 |
| | Void Ratio | 0.6530 | 0.6538 | 0.6551 |
| | Diameter, in. | 2.80 | 2.80 | 2.80 |
| | Height, in. | 5.60 | 5.60 | 5.60 |
| At Test | Water Content, % | 24.1 | 24.3 | 24.4 |
| | Dry Density, pcf | 100.9 | 100.6 | 100.5 |
| | Saturation, % | 100.0 | 100.0 | 100.0 |
| | Void Ratio | 0.6398 | 0.6441 | 0.6462 |
| | Diameter, in. | 2.79 | 2.79 | 2.79 |
| | Height, in. | 5.58 | 5.59 | 5.59 |
| Strain rate, in./min. | | 0.06 | 0.06 | 0.06 |
| Back Pressure, tsf | | 0.07 | 0.11 | 0.22 |
| Cell Pressure, tsf | | 0.22 | 0.43 | 0.86 |
| Fail. Stress, tsf | | 2.72 | 3.15 | 3.83 |
| Ult. Stress, tsf | | | | |
| $\sigma_1$ Failure, tsf | | 2.86 | 3.48 | 4.48 |
| $\sigma_3$ Failure, tsf | | 0.14 | 0.32 | 0.65 |

**Type of Test:**
Consolidated Undrained
**Sample Type:** Recompacted
**Description:** Gray Silty fine to medium SAND (SM) with marine shell fragments

**Assumed Specific Gravity=** 2.65
**Remarks:**

**Client:** CDM

**Project:** Dare County Landfill Phae (Cell) 4

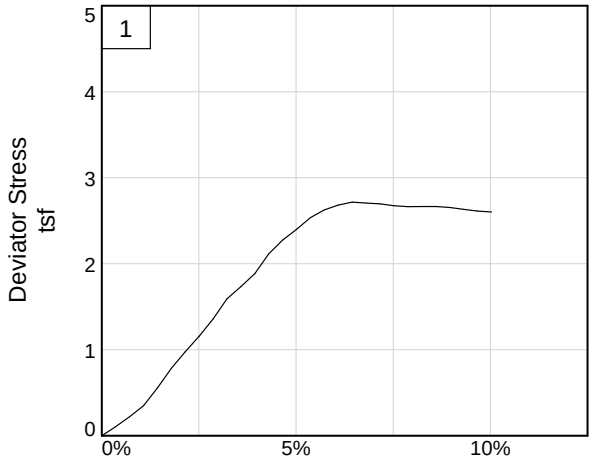
**Location:** App973'South from North End and 95'West from East Edge
**Sample Number:** Proctor No. 3
**Proj. No.:** EC10-166T **Date Sampled:**

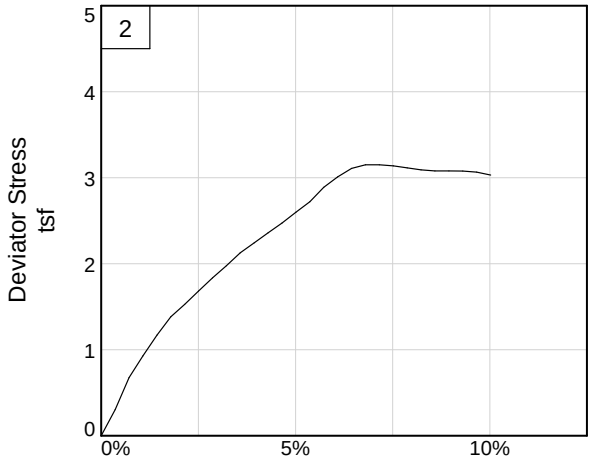
TRIAXIAL SHEAR TEST REPORT

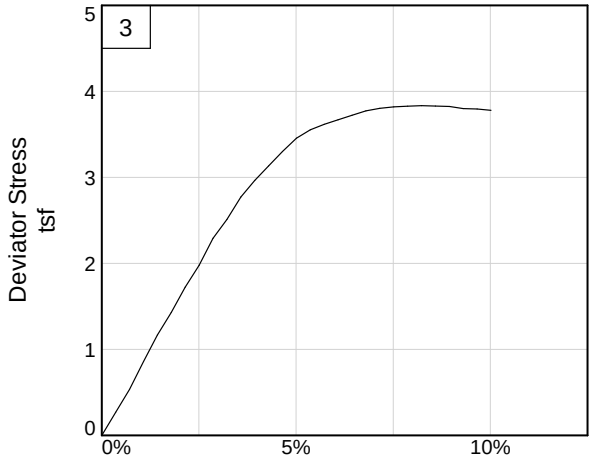
GET SOLUTIONS, INC.

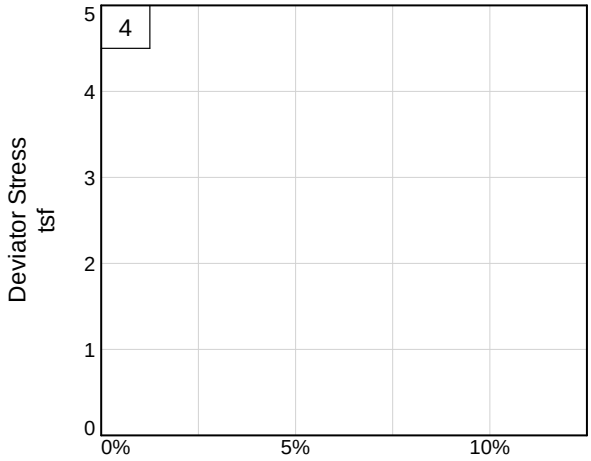
**Figure** T3

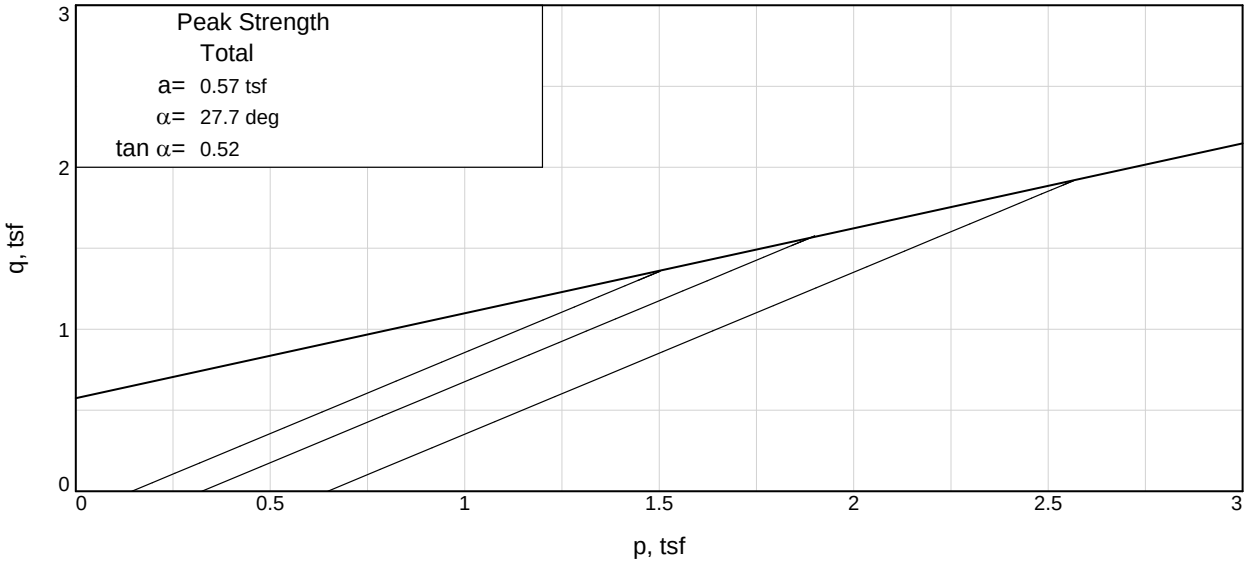
**Tested By:** PB **Checked By:** GS



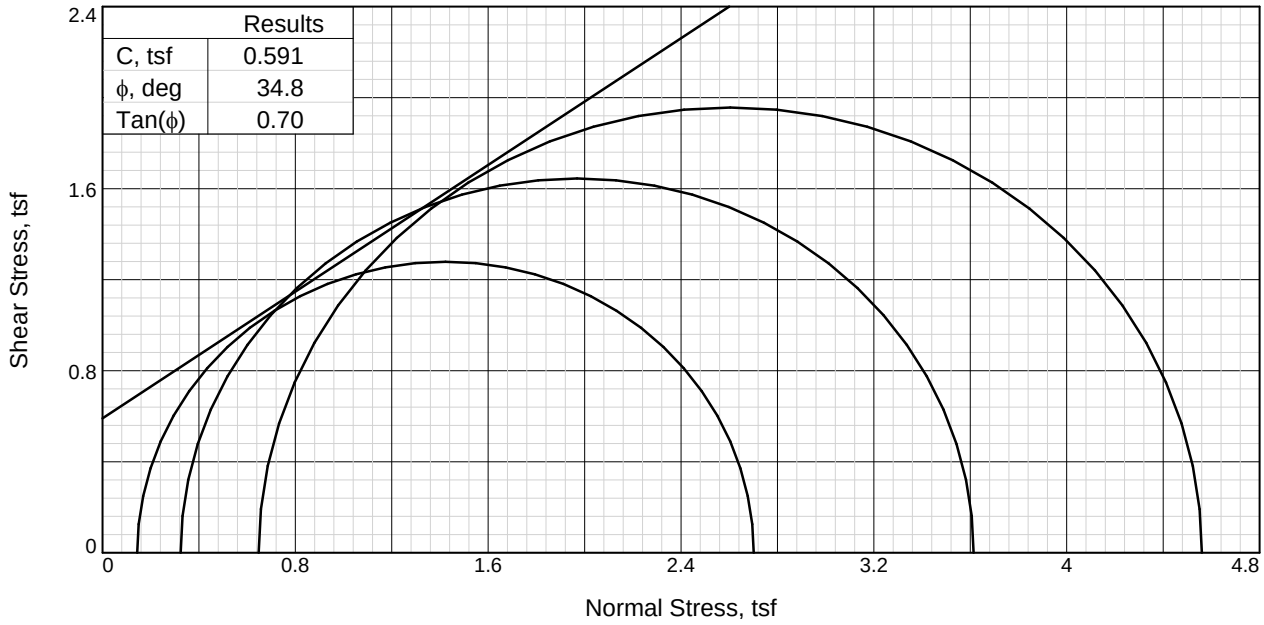



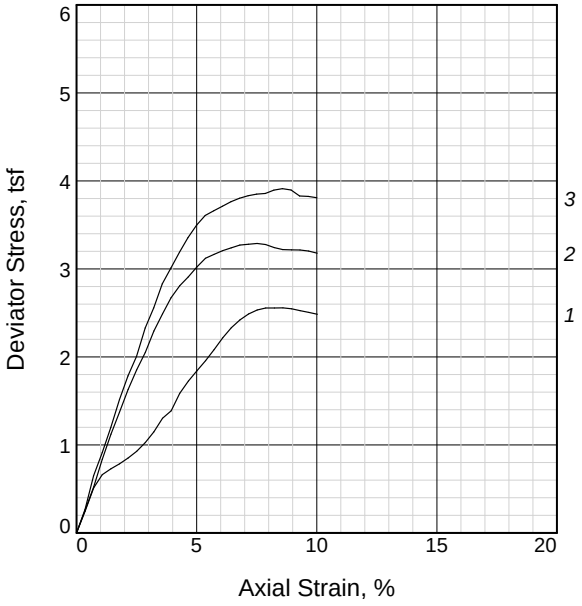




**Client:** CDM
**Project:** Dare County Landfill Phae (Cell) 4
**Location:** App973'South from North End and 95'West from East Edge
**Sample Number:** Proctor No. 3
**Project No.:** EC10-166T
**Figure** _____

**GET Solutions, Inc.**

**Tested By:** PB **Checked By:** GS




| Sample No. | | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 13.2 | 13.2 | 13.2 |
| | Dry Density, pcf | 98.5 | 98.6 | 98.5 |
| | Saturation, % | 51.7 | 51.7 | 51.6 |
| | Void Ratio | 0.6794 | 0.6785 | 0.6800 |
| | Diameter, in. | 2.80 | 2.80 | 2.80 |
| | Height, in. | 5.60 | 5.60 | 5.60 |
| At Test | Water Content, % | 25.1 | 25.2 | 25.7 |
| | Dry Density, pcf | 99.3 | 99.1 | 98.5 |
| | Saturation, % | 100.0 | 100.0 | 100.0 |
| | Void Ratio | 0.6659 | 0.6686 | 0.6800 |
| | Diameter, in. | 2.79 | 2.79 | 2.80 |
| | Height, in. | 5.58 | 5.59 | 5.60 |
| Strain rate, in./min. | | 0.06 | 0.06 | 0.06 |
| Back Pressure, tsf | | 0.07 | 0.11 | 0.22 |
| Cell Pressure, tsf | | 0.22 | 0.43 | 0.86 |
| Fail. Stress, tsf | | 2.56 | 3.29 | 3.91 |
| Ult. Stress, tsf | | | | |
| $\sigma_1$ Failure, tsf | | 2.70 | 3.61 | 4.56 |
| $\sigma_3$ Failure, tsf | | 0.14 | 0.32 | 0.65 |

**Type of Test:**
Consolidated Undrained

**Sample Type:** Recompacted

**Description:** Gray-Tan Silty fine SAND (SM) with Clay

**Assumed Specific Gravity=** 2.65

**Remarks:**

**Client:** CDM

**Project:** Dare County Landfill Phae (Cell) 4

**Location:** App156'North from South End and 51'East from West Edge

**Sample Number:** Proctor No. 4

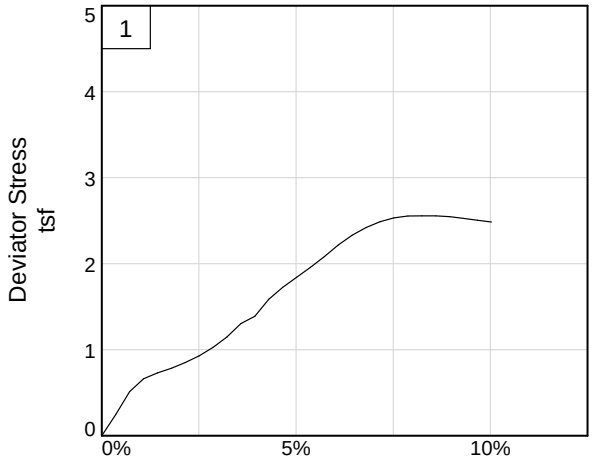
**Proj. No.:** EC10-166T **Date Sampled:**

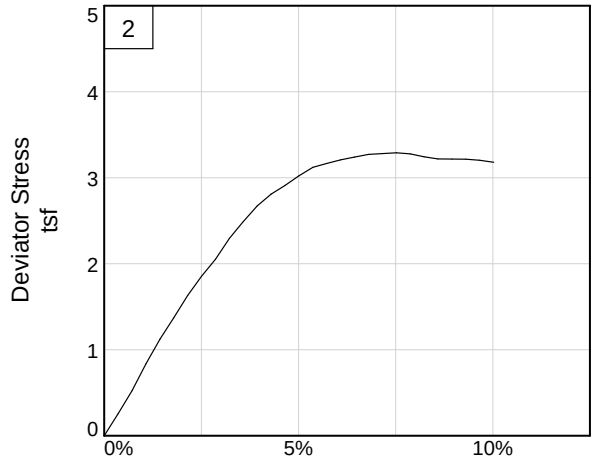
TRIAXIAL SHEAR TEST REPORT

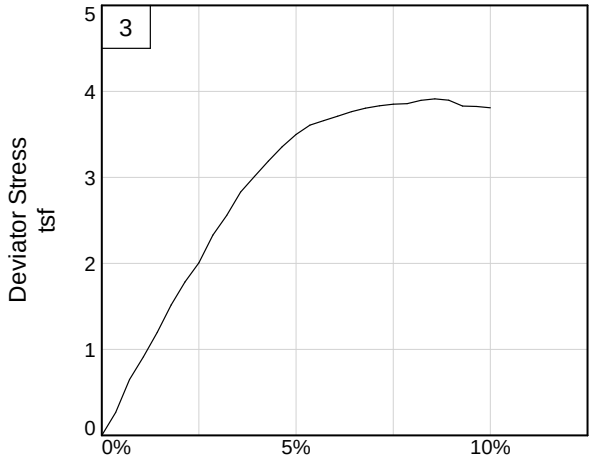
GET SOLUTIONS, INC.

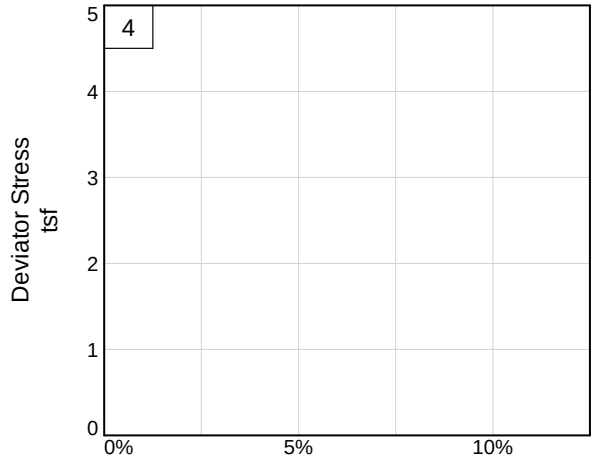
**Figure** T4

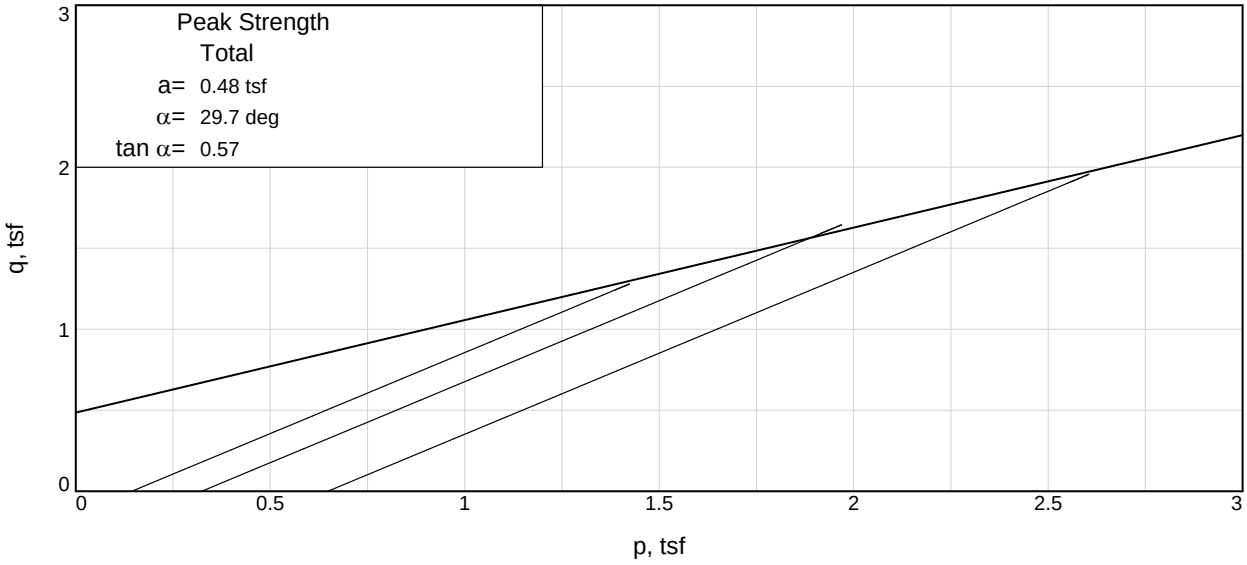
**Tested By:** PB **Checked By:** GS




**Client:** CDM
**Project:** Dare County Landfill Phae (Cell) 4
**Location:** App156'North from South End and 51'East from West Edge
**Sample Number:** Proctor No. 4
**Project No.:** EC10-166T
**Figure** _____

**GET Solutions, Inc.**

**Tested By:** PB **Checked By:** GS

**G E T Solutions, Inc.**
106 Capital Trace; Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 4/29/10 |
| Project Location: | Dare County North Carolina | Technician: | R. Woodard |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear Temp. (˚F) |
| Grading Contractor: | Glover | General Test Location: | Cell 4 pad |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 1 | 13.7 | 97.1 | 110.5 | 2 | 95% | 98% | X | | 2' BFG | 35º 50.182' N 75º 49.134' W |
| 2 | 8.8 | 103.3 | 112.3 | 3 | 95% | 98% | X | | 2' BFG | 35º 50.182' N 75º 49.149' W |
| 3 | 8.9 | 105.2 | 114.4 | 3 | 95% | 100+% | X | | 2' BFG | 35º 50.181' N 75º 49.160' W |
| 4 | 14.9 | 102.8 | 118.1 | 3 | 95% | 98% | X | | 2' BFG | 35º 50.148' N 75º 49.129' W |
| 5 | 14.5 | 103.9 | 118.9 | 3 | 95% | 99% | X | | 2' BFG | 35º 50.146' N 75º 49.142' W |
| 6 | 14.6 | 104.8 | 120.1 | 3 | 95% | 99% | X | | 2' BFG | 35º 50.146' N 75º 49.155' W |
| 7 | 13.5 | 105.4 | 119.7 | 3 | 95% | 100% | X | | 2' BFG | 35º 50.094' N 75º 49.123' W |
| 8 | 13.0 | 105.6 | 119.3 | 3 | 95% | 100% | X | | 2' BFG | 35º 50.094' N 75º 49.137' W |
| 9 | 12.9 | 105.8 | 119.4 | 3 | 95% | 100% | X | | 2' BFG | 35º 50.055' N 75º 49.115' W |
| 10 | 13.6 | 104.7 | 118.9 | 3 | 95% | 99% | X | | 2' BFG | 35º 50.052' N 75º 49.127' W |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | | | |
|---|---|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 1 | 2 | 3 4 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 | 98.7 | 105.3 103.7 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 16.6% | 17.8% | 14.3% 13.2% |
| Description of Material Tested: | Tan SAND, Gray SAND | Field Testing Procedure: | ASTM D 6938 | | |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth | | |
| Gauge Standardization counts: | Moisture: 659 Density: 2642 | | □ B) Backscatter | | |

| Gauge make/model/serial #: | Troxler | 3430 | 32867 |
|---|---|---|---|
| | MAKE | MODEL | SERIAL # |

Remarks:

**G E T Solutions, Inc.**
106 Capital Trace; Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 4/29/10 |
| Project Location: | Dare County North Carolina | Technician: | R. Woodard |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear Temp. (˚F) |
| Grading Contractor: | Glover | General Test Location: | Cell 4 pad |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 11 | 7.2 | 107.3 | 115.1 | 3 | 95% | 100+% | X | | 2' BFG | 35º 50.946' N 75º 49.096' W |
| 12 | 8.3 | 104.8 | 113.5 | 3 | 95% | 100% | X | | 2' BFG | 35º 50.969' N 75º 49.104' W |
| 13 | 6.2 | 111.9 | 118.8 | 3 | 95% | 100+% | X | | 2' BFG | 35º 50.010' N 75º 49.113' W |
| 14 | 9.2 | 108.9 | 118.9 | 3 | 95% | 100+% | X | | 2' BFG | 35º 50.022' N 75º 49.141' W |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | | | |
|---|---|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 1 | 2 | 3 | 4 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 | 98.7 | 105.3 | 103.7 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 16.6% | 17.8% | 14.3% | 13.2% |
| Description of Material Tested: | Tan SAND, Gray SAND | Field Testing Procedure: | ASTM D 6938 | | | |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth | | | |
| Gauge Standardization counts: | Moisture: 659 Density: 2642 | | □ B) Backscatter | | | |

| Gauge make/model/serial #: | Troxler | 3430 | 32867 |
|---|---|---|---|
| | MAKE | MODEL | SERIAL # |

Remarks:

**G E T Solutions, Inc.**
106 Capital Trace; Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 4/30/10 |
| Project Location: | Dare County North Carolina | Technician: | R. Woodard |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear — Temp. (˚F) 66 |
| Grading Contractor: | Glover | General Test Location: | Cell 4 pad |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 1 | 13.3 | 111.4 | 126.3 | 3 | 95% | 100+% | x | | 3' BFG | 35º 49.944' N 75º 49.098' W |
| 2 | 11.0 | 111.0 | 124.1 | 3 | 95% | 100+% | x | | 4' BFG | 35º 49.944' N 75º 49.098' W |
| 3 | 13.8 | 110.9 | 125.9 | 3 | 95% | 100+% | x | | 5' BFG | 35º 49.944' N 75º 49.098' W |
| 4 | 10.9 | 111.4 | 123.5 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.001' N 75º 49.107' W |
| 5 | 12.4 | 110.7 | 124.4 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.001' N 75º 49.107' W |
| 6 | 12.7 | 110.6 | 124.7 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.042' N 75º 49.113' W |
| 7 | 12.2 | 110.9 | 124.5 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.042'N 75º 49.113'W |
| 8 | 15.6 | 109.3 | 126.3 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.100' N 75º 49.122' W |
| 9 | 15.9 | 110.6 | 124.9 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.100' N 75º 49.122' W |
| 10 | 15.2 | 108.4 | 124.9 | 3 | 95% | 100+% | x | | 5' BFG | 35º 50.100' N 75º 49.122' W |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | | | |
|---|---|---|---|---|---|
| Compaction Equipment Used: | Vibratory Roller | Proctor Number: | 1 | 2 | 3 | 4 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 | 98.7 | 105.3 | 103.7 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 16.6% | 17.8% | 14.3% | 13.2% |
| Description of Material Tested: | Gray SAND | Field Testing Procedure: | ASTM D 6938 | | | |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth | | | |
| Gauge Standardization counts: | Moisture: 655 — Density: 2604 | | □ B) Backscatter | | | |

| Gauge make/model/serial #: | MAKE | MODEL | SERIAL # |
|---|---|---|---|
| | Troxler | 3430 | 32867 |

Remarks:

**G E T Solutions, Inc.**
106 Capital Trace; Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 4/30/10 |
| Project Location: | Dare County North Carolina | Technician: | R. Woodard |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear — Temp. (˚F) 66 |
| Grading Contractor: | Glover | General Test Location: | Cell 4 pad |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 11 | 10.9 | 110.2 | 122.2 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.142' N 75º 49.127' W |
| 12 | 15.2 | 110.8 | 127.6 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.142' N 75º 49.127' W |
| 13 | 11.1 | 109.7 | 121.8 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.188' N 75º 49.134' W |
| 14 | 12.7 | 111.3 | 125.5 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.188' N 75º 49.134' W |
| 15 | 13.6 | 111.9 | 126.2 | 3 | 95% | 100+% | x | | 5' BFG | 35º 50.188' N 75º 49.134' W |
| 16 | 13.8 | 106.6 | 121.2 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.177' N 75º 49.162' W |
| 17 | 13.6 | 109.1 | 123.9 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.177' N 75º 49.162' W |
| 18 | 11.8 | 110.8 | 123.9 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.131' N 75º 49.157' W |
| 19 | 13.7 | 108.5 | 123.5 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.131' N 75º 49.157' W |
| 20 | 13.6 | 109.0 | 122.6 | 3 | 95% | 100+% | x | | 5' BFG | 35º 50.131' N 75º 49.157' W |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | |
|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 1 2 3 4 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 98.7 105.3 103.7 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 16.6% 17.8% 14.3% 13.2% |
| Description of Material Tested: | Gray SAND | Field Testing Procedure: | ASTM D 6938 |
| Proctor Type: | ASTM | Field Testing Method: | ■ A) Direct transmission & test depth |
| Gauge Standardization counts: | Moisture: 655 | | □ B) Backscatter |
| Gauge make/model/serial #: | Troxler / 3430 / 32867 (MAKE / MODEL / SERIAL #) | | |

Remarks:

**G E T Solutions, Inc.**
106 Capital Trace; Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 4/30/10 |
| Project Location: | Dare County North Carolina | Technician: | R. Woodard |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | | Weather: | Clear — Temp. (˚F) 66 |
| Grading Contractor: | | General Test Location: | Cell 4 pad |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 21 | 20.2 | 106.4 | 127.9 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.086' N 75º 49.153' W |
| 22 | 16.8 | 107.5 | 125.5 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.086' N 75º 49.153' W |
| 23 | 13.2 | 110.2 | 124.7 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.031' N 75º 49.145' W |
| 24 | 14.2 | 109.6 | 123.7 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.031' N 75º 49.145' W |
| 25 | 13.7 | 109.8 | 124.8 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.044' N 75º 49.125' W |
| 26 | 12.6 | 111.1 | 125.8 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.044' N 75º 49.125' W |
| 27 | 14.8 | 108.9 | 124.9 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.095' N 75º 49.134' W |
| 28 | 14.9 | 109.5 | 124.1 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.095' N 75º 49.134' W |
| | | | | | | | | | | |
| | | | | | | | | | | |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | |
|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 1 2 3 4 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 98.7 105.3 103.7 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 16.6% 17.8% 14.3% 13.2% |
| Description of Material Tested: | Gray SAND | Field Testing Procedure: | ASTM D 6938 |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth |
| Gauge Standardization counts: | Moisture: 655 Density: 2604 | | □ B) Backscatter |

| Gauge make/model/serial #: | Troxler | 3430 | 32867 |
|---|---|---|---|
| | MAKE | MODEL | SERIAL # |

Remarks:

**G E T Solutions, Inc.**
504 East Elizabeth Street; Suite 2
Elizabeth City, North Carolina 27909
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Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 5/25/10 |
| Project Location: | Dare County North Carolina | Technician: | J. Meads |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Overcast Temp. (˚F) 75 |
| Grading Contractor: | Glover | General Test Location: | Lots 2, 4, 6, 8, 10, 12, 14 |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 1 | 17.6 | 99.8 | 117.4 | 2 | 95% | 100+% | x | | 1' BFG | Approx. center of Lot 2' 35.40 05' N 75.49.125' W |
| 2 | 22.4 | 101.0 | 123.6 | 6 | 95% | 98% | x | | 2' BFG | Approx. center of Lot 2' 35.40 05' N 75.49.125' W |
| 3 | 21.3 | 98.2 | 119.1 | 2 | 95% | 100% | x | | 1' BFG | Approx. center of Lot 4 35.49.996' N 75.49.132' W |
| 4 | 20.7 | 100.2 | 120.9 | 6 | 95% | 97% | x | | 2' BFG | Approx. center of Lot 4 35.49.996' N 75.49.132' W |
| 5 | 22.7 | 94.8 | 116.4 | 2 | 95% | 96% | x | | 1' BFG | Approx. center of Lot 6 35.50.040' N 75.48.138' W |
| 6 | 10.9 | 110.0 | 122.0 | 5 | 95% | 100% | x | | 2' BFG | Approx. center of Lot 6 35.50.040' N 75.48.138' W |
| 7 | 20.4 | 98.1 | 118.5 | 2 | 95% | 99% | x | | 1' BFG | Approx. center of Lot 8 35.50.084' N 75.49.145' W |
| 8 | 24.7 | 98.3 | 122.6 | 2 | 95% | 100% | x | | 2' BFG | Approx. center of Lot 8 35.50.084' N 75.49.145' W |
| 9 | 22.4 | 97.3 | 119.1 | 2 | 95% | 98% | x | | 1' BFG | Approx. center of Lot 10 35.50.128' N 75.49.151' W |
| 10 | 17.7 | 107.4 | 126.4 | 5 | 95% | 99% | x | | 2' BFG | Approx. center of Lot 10 35.50.128' N 75.49.151' W |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 1 | 2 | 3 | 4 | 5 | 6 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 | 98.7 | 105.3 | 103.7 | 108.5 | 103.4 |
| Test Elevation Established By: | Geotechnics | Optimum Moisture (%): | 16.6% | 17.8% | 4.3% | 13.2% | 16.0% | 14.1% |
| Description of Material Tested: | Onsite excavated soils | Field Testing Procedure: | ASTM D 6938 | | | | | |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth | | | | | |
| Gauge Standardization counts: | Moisture: 602 Density: 2754 | | □ B) Backscatter | | | | | |
| Gauge make/model/serial #: | Troxler / 3430 / 31918 (MAKE / MODEL / SERIAL #) | | | | | | | |

Remarks:

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Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 5/25/10 |
| Project Location: | Dare County North Carolina | Technician: | J. Meads |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Overcast Temp. (˚F) 75 |
| Grading Contractor: | Glover | General Test Location: | Lots 2, 4, 6, 8, 10, 12, 14 |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 11 | 20.3 | 100.8 | 121.4 | 6 | 95% | 97% | X | | 1' BFG | Approx. center of lot 12 35.50.173' N 75.49.157' W |
| 12 | 19.9 | 99.7 | 119.5 | 6 | 95% | 96% | X | | 2' BFG | Approx. center of lot 12 35.50.173' N 75.49.157' W |
| 13 | 21.8 | 97.2 | 118.4 | 2 | 95% | 98% | x | | 1' BFG | Approx. center of lot 14 35.50.215' N 75.49.164' W |
| 14 | 18.6 | 101.3 | 120.1 | 6 | 95% | 98% | x | | 2' BFG | Approx. center of lot 14 35.50.215' N 75.49.164' W |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 1 | 2 | 3 | 4 | 5 | 6 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 | 98.7 | 105.3 | 103.7 | 108.5 | 103.4 |
| Test Elevation Established By: | Geotechnics | Optimum Moisture (%): | 16.6% | 17.8% | 4.3% | 13.2% | 16.0% | 14.1% |
| Description of Material Tested: | Onsite excavated soils | Field Testing Procedure: | ASTM D 6938 | | | | | |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth | | | | | |
| Gauge Standardization counts: | Moisture: 602 Density: 2754 | | □ B) Backscatter | | | | | |
| Gauge make/model/serial #: | Troxler / 3430 / 31918 (MAKE / MODEL / SERIAL #) | | | | | | | |

Remarks:

**G E T Solutions, Inc.**
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Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 6/11/10 |
| Project Location: | Dare County North Carolina | Technician: | J. Meads |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear Temp. (˚F) 75 |
| Grading Contractor: | Glover | General Test Location: | Cell 4 Pad; Sub-Lots 5, 6, 7, 8, 9, 10 |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 1 | 17.8 | 105.3 | 119.8 | 5 | 95% | 97% | x | | FG | Lot 5; 35.50.027' N 74.49.115' W |
| 2 | 11.0 | 111.8 | 124.1 | 5 | 95% | 100+% | x | | FG | Lot 4; 35.50.027' N 75.49.137' W |
| 3 | 15.9 | 104.9 | 121.5 | 5 | 95% | 97% | x | | FG | Lot 7 35.50.070' N 75.49.117' W |
| 4 | 14.3 | 107.6 | 123.0 | 5 | 95% | 99% | x | | FG | Lot 6 35.50.068' N 75.49.140' W |
| 5 | 16.1 | 105.1 | 122.0 | 5 | 95% | 97% | x | | FG | Lot 9 35.50.121' N 75.49.122' W |
| 6 | 13.1 | 108.7 | 122.9 | 5 | 95% | 100% | x | | FG | Lot 10 35.50.119' N 75.49.147' W |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | |
|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 5 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 108.5 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 16.0% |
| Description of Material Tested: | Onsite excavated soils | Field Testing Procedure: | ASTM D 6938 |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth |
| Gauge Standardization counts: | Moisture: 602 | | Density: 2768 |
| | | | ☐ B) Backscatter |

| Gauge make/model/serial #: | Troxler | 3430 | 31918 |
|---|---|---|---|
| | MAKE | MODEL | SERIAL # |

Remarks:

**G E T Solutions, Inc.**
106 Capital Trace; Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 6/14/10 |
| Project Location: | Dare County North Carolina | Technician: | G. Gallop |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear — Temp. (˚F) 90 |
| Grading Contractor: | Glover | General Test Location: | Cell 4 |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 1 | 16.3 | 101.8 | 118.4 | 6 | 95% | 98% | x | | FG | 35º 49.969 N / 75º 49.101' W |
| 2 | 21.4 | 102.3 | 124.2 | 6 | 95% | 99% | x | | 1' BFG | 35º 49.969' N / 75º 49.101' W |
| 3 | 13.8 | 101.6 | 115.7 | 6 | 95% | 98% | x | | FG | 35º 50.000' N / 75º 49.110' W |
| 4 | 25.7 | 95.2 | 119.7 | 2 | 95% | 96% | x | | 1' BFG | 35º 50.000' N / 75º 49.110' W |
| 5 | 11.3 | 105.9 | 117.9 | 5 | 95% | 98% | x | | FG | 35º 50.053' N / 75º 49.115' W |
| 6 | 26.0 | 95.0 | 119.7 | 2 | 95% | 96% | x | | 1' BFG | 35º 50.053' N / 75º 49.115' W |
| 7 | 11.7 | 104.8 | 117.0 | 5 | 95% | 96% | x | | FG | 35º 50.084' N / 75º 49.123' W |
| 8 | 24.7 | 96.4 | 120.2 | 2 | 95% | 98% | x | | 1' BFG | 35º 50.084' N / 75º 49.123' W |
| 9 | 10.9 | 108.0 | 119.8 | 5 | 95% | 99% | x | | FG | 35º 50.137' N / 75º 49.127' W |
| 10 | 17.3 | 99.8 | 117.6 | 6 | 95% | 96% | x | | 1' BFG | 35º 50.137' N / 75º 49.127' W |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | |
|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 2 5 6 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 98.7 108.5 103.4 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 17.8% 16.0% 14.1% |
| Description of Material Tested: | On-site Excavated Soils | Field Testing Procedure: | ASTM D 6938 |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth |
| Gauge Standardization counts: | Moisture: 705 Density: 2497 | | □ B) Backscatter |
| Gauge make/model/serial #: | Troxler / 3430 / 31918 (MAKE / MODEL / SERIAL #) | | |

Remarks:

**G E T Solutions, Inc.**
106 Capital Trace; Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 6/17/10 |
| Project Location: | Dare County North Carolina | Technician: | J. Meads |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear — Temp. (˚F) 89 |
| Grading Contractor: | Glover | General Test Location: | Cell 4 |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 1 | 13.5 | 105.0 | 119.2 | 5 | 95% | 97% | x | | FG | Lot 12; 35º 50.166' N 75º 49.158' W |
| 2 | 14.1 | 107.6 | 122.8 | 5 | 95% | 99% | x | | FG | Lot 14; 35º 50.211' N 75º 49.164' W |
| 3 | 11.9 | 108.0 | 120.9 | 5 | 95% | 99% | X | | FG | Lot 15; 35º 50.258' N 75º 49.146' W |
| 4 | 13.5 | 106.9 | 121.3 | 5 | 95% | 98% | X | | 1' BFG | Lot 15; 35º 50.258' N 75º 49.146' W |
| 5 | 15.0 | 104.5 | 120.2 | 3 | 95% | 100% | x | | 2' BFG | Lot 15; 35º 50.258' N 75º 49.146' W |
| 6 | 15.3 | 104.0 | 119.9 | 3 | 95% | 100% | x | | 3' BFG | Lot 15; 35º 50.258' N 75º 49.146' W |
| 7 | 9.7 | 108.5 | 119.0 | 5 | 95% | 100% | x | | FG | Lot 16; 35º 50.253' N 75º 49.171' W |
| 8 | 12.0 | 105.5 | 118.1 | 5 | 95% | 97% | x | | 1' FG | Lot 16; 35º 50.253' N 75º 49.171' W |
| 9 | 12.8 | 103.4 | 116.6 | 3 | 95% | 100% | x | | 2' FG | Lot 16; 35º 50.253' N 75º 49.171' W |
| 10 | 15.0 | 103.0 | 118.5 | 3 | 95% | 100% | x | | 3' FG | Lot 16; 35º 50.253' N 75º 49.171' W |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | |
|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 3 5 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 105.3 108.5 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 14.3% 16.0% |
| Description of Material Tested: | Onsite excavated soils | Field Testing Procedure: | ASTM D 6938 |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth |
| Gauge Standardization counts: | Moisture: Density: | | □ B) Backscatter |

| Gauge make/model/serial #: | MAKE | MODEL | SERIAL # |
|---|---|---|---|
| | Troxler | 3430 | 31918 |

Remarks:

# *Appendix A-6*

Geotechnics
INTEGRITY IN TESTING

April 5, 2010

Project No. 2010-652-01

Mr. Ed Marks
Glover Construction
PO Box 40
Pleasant Hill, NC 27866

**Transmittal**
**Laboratory Test Results**
**Dare County C&D Landfill**

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
***Geotechnics, Inc.***

Michael P. Smith
Regional Manger

***We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.***


2200 Westinghouse Boulevard • Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460

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# MOISTURE CONTENT

ASTM D 2216 (SOP-S1)

| | |
|---|---|
| Client | GLOVER CONSTRUCTION |
| Client Reference | DARE CO. C&D LF. |
| Project No. | 2010-652-01 |

| | | | |
|---|---|---|---|
| Lab ID | .001 | .002 | .003 |
| Boring No. | STOCKPILE | STOCKPILE | STOCKPILE |
| Depth (ft) | NA | NA | NA |
| Sample No. | CF-01 | CF-02 | CF-03 |
| Tare Number | 832 | 839 | 842 |
| Wt. of Tare & WS (gm) | 470.32 | 500.93 | 445.95 |
| Wt. of Tare & DS (gm) | 447.85 | 476.57 | 427.96 |
| Wt. of Tare (gm) | 259.03 | 258.03 | 255.77 |
| Wt. of Water (gm) | 22.47 | 24.36 | 17.99 |
| Wt. of DS (gm) | 188.82 | 218.54 | 172.19 |
| **Water Content (%)** | **11.9** | **11.1** | **10.4** |

*Notes :* *NA*

*Tested By* *DAW* *Date* *4/2/2010* *Checked By* GEM *Date* 4-5-10



DCN: CT-S1 DATE 6-30-98 REVISION: 2

*\\Server\data drive\Data Sheets\[WATCONT.XLS]Sheet1*

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## ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C & D LF | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-01 |
| Lab ID | 2010-652-01-01 | Visual Description | **BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 4/1/2010 *Checked By* GEM *Date* 4-2-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-01-03 Limit-(NP).xls]Sheet1*

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## ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C & D LF | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-02 |
| Lab ID | 2010-652-01-02 | Visual Description | **BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 4/1/2010 *Checked By* GEM *Date* 4-2-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-01-02 Limit-(NP).xls]Sheet1*

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## ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C & D LF | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-03 |
| Lab ID | 2010-652-01-03 | Visual Description | **LIGHT BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 4/1/2010 *Checked By* GEM *Date* 4-2-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-01-03 Limit-(NP).xls]Sheet1*

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**SIEVE ANALYSIS**
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-01 |
| Lab ID | 2010-652-01-01 | Soil Color | **BROWN** |

| | *SIEVE ANALYSIS* | | *HYDROMETER* |
|---|---|---|---|
| ***USCS*** | **gravel** | **sand** | **silt and clay** |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By DAW Date 4/2/2010 Checked By GEM Date 4-5-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *S:\server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-01-01 SIEVON REV 4.xls]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-01 |
| Lab ID | 2010-652-01-01 | Soil Color | **BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 832 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 470.32 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 447.85 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 259.03 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 22.47 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 188.82 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **11.9** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 188.82 |
| Dry Weight - 3/4" Sample (gm) | 164.9 | Weight of minus #200 material (gm) | 23.94 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 164.88 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 1.81 | 1.0 | 1.0 | 99.0 | **99.0** |
| #10 | 2.00 | 0.86 | 0.5 | 1.4 | 98.6 | **98.6** |
| #20 | 0.850 | 2.08 | 1.1 | 2.5 | 97.5 | **97.5** |
| #40 | 0.425 | 3.41 | 1.8 | 4.3 | 95.7 | **95.7** |
| #60 | 0.250 | 21.15 | 11.2 | 15.5 | 84.5 | **84.5** |
| #140 | 0.106 | 110.92 | 58.7 | 74.3 | 25.7 | **25.7** |
| #200 | 0.075 | 24.65 | 13.1 | 87.3 | 12.7 | **12.7** |
| Pan | - | 23.94 | 12.7 | 100.0 | - | **-** |

Tested By DAW Date 4/2/2010 Checked By GEM Date 4-5-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-01-01 SIEVON REV 4.xls]Sheet1*

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**SIEVE ANALYSIS**
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-02 |
| Lab ID | 2010-652-01-02 | Soil Color | **BROWN** |

| | *SIEVE ANALYSIS* | | *HYDROMETER* |
|---|---|---|---|
| ***USCS*** | **gravel** | **sand** | **silt and clay** |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By DAW Date 4/2/2010 Checked By GEM Date 4-5-10


DCN: CT-S3C DATE 6-25-98 REVISION 2 *S:\server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-01-02 SIEVON REV 4.xls]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-02 |
| Lab ID | 2010-652-01-02 | Soil Color | **BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 839 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 500.93 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 476.57 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 258.03 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 24.36 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 218.54 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **11.1** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 218.54 |
| Dry Weight - 3/4" Sample (gm) | 190.5 | Weight of minus #200 material (gm) | 28.00 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 190.54 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.36 | 0.2 | 0.2 | 99.8 | **99.8** |
| #10 | 2.00 | 0.37 | 0.2 | 0.3 | 99.7 | **99.7** |
| #20 | 0.850 | 0.93 | 0.4 | 0.8 | 99.2 | **99.2** |
| #40 | 0.425 | 3.51 | 1.6 | 2.4 | 97.6 | **97.6** |
| #60 | 0.250 | 25.82 | 11.8 | 14.2 | 85.8 | **85.8** |
| #140 | 0.106 | 139.12 | 63.7 | 77.8 | 22.2 | **22.2** |
| #200 | 0.075 | 20.43 | 9.3 | 87.2 | 12.8 | **12.8** |
| Pan | - | 28.00 | 12.8 | 100.0 | - | **-** |

Tested By DAW Date 4/2/2010 Checked By GEM Date 4-5-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-01-02 SIEVON REV 4.xls]Sheet1*

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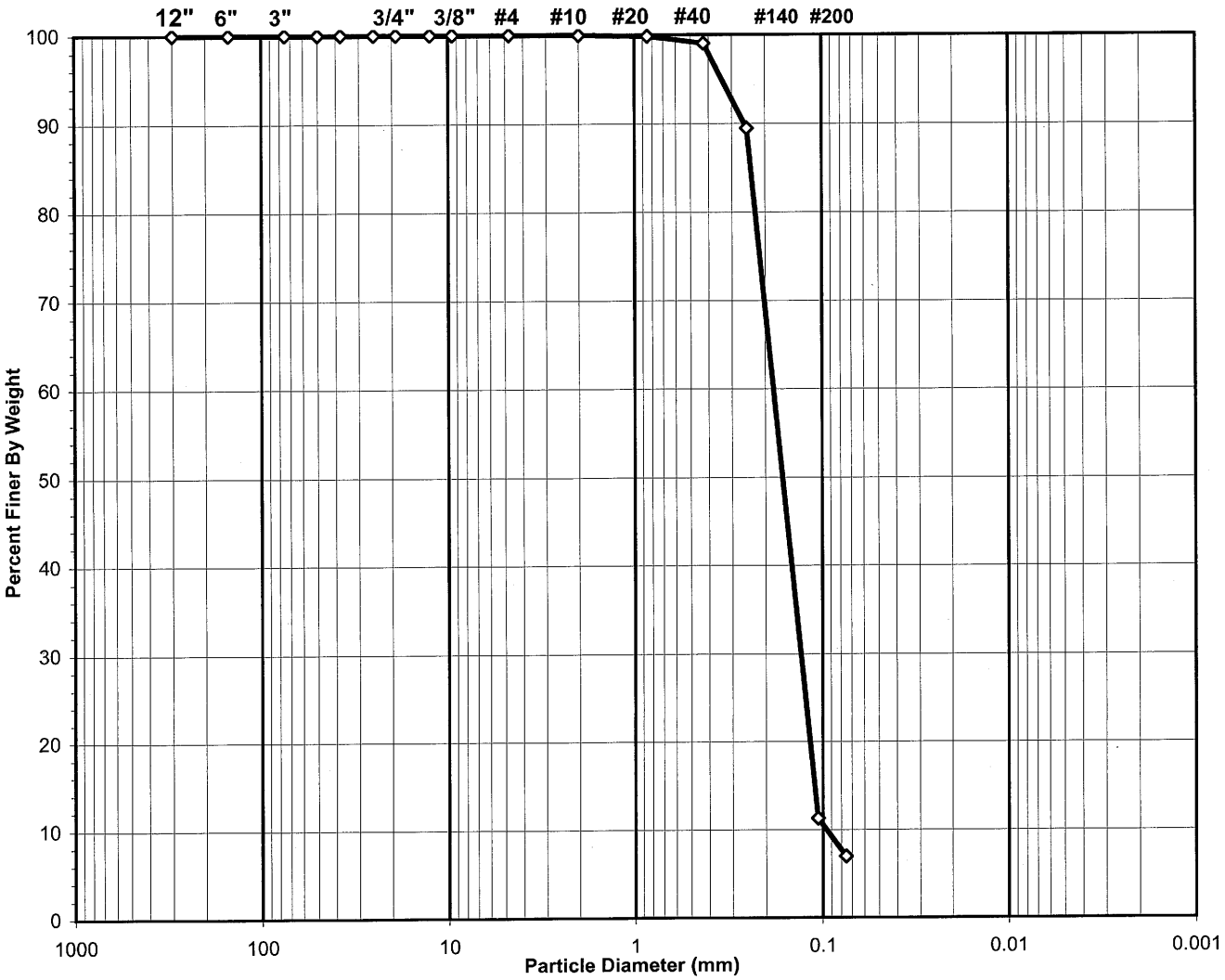
**SIEVE ANALYSIS**
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-03 |
| Lab ID | 2010-652-01-03 | Soil Color | **LIGHT BROWN** |

| | | | |
|---|---|---|---|
| | ***SIEVE ANALYSIS*** | | ***HYDROMETER*** |
| ***USCS*** | **gravel** | **sand** | **silt and clay** |




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ***USCS Symbol*** | ***SP-SM, TESTED (NON PLASTIC FINES)*** | **D60 =** | **0.2** | **CC =** | **1.0** |
| ***USCS Classification*** | ***POORLY GRADED SAND WITH SILT*** | **D30 =** | **0.1** | **CU =** | **1.9** |
| | | **D10 =** | **0.1** | | |

Tested By DAW Date 4/2/2010 Checked By GAM Date 4-5-10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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-03 |
| Lab ID | 2010-652-01-03 | Soil Color | **LIGHT BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 842 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 445.95 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 427.96 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 255.77 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 17.99 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 172.19 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **10.4** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 172.19 |
| Dry Weight - 3/4" Sample (gm) | 160.2 | Weight of minus #200 material (gm) | 11.99 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 160.20 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 0.08 | 0.0 | 0.0 | 100.0 | **100.0** |
| #20 | 0.850 | 0.22 | 0.1 | 0.2 | 99.8 | **99.8** |
| #40 | 0.425 | 1.37 | 0.8 | 1.0 | 99.0 | **99.0** |
| #60 | 0.250 | 16.48 | 9.6 | 10.5 | 89.5 | **89.5** |
| #140 | 0.106 | 134.63 | 78.2 | 88.7 | 11.3 | **11.3** |
| #200 | 0.075 | 7.42 | 4.3 | 93.0 | 7.0 | **7.0** |
| Pan | - | 11.99 | 7.0 | 100.0 | - | **-** |

Tested By DAW Date 4/2/2010 Checked By GEM Date 4-5-10



DCN: CT-S3C DATE 6-25-98 REVISIONS *S:\server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-01-03 SIEVON REV 4.xls]Sheet1*

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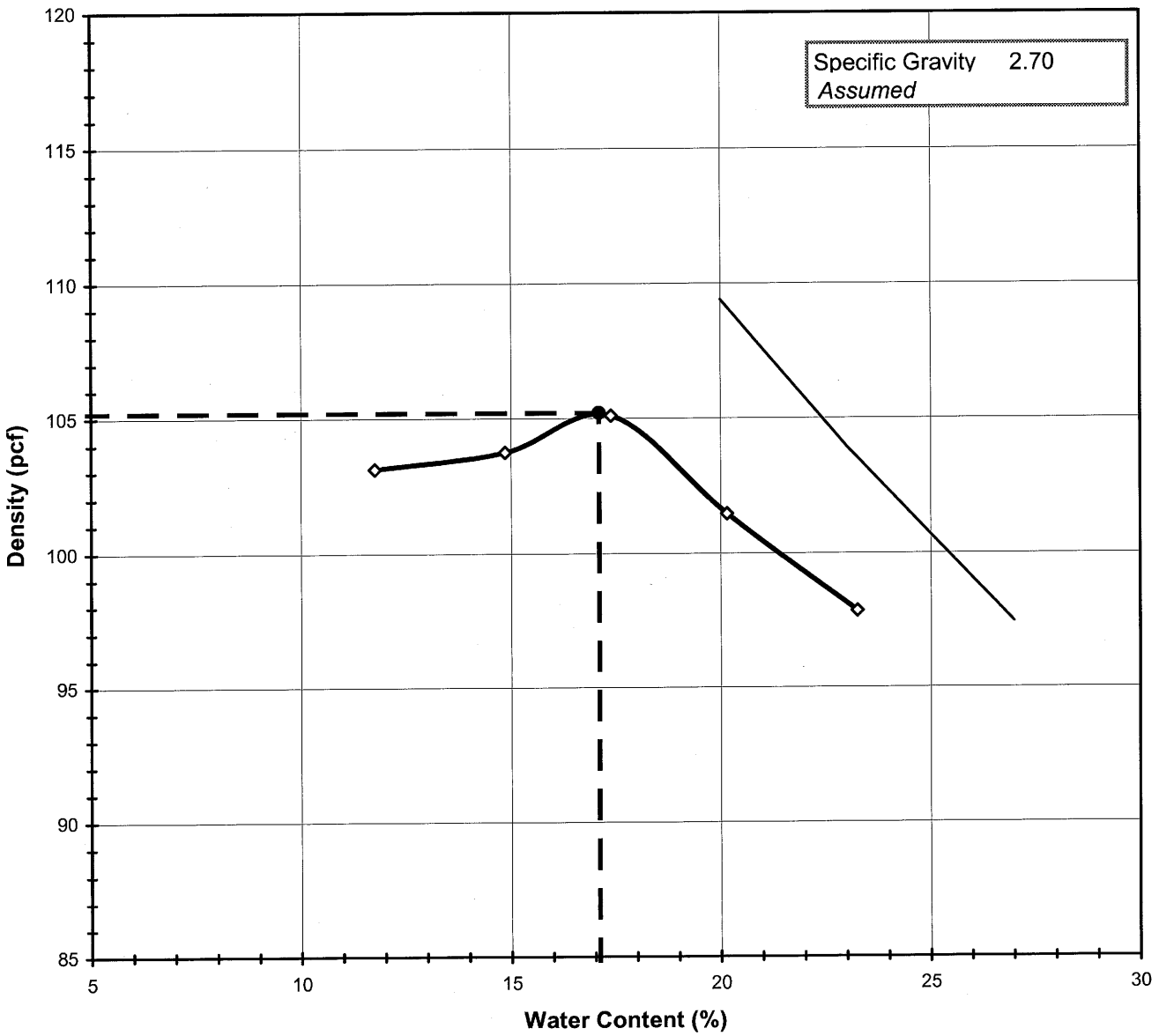
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-01 |
| Lab ID | 2010-652-01-01 | Test Method | **STANDARD** |

Visual Description BROWN SILTY SAND

**Optimum Water Content** **17.1**
**Maximum Dry Density** **105.2**




*Tested By* SD *Date* 4/2/2010 *Checked By* GEM *Date* 4-5-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-01-01 Proctor.xls]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-01 |
| Lab ID | 2010-652-01-01 | | |

Visual Description BROWN SILTY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 27216 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4311 |
| Volume of the Mold(cc) | | 942 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6051 | 6110 | 6173 | 6151 | 6132 |
| Wt.of Mold (gm) | 4311 | 4311 | 4311 | 4311 | 4311 |
| Wt. of WS | 1740 | 1799 | 1862 | 1840 | 1821 |
| Mold Volume (cc) | 942 | 942 | 942 | 942 | 942 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 300 | 308 | 317 | 399 | 311 |
| Wt. of Tare & WS (gm) | 388.84 | 453.50 | 444.40 | 470.80 | 551.40 |
| Wt. of Tare & DS (gm) | 359.61 | 409.21 | 391.06 | 406.35 | 463.31 |
| Wt. of Tare (gm) | 111.10 | 111.10 | 84.20 | 86.50 | 84.40 |
| Wt. of Water (gm) | 29.23 | 44.29 | 53.34 | 64.45 | 88.09 |
| Wt. of DS (gm) | 248.51 | 298.11 | 306.86 | 319.85 | 378.91 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.85 | 1.91 | 1.98 | 1.95 | 1.93 |
| Wet Density (pcf) | 115.3 | 119.2 | 123.4 | 121.9 | 120.6 |
| **Moisture Content (%)** | **11.8** | **14.9** | **17.4** | **20.2** | **23.2** |
| **Dry Density (pcf)** | **103.1** | **103.7** | **105.1** | **101.5** | **97.9** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 20.0 | 23.0 | 27.0 |
| **Dry Unit Weight (pcf)** | 109.4 | 103.9 | 97.4 |

*Tested By* SD *Date* 4/2/2010 *Checked By* GEM *Date* 4-5-10



DCN:CT-S12 DATE:12/11/00 REVISION 5 \\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-01-01 Proctor.xls]Sheet1

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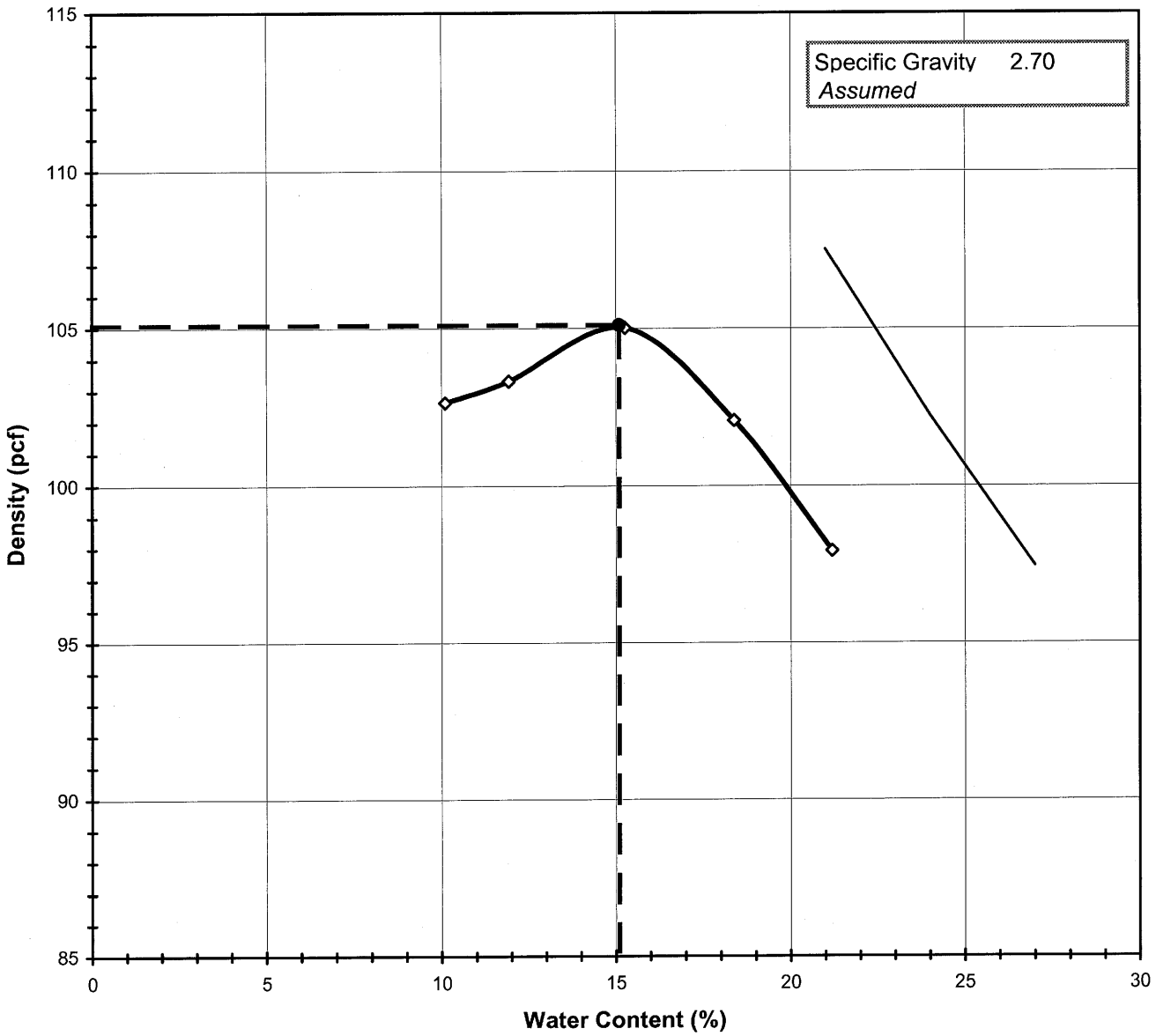
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-02 |
| Lab ID | 2010-652-01-02 | Test Method | **STANDARD** |

Visual Description BROWN SILTY SAND

**Optimum Water Content** **15.1**
**Maximum Dry Density** **105.1**




*Tested By* SD *Date* 4/2/2010 *Checked By* GEM *Date* 4-5-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-01-02 Proctor.xls]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-02 |
| Lab ID | 2010-652-01-02 | | |

Visual Description BROWN SILTY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 16969 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4311 |
| Volume of the Mold(cc) | | 942 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6017 | 6057 | 6138 | 6135 | 6103 |
| Wt.of Mold (gm) | 4311 | 4311 | 4311 | 4311 | 4311 |
| Wt. of WS | 1706 | 1746 | 1827 | 1824 | 1792 |
| Mold Volume (cc) | 942 | 942 | 942 | 942 | 942 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 310 | 312 | 306 | 314 | K-7 |
| Wt. of Tare & WS (gm) | 378.30 | 469.50 | 553.60 | 320.00 | 540.20 |
| Wt. of Tare & DS (gm) | 353.68 | 428.46 | 492.07 | 283.47 | 465.08 |
| Wt. of Tare (gm) | 110.00 | 84.40 | 89.10 | 84.70 | 110.70 |
| Wt. of Water (gm) | 24.62 | 41.04 | 61.53 | 36.53 | 75.12 |
| Wt. of DS (gm) | 243.68 | 344.06 | 402.97 | 198.77 | 354.38 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.81 | 1.85 | 1.94 | 1.94 | 1.90 |
| Wet Density (pcf) | 113.0 | 115.6 | 121.0 | 120.8 | 118.7 |
| **Moisture Content (%)** | **10.1** | **11.9** | **15.3** | **18.4** | **21.2** |
| **Dry Density (pcf)** | **102.6** | **103.3** | **105.0** | **102.1** | **97.9** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 21.0 | 24.0 | 27.0 |
| **Dry Unit Weight (pcf)** | 107.5 | 102.2 | 97.4 |

*Tested By* SD *Date* 4/2/2010 *Checked By* GAM *Date* 4-5-10



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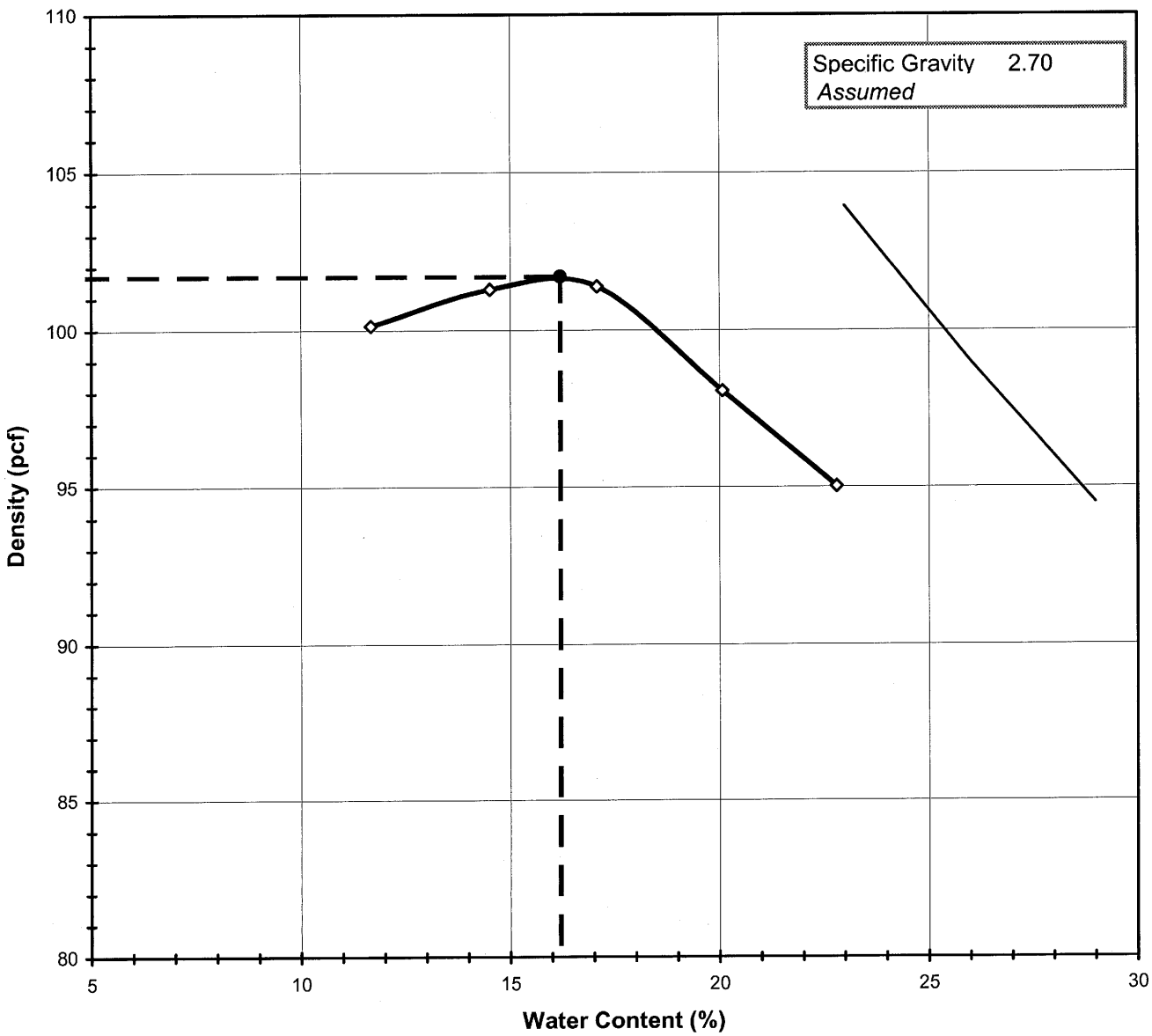
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-03 |
| Lab ID | 2010-652-01-03 | Test Method | **STANDARD** |

Visual Description LIGHT BROWN POORLY GRADED SAND WITH SILT

**Optimum Water Content** **16.2**
**Maximum Dry Density** **101.7**




*Tested By* SD *Date* 4/2/2010 *Checked By* GEM *Date* 4-5-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-651 TRIANGLE GRADING\[2010-652-01-03 Proctor.xls]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | NA |
| Project No. | 2010-652-01 | Sample No. | CF-03 |
| Lab ID | 2010-652-01-03 | | |

Visual Description: LIGHT BROWN POORLY GRADED SAND WITH SILT

| | |
|---|---|
| Total Weight of the Sample (gm) | 18670 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4312 |
| Volume of the Mold(cc) | | 942 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6000 | 6063 | 6104 | 6089 | 6073 |
| Wt.of Mold (gm) | 4312 | 4312 | 4312 | 4312 | 4312 |
| Wt. of WS | 1688 | 1751 | 1792 | 1777 | 1762 |
| Mold Volume (cc) | 942 | 942 | 942 | 942 | 942 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 309 | 307 | 398 | 818 | 827 |
| Wt. of Tare & WS (gm) | 424.30 | 389.10 | 409.10 | 470.10 | 508.30 |
| Wt. of Tare & DS (gm) | 391.31 | 353.81 | 361.64 | 414.42 | 439.44 |
| Wt. of Tare (gm) | 108.70 | 110.70 | 83.70 | 137.00 | 137.50 |
| Wt. of Water (gm) | 32.99 | 35.29 | 47.46 | 55.68 | 68.86 |
| Wt. of DS (gm) | 282.61 | 243.11 | 277.94 | 277.42 | 301.94 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.79 | 1.86 | 1.90 | 1.89 | 1.87 |
| Wet Density (pcf) | 111.8 | 116.0 | 118.7 | 117.7 | 116.7 |
| **Moisture Content (%)** | **11.7** | **14.5** | **17.1** | **20.1** | **22.8** |
| **Dry Density (pcf)** | **100.1** | **101.3** | **101.4** | **98.1** | **95.0** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 23.0 | 26.0 | 29.0 |
| **Dry Unit Weight (pcf)** | 103.9 | 99.0 | 94.5 |

*Tested By* SD *Date* 4/2/2010 *Checked By* GEM *Date* 4-5-10



DCN:CT-S12 DATE:12/11/00 REVISION 5 \\Server\data drive\2010 PROJECTS\2010-651 TRIANGLE GRADING\[2010-652-01-03 Proctor.xls]Sheet1

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April 14, 2010

Project No. 2010-652-02

Mr. Ed Marks
Glover Construction
PO Box 40
Pleasant Hill, NC 27866

**Transmittal**
**Laboratory Test Results**
**Dare County C&D Landfill**

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
***Geotechnics, Inc.***

Michael P. Smith
Regional Manger

***We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.***


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# MOISTURE CONTENT

ASTM D 2216 (SOP-S1)

| | |
|---|---|
| Client | GLOVER CONSTRUCTION |
| Client Reference | DARE CO. C&D LF |
| Project No. | 2010-652-02 |

| | | |
|---|---|---|
| Lab ID | .001 | .002 |
| Boring No. | STOCKPILE | STOCKPILE |
| Depth (ft) | BL | BL |
| Sample No. | CF-04 | CF-05 |
| Tare Number | 211 | 840 |
| Wt. of Tare & WS (gm) | 692.03 | 687.97 |
| Wt. of Tare & DS (gm) | 633.70 | 637.79 |
| Wt. of Tare (gm) | 171.25 | 262.67 |
| Wt. of Water (gm) | 58.33 | 50.18 |
| Wt. of DS (gm) | 462.45 | 375.12 |
| **Water Content (%)** | **12.6** | **13.4** |

*Notes :* *NA*

*Tested By* *SD* *Date* *4/14/2010* *Checked By* GZM *Date* 4-14-10



DCN: CT-S1 DATE 6-30-98 REVISION: 2

*\\Server\data drive\Data Sheets\[WATCONT.XLS]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | BL |
| Project No. | 2010-652-02 | Sample No. | CF-04 |
| Lab ID | 2010-652-02-01 | Visual Description | **GRAY BROWN** |

( MInus No. 40 sieve material, Wet Method)

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 4/14/2010 *Checked By* GEM *Date* 4-14-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-02-02 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | BL |
| Project No. | 2010-652-02 | Sample No. | CF-05 |
| Lab ID | 2010-652-02-02 | Visual Description | **GRAY** |

( MInus No. 40 sieve material, Wet Method)

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 4/14/2010 *Checked By* GM *Date* 4-14-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2

*\\Server\data drive\Data Sheets\[Limit-(NP).xls]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | BL |
| Project No. | 2010-652-02 | Sample No. | CF-04 |
| Lab ID | 2010-652-02-01 | Soil Color | **GRAY BROWN** |

| | *SIEVE ANALYSIS* | | *HYDROMETER* |
|---|---|---|---|
| *USCS* | **gravel** | **sand** | **silt and clay** |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 4/14/2010 Checked By GM Date 4-14-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-02-01 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | BL |
| Project No. | 2010-652-02 | Sample No. | CF-04 |
| Lab ID | 2010-652-02-01 | Soil Color | **GRAY BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 211 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 692.03 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 633.70 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 171.25 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 58.33 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 462.45 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **12.6** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 462.45 |
| Dry Weight - 3/4" Sample (gm) | 386.4 | Weight of minus #200 material (gm) | 76.06 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 386.39 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.46 | 0.1 | 0.1 | 99.9 | **99.9** |
| #4 | 4.75 | 0.74 | 0.2 | 0.3 | 99.7 | **99.7** |
| #10 | 2.00 | 1.52 | 0.3 | 0.6 | 99.4 | **99.4** |
| #20 | 0.850 | 5.37 | 1.2 | 1.7 | 98.3 | **98.3** |
| #40 | 0.425 | 10.27 | 2.2 | 4.0 | 96.0 | **96.0** |
| #60 | 0.250 | 78.30 | 16.9 | 20.9 | 79.1 | **79.1** |
| #140 | 0.106 | 235.24 | 50.9 | 71.8 | 28.2 | **28.2** |
| #200 | 0.075 | 54.49 | 11.8 | 83.6 | 16.4 | **16.4** |
| Pan | - | 76.06 | 16.4 | 100.0 | - | **-** |

Tested By SD Date 4/14/2010 Checked By GBM Date 4-14-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-02-01 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | BL |
| Project No. | 2010-652-02 | Sample No. | CF-05 |
| Lab ID | 2010-652-02-02 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 4/14/2010 Checked By GM Date 4-14-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-02-02 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | BL |
| Project No. | 2010-652-02 | Sample No. | CF-05 |
| Lab ID | 2010-652-02-02 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 840 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 687.97 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 637.79 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 262.67 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 50.18 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 375.12 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **13.4** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 375.12 |
| Dry Weight - 3/4" Sample (gm) | 311.0 | Weight of minus #200 material (gm) | 64.17 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 310.95 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.66 | 0.2 | 0.2 | 99.8 | **99.8** |
| #10 | 2.00 | 1.21 | 0.3 | 0.5 | 99.5 | **99.5** |
| #20 | 0.850 | 3.37 | 0.9 | 1.4 | 98.6 | **98.6** |
| #40 | 0.425 | 6.04 | 1.6 | 3.0 | 97.0 | **97.0** |
| #60 | 0.250 | 59.07 | 15.7 | 18.8 | 81.2 | **81.2** |
| #140 | 0.106 | 200.10 | 53.3 | 72.1 | 27.9 | **27.9** |
| #200 | 0.075 | 40.50 | 10.8 | 82.9 | 17.1 | **17.1** |
| Pan | - | 64.17 | 17.1 | 100.0 | - | **-** |

Tested By SD Date 4/14/2010 Checked By GBM Date 4-14-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *\\server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-02-02 SIEVON REV 4.XLS]Sheet1*

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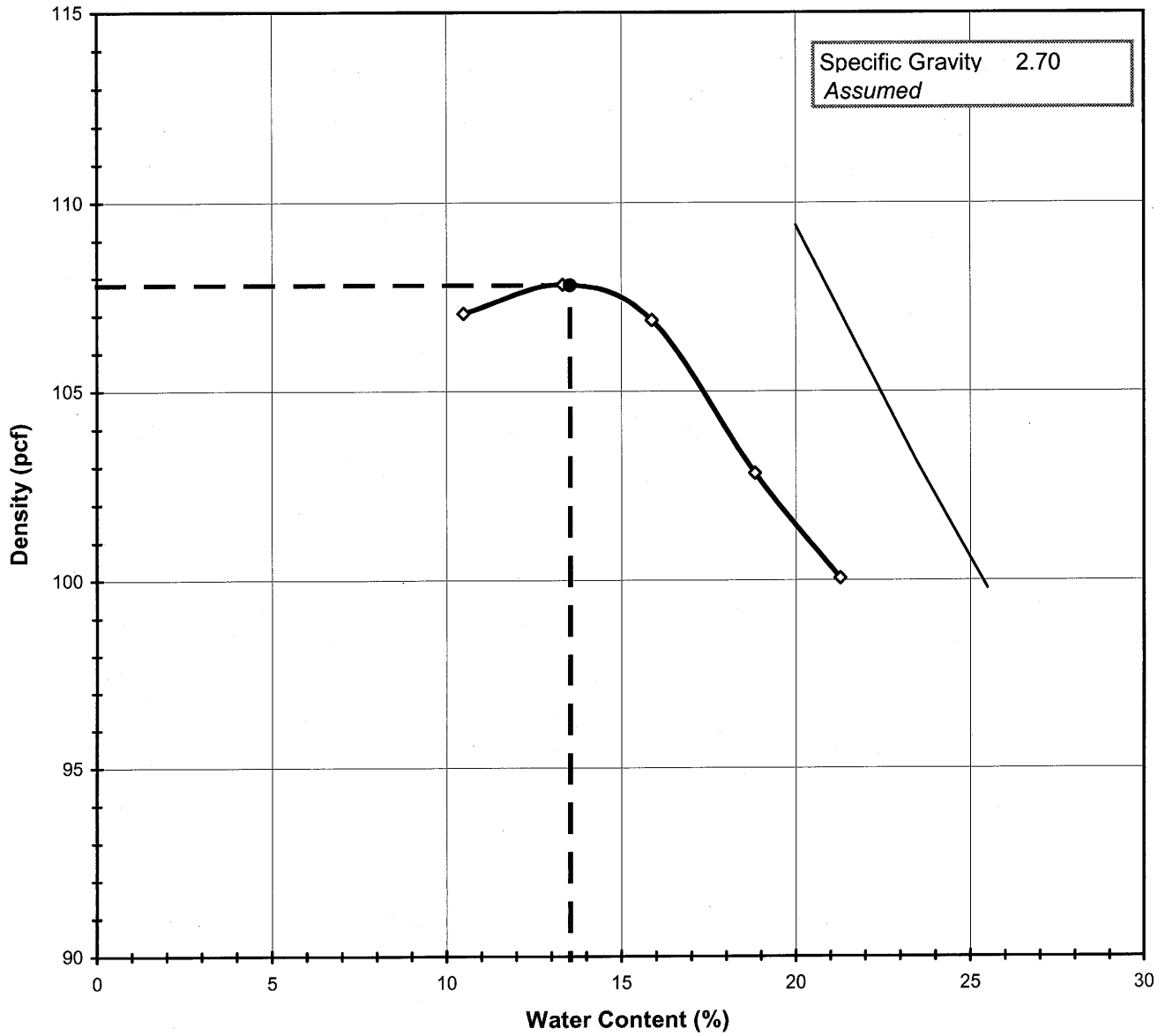
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | BL |
| Project No. | 2010-652-02 | Sample No. | CF-04 |
| Lab ID | 2010-652-02-01 | Test Method | **STANDARD** |

Visual Description GRAY BROWN SILTY SAND

**Optimum Water Content** **13.5**
**Maximum Dry Density** **107.8**




*Tested By* SD *Date* 4/13/2010 *Checked By* GM *Date* 4-14-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-02-01 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | BL |
| Project No. | 2010-652-02 | Sample No. | CF-04 |
| Lab ID | 2010-652-02-01 | | |

Visual Description GRAY BROWN SILTY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 20911 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4311 |
| Volume of the Mold(cc) | | 942 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6096 | 6155 | 6180 | 6155 | 6142 |
| Wt.of Mold (gm) | 4311 | 4311 | 4311 | 4311 | 4311 |
| Wt. of WS | 1786 | 1845 | 1870 | 1845 | 1832 |
| Mold Volume (cc) | 942 | 942 | 942 | 942 | 942 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 309 | 298 | K-7 | 308 | 318 |
| Wt. of Tare & WS (gm) | 530.50 | 478.60 | 468.50 | 575.90 | 477.10 |
| Wt. of Tare & DS (gm) | 490.56 | 432.21 | 419.47 | 502.34 | 408.64 |
| Wt. of Tare (gm) | 109.80 | 84.20 | 110.70 | 111.60 | 87.00 |
| Wt. of Water (gm) | 39.94 | 46.39 | 49.03 | 73.56 | 68.46 |
| Wt. of DS (gm) | 380.76 | 348.01 | 308.77 | 390.74 | 321.64 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.90 | 1.96 | 1.98 | 1.96 | 1.94 |
| Wet Density (pcf) | 118.3 | 122.2 | 123.8 | 122.2 | 121.3 |
| **Moisture Content (%)** | **10.5** | **13.3** | **15.9** | **18.8** | **21.3** |
| **Dry Density (pcf)** | **107.1** | **107.8** | **106.9** | **102.8** | **100.0** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 20.0 | 23.5 | 25.5 |
| **Dry Unit Weight (pcf)** | 109.4 | 103.1 | 99.8 |

*Tested By* SD *Date* 4/13/2010 *Checked By* GEM *Date* 4-14-10



DCN:CT-S12 DATE:12/11/00 REVISION 5 \\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-02-01 Proctor.XLS]Sheet1

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*INTEGRITY IN TESTING*

April 21, 2010

Project No. 2010-652-03

Mr. Ed Marks
Glover Construction
PO Box 40
Pleasant Hill, NC 27866

**Transmittal**
**Laboratory Test Results**
**Dare County C&D Landfill**

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
***Geotechnics, Inc.***

Michael P. Smith
Regional Manger

***We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.***


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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | BL |
| Project No. | 2010-652-03 | Sample No. | CF-06 |
| Lab ID | 2010-652-03-01 | Visual Description | **BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 4/19/2010 *Checked By* GTM *Date* 4-20-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-01 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 1 |
| Project No. | 2010-652-03 | Sample No. | CF-07 |
| Lab ID | 2010-652-03-02 | Visual Description | **BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 4/19/2010 *Checked By* GEM *Date* 4-20-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2

*\\Server\data drive\Data Sheets\[Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE 2 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-03 | Sample No. | CF-08 |
| Lab ID | 2010-652-03-03 | Soil Description | **BROWN LEAN CLAY** |

***Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.*** ( Minus No. 40 sieve material, Airdried)

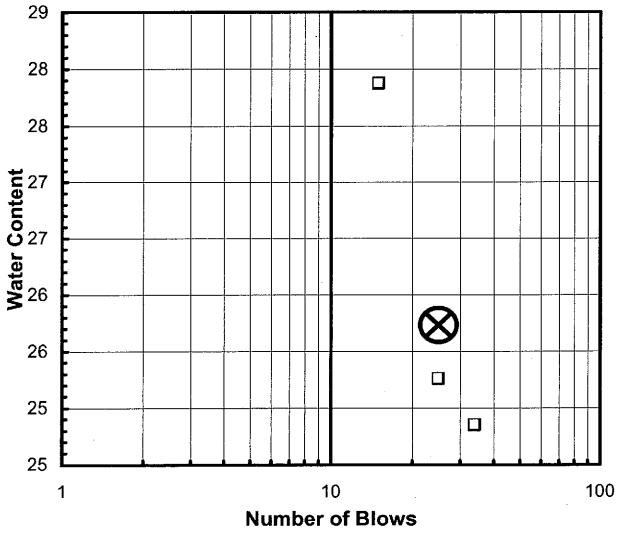
| **Liquid Limit Test** | **1** | **2** | **3** | |
|---|---|---|---|---|
| Tare Number | F | V | Q | **MULTIPOINT** |
| Wt. of Tare & WS (gm) | 27.66 | 28.64 | 27.35 | |
| Wt. of Tare & DS (gm) | 24.92 | 25.94 | 24.92 | |
| Wt. of Tare (gm) | 15.09 | 15.25 | 15.14 | |
| Wt. of Water (gm) | 2.7 | 2.7 | 2.4 | |
| Wt. of DS (gm) | 9.8 | 10.7 | 9.8 | |
| **Moisture Content (%)** | **27.9** | **25.3** | **24.8** | |
| **Number of Blows** | **15** | **25** | **34** | |

| **Plastic Limit Test** | **1** | **2** | **Range** |
|---|---|---|---|
| Tare Number | M | S | |
| Wt. of Tare & WS (gm) | 21.44 | 21.28 | |
| Wt. of Tare & DS (gm) | 20.47 | 20.35 | |
| Wt. of Tare (gm) | 15.11 | 15.18 | |
| Wt. of Water (gm) | 1.0 | 0.9 | |
| Wt. of DS (gm) | 5.4 | 5.2 | |
| **Moisture Content (%)** | **18.1** | **18.0** | **0.1** |

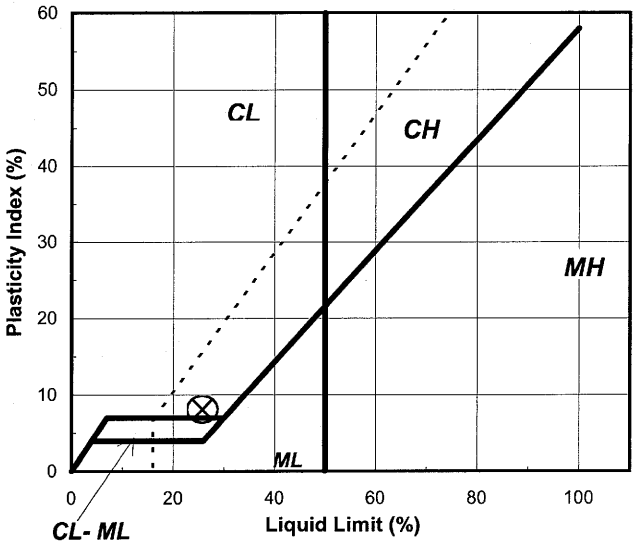
*Note: The acceptable range of the two Moisture contents is ± 2.6*

| **Test Results** | |
|---|---|
| **Liquid Limit (%)** | **26** |
| **Plastic Limit (%)** | **18** |
| **Plasticity Index (%)** | **8** |
| **USCS Symbol** | **CL** |

**Flow Curve**




**Plasticity Chart**




*Tested By* SD *Date* 4/20/2010 *Checked By* GM *Date* 4-21-10



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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE 3 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-03 | Sample No. | CF-09 |
| Lab ID | 2010-652-03-04 | Visual Description | **GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 4/19/2010 *Checked By* GEM *Date* 4-20-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-05 SIEVON REV 4.XLS]Sheet1*

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## ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE 4 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-03 | Sample No. | CF-10 |
| Lab ID | 2010-652-03-05 | Visual Description | **GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 4/19/2010 *Checked By* GEM *Date* 4-20-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-01 Limit-(NP).xls]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | BL |
| Project No. | 2010-652-03 | Sample No. | CF-06 |
| Lab ID | 2010-652-03-01 | Soil Color | **BROWN** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By DAW Date 4/21/2010 Checked By GEM Date 4-21-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-01 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | BL |
| Project No. | 2010-652-03 | Sample No. | CF-06 |
| Lab ID | 2010-652-03-01 | Soil Color | **BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 842 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 669.51 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 616.81 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 255.81 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 52.70 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 361.00 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **14.6** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 361.00 |
| Dry Weight - 3/4" Sample (gm) | 308.7 | Weight of minus #200 material (gm) | 52.33 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 308.67 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 1.37 | 0.4 | 0.4 | 99.6 | **99.6** |
| #10 | 2.00 | 0.26 | 0.1 | 0.5 | 99.5 | **99.5** |
| #20 | 0.850 | 1.26 | 0.3 | 0.8 | 99.2 | **99.2** |
| #40 | 0.425 | 5.02 | 1.4 | 2.2 | 97.8 | **97.8** |
| #60 | 0.250 | 69.88 | 19.4 | 21.5 | 78.5 | **78.5** |
| #140 | 0.106 | 205.28 | 56.9 | 78.4 | 21.6 | **21.6** |
| #200 | 0.075 | 25.60 | 7.1 | 85.5 | 14.5 | **14.5** |
| Pan | - | 52.33 | 14.5 | 100.0 | - | - |

Tested By DAW Date 4/21/2010 Checked By GEM Date 4-21-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-01 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 1 |
| Project No. | 2010-652-03 | Sample No. | CF-07 |
| Lab ID | 2010-652-03-02 | Soil Color | **BROWN** |

| USCS | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 4/20/2010 Checked By GDM Date 4-20-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-02 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 1 |
| Project No. | 2010-652-03 | Sample No. | CF-07 |
| Lab ID | 2010-652-03-02 | Soil Color | **BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 213 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 587.08 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 543.06 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 173.23 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 44.02 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 369.83 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **11.9** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 369.83 |
| Dry Weight - 3/4" Sample (gm) | 318.2 | Weight of minus #200 material (gm) | 51.63 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 318.20 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 1.83 | 0.5 | 0.5 | 99.5 | **99.5** |
| #10 | 2.00 | 1.24 | 0.3 | 0.8 | 99.2 | **99.2** |
| #20 | 0.850 | 2.86 | 0.8 | 1.6 | 98.4 | **98.4** |
| #40 | 0.425 | 5.11 | 1.4 | 3.0 | 97.0 | **97.0** |
| #60 | 0.250 | 55.49 | 15.0 | 18.0 | 82.0 | **82.0** |
| #140 | 0.106 | 223.69 | 60.5 | 78.5 | 21.5 | **21.5** |
| #200 | 0.075 | 27.98 | 7.6 | 86.0 | 14.0 | **14.0** |
| Pan | - | 51.63 | 14.0 | 100.0 | - | **-** |

Tested By SD Date 4/20/2010 Checked By GEM Date 4-20-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-02 SIEVON REV 4.XLS]Sheet1*

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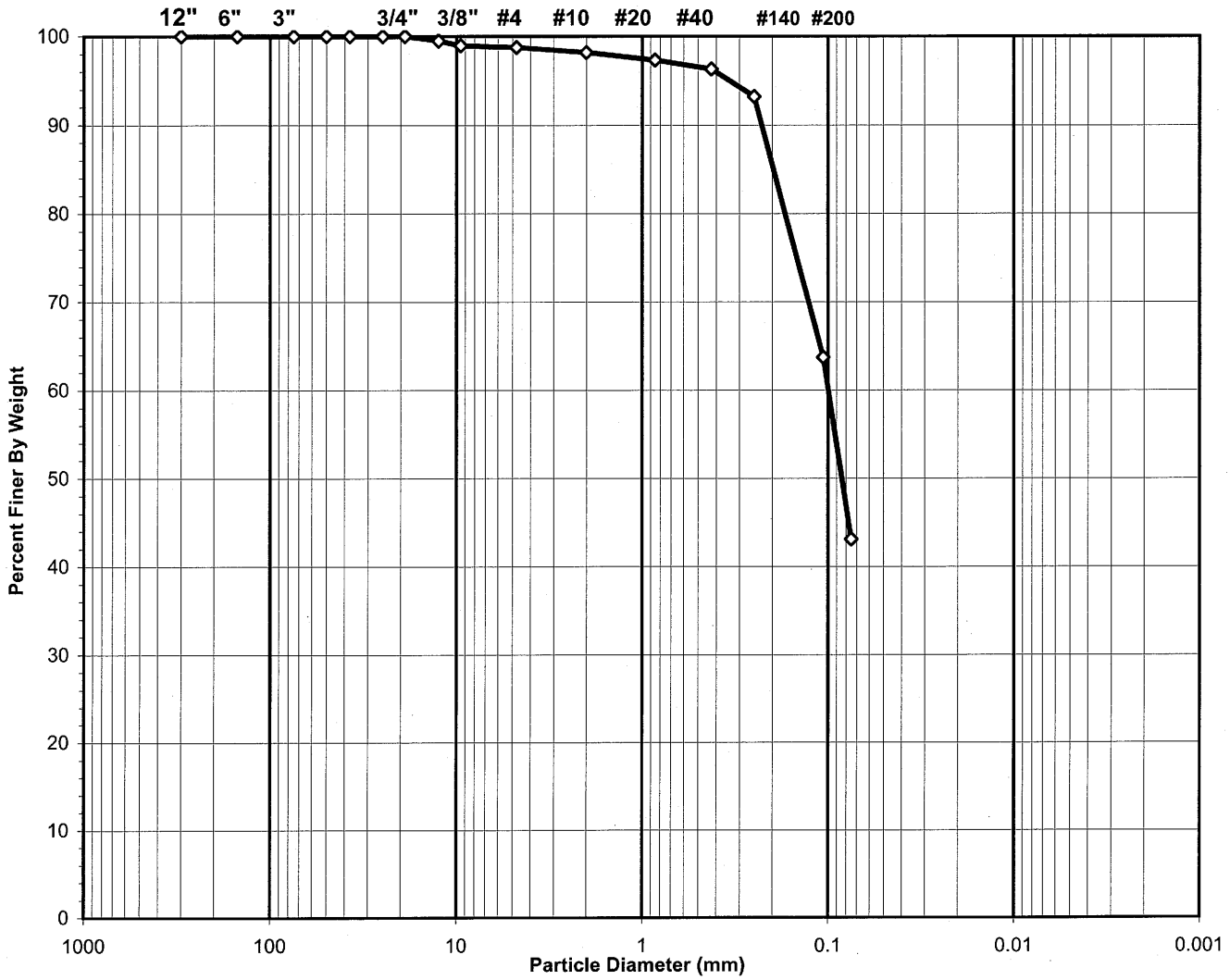
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE 2 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-03 | Sample No. | CF-08 |
| Lab ID | 2010-652-03-03 | Soil Color | **BROWN** |

| | *SIEVE ANALYSIS* | | *HYDROMETER* |
|---|---|---|---|
| *USCS* | **gravel** | **sand** | **silt and clay** |




***USCS Symbol*** ***SC, TESTED***

***USCS Classification*** ***CLAYEY SAND***

Tested By SD Date 4/20/2010 Checked By GEM Date 4-21-10

 **DCN: CT-S3C DATE 6-25-98 REVISION 2** *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-03 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE 2 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-03 | Sample No. | CF-08 |
| Lab ID | 2010-652-03-03 | Soil Color | **BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 211 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 593.42 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 537.91 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 171.18 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 55.51 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 366.73 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **15.1** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 366.73 |
| Dry Weight - 3/4" Sample (gm) | 208.7 | Weight of minus #200 material (gm) | 158.06 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 208.67 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 1.79 | 0.5 | 0.5 | 99.5 | **99.5** |
| 3/8" | 9.50 | 2.03 | 0.6 | 1.0 | 99.0 | **99.0** |
| #4 | 4.75 | 0.69 | 0.2 | 1.2 | 98.8 | **98.8** |
| #10 | 2.00 | 2.18 | 0.6 | 1.8 | 98.2 | **98.2** |
| #20 | 0.850 | 3.21 | 0.9 | 2.7 | 97.3 | **97.3** |
| #40 | 0.425 | 3.70 | 1.0 | 3.7 | 96.3 | **96.3** |
| #60 | 0.250 | 11.25 | 3.1 | 6.8 | 93.2 | **93.2** |
| #140 | 0.106 | 108.12 | 29.5 | 36.3 | 63.7 | **63.7** |
| #200 | 0.075 | 75.70 | 20.6 | 56.9 | 43.1 | **43.1** |
| Pan | - | 158.06 | 43.1 | 100.0 | - | - |

Tested By SD Date 4/20/2010 Checked By GEM Date 4-21-10





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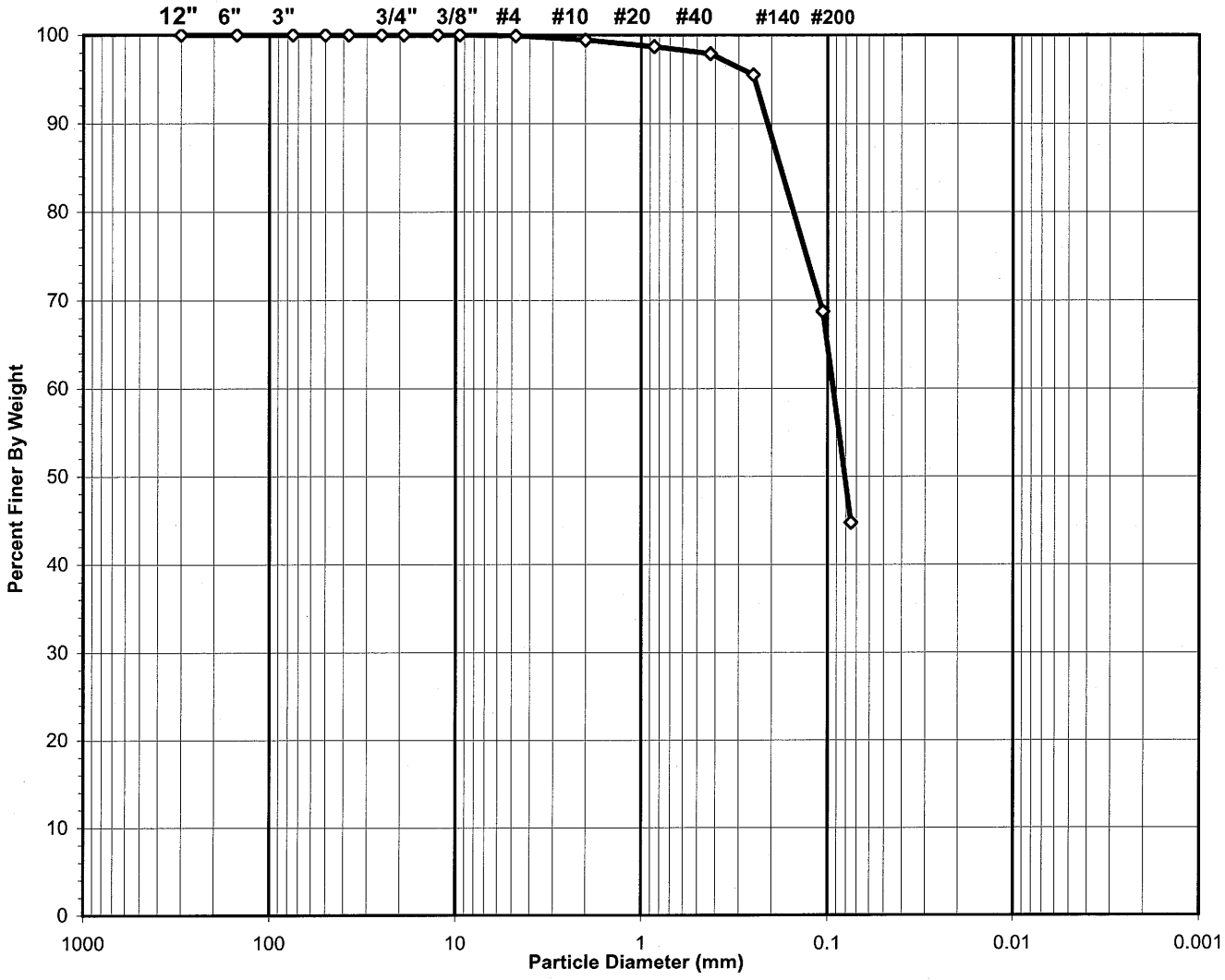
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE 3 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-03 | Sample No. | CF-09 |
| Lab ID | 2010-652-03-04 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |




***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 4/20/2010 Checked By GEM Date 4-20-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-04 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE 3 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-03 | Sample No. | CF-09 |
| Lab ID | 2010-652-03-04 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 214 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 735.72 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 676.80 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 171.32 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 58.92 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 505.48 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **11.7** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 505.48 |
| Dry Weight - 3/4" Sample (gm) | 279.4 | Weight of minus #200 material (gm) | 226.11 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 279.37 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.55 | 0.1 | 0.1 | 99.9 | **99.9** |
| #10 | 2.00 | 2.37 | 0.5 | 0.6 | 99.4 | **99.4** |
| #20 | 0.850 | 3.74 | 0.7 | 1.3 | 98.7 | **98.7** |
| #40 | 0.425 | 4.11 | 0.8 | 2.1 | 97.9 | **97.9** |
| #60 | 0.250 | 11.92 | 2.4 | 4.5 | 95.5 | **95.5** |
| #140 | 0.106 | 135.37 | 26.8 | 31.3 | 68.7 | **68.7** |
| #200 | 0.075 | 121.31 | 24.0 | 55.3 | 44.7 | **44.7** |
| Pan | - | 226.11 | 44.7 | 100.0 | - | **-** |

Tested By SD Date 4/20/2010 Checked By GEM Date 4-20-10



**DCN: CT-S3C DATE 6-25-98 REVISION 2** *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-04 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE 4 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-03 | Sample No. | CF-10 |
| Lab ID | 2010-652-03-05 | Soil Color | **GRAY** |

| USCS | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 4/20/2010 Checked By GM Date 4-20-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-05 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE 4 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-03 | Sample No. | CF-10 |
| Lab ID | 2010-652-03-05 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 215 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 654.92 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 571.60 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 172.35 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 83.32 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 399.25 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **20.9** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 399.25 |
| Dry Weight - 3/4" Sample (gm) | 293.2 | Weight of minus #200 material (gm) | 106.02 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 293.23 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.53 | 0.1 | 0.1 | 99.9 | **99.9** |
| #10 | 2.00 | 1.11 | 0.3 | 0.4 | 99.6 | **99.6** |
| #20 | 0.850 | 1.26 | 0.3 | 0.7 | 99.3 | **99.3** |
| #40 | 0.425 | 2.21 | 0.6 | 1.3 | 98.7 | **98.7** |
| #60 | 0.250 | 6.41 | 1.6 | 2.9 | 97.1 | **97.1** |
| #140 | 0.106 | 169.34 | 42.4 | 45.3 | 54.7 | **54.7** |
| #200 | 0.075 | 112.37 | 28.1 | 73.4 | 26.6 | **26.6** |
| Pan | - | 106.02 | 26.6 | 100.0 | - | - |

Tested By SD Date 4/20/2010 Checked By GEM Date 4-20-10





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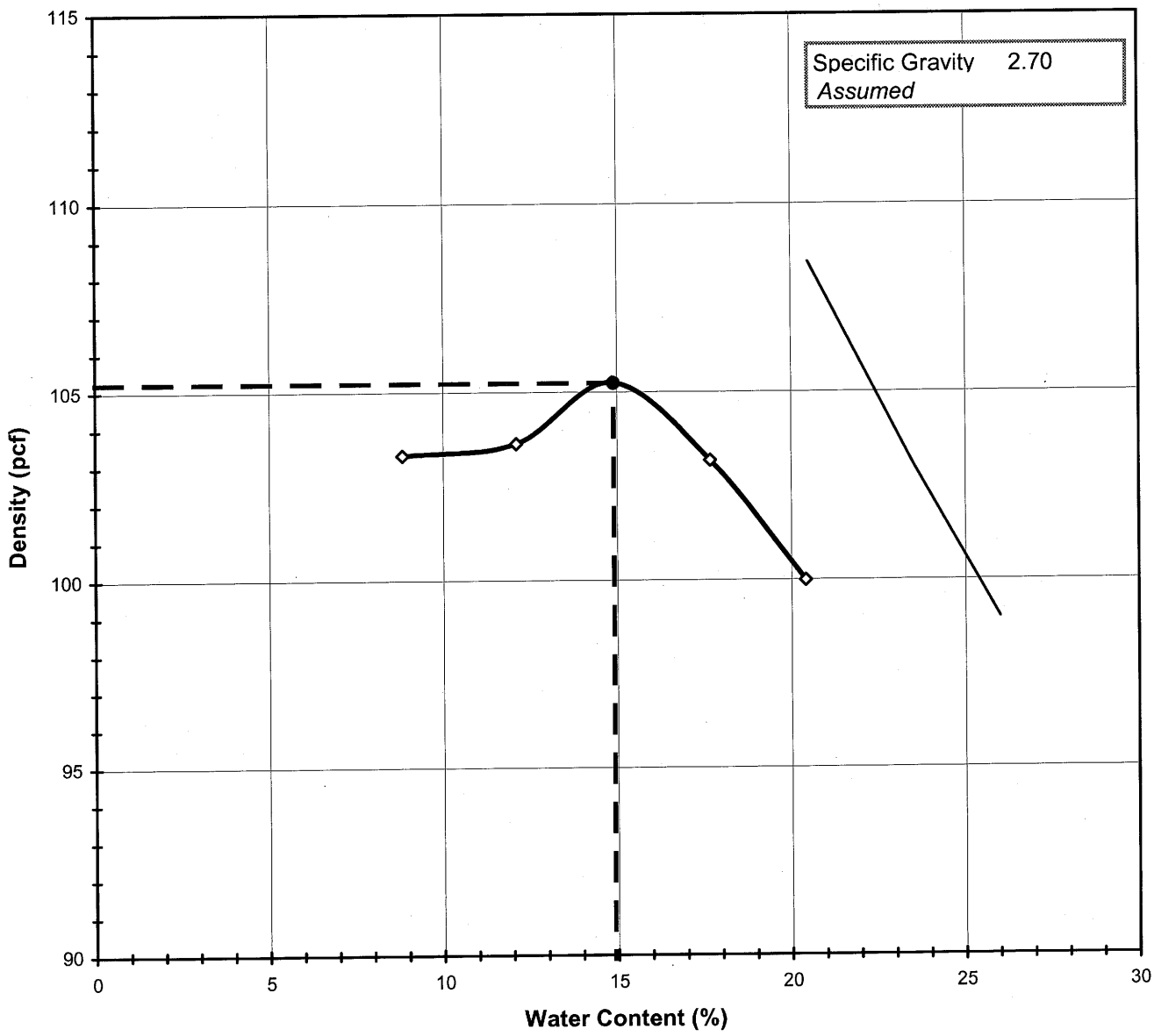
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. D&D LF | Depth (ft) | BL |
| Project No. | 2010-652-03 | Sample No. | CF-06 |
| Lab ID | 2010-652-03-01 | Test Method | **STANDARD** |

Visual Description BROWN SILTY SAND

**Optimum Water Content** **14.9**
**Maximum Dry Density** **105.2**




*Tested By* SD *Date* 4/20/2010 *Checked By* GEM *Date* 4-21-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-01 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. D&D LF | Depth (ft) | BL |
| Project No. | 2010-652-03 | Sample No. | CF-06 |
| Lab ID | 2010-652-03-01 | | |

Visual Description BROWN SILTY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 23380 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4311 |
| Volume of the Mold(cc) | | 942 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6009 | 6065 | 6136 | 6144 | 6128 |
| Wt.of Mold (gm) | 4311 | 4311 | 4311 | 4311 | 4311 |
| Wt. of WS | 1698 | 1754 | 1825 | 1833 | 1817 |
| Mold Volume (cc) | 942 | 942 | 942 | 942 | 942 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 308 | 317 | 318 | 309 | 398 |
| Wt. of Tare & WS (gm) | 455.40 | 478.70 | 457.00 | 512.60 | 509.30 |
| Wt. of Tare & DS (gm) | 427.50 | 436.10 | 409.10 | 452.10 | 437.30 |
| Wt. of Tare (gm) | 111.40 | 84.30 | 86.90 | 109.80 | 84.50 |
| Wt. of Water (gm) | 27.90 | 42.60 | 47.90 | 60.50 | 72.00 |
| Wt. of DS (gm) | 316.10 | 351.80 | 322.20 | 342.30 | 352.80 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.80 | 1.86 | 1.94 | 1.95 | 1.93 |
| Wet Density (pcf) | 112.5 | 116.2 | 120.9 | 121.4 | 120.4 |
| **Moisture Content (%)** | **8.8** | **12.1** | **14.9** | **17.7** | **20.4** |
| **Dry Density (pcf)** | **103.3** | **103.6** | **105.2** | **103.2** | **100.0** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 20.5 | 23.5 | 26.0 |
| **Dry Unit Weight (pcf)** | 108.5 | 103.1 | 99.0 |

*Tested By* SD *Date* 4/20/2010 *Checked By* GM *Date* 4-21-10



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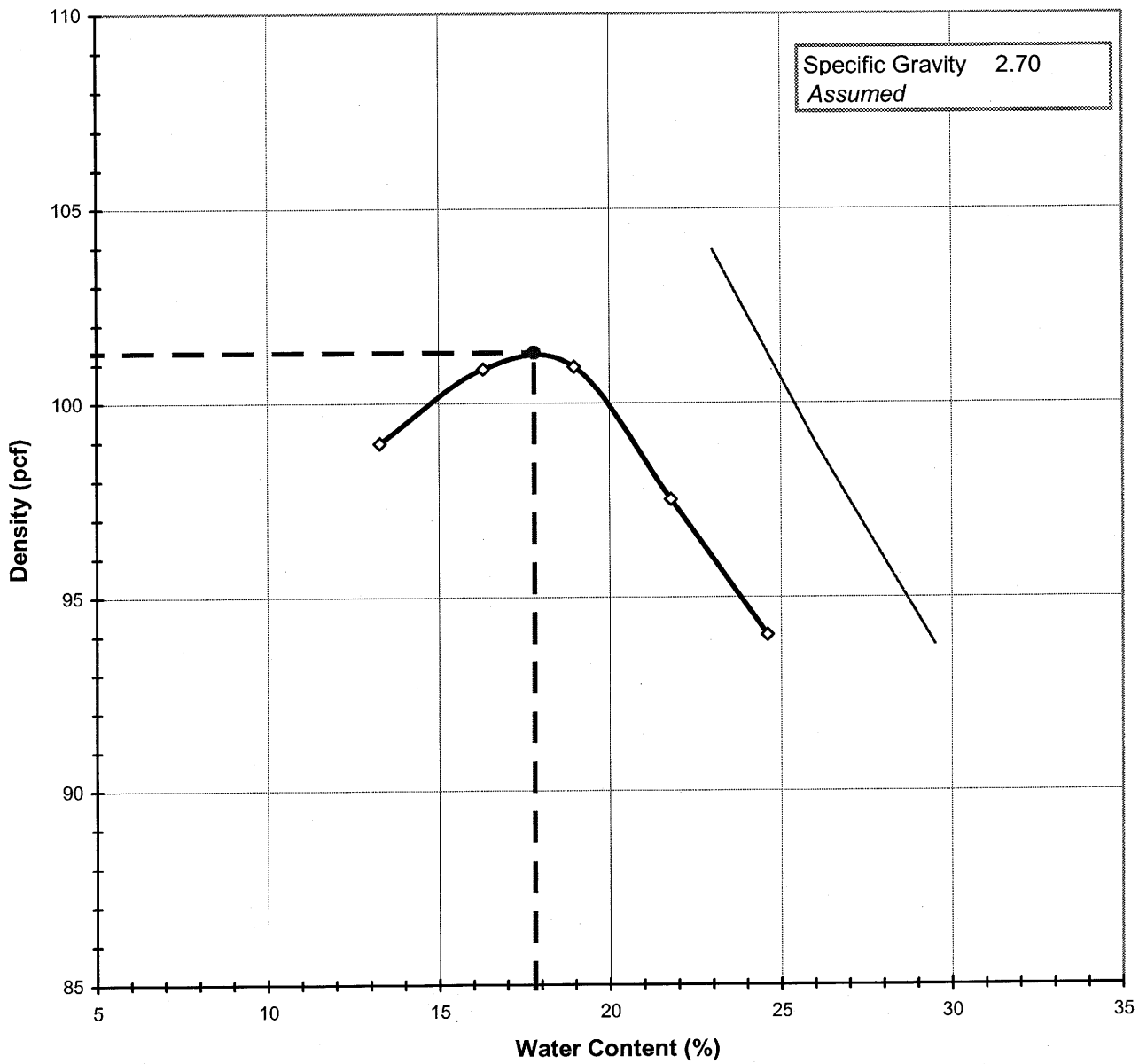
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE 4 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-03 | Sample No. | CF-10 |
| Lab ID | 2010-652-03-05 | Test Method | **STANDARD** |

Visual Description GRAY SILTY SAND

**Optimum Water Content** **17.8**
**Maximum Dry Density** **101.3**




*Tested By* SD *Date* 4/19/2010 *Checked By* Gen *Date* 4-20-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5 \\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-05 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE 4 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-03 | Sample No. | CF-10 |
| Lab ID | 2010-652-03-05 | | |

Visual Description GRAY SILTY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 19433 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4311 |
| Volume of the Mold(cc) | | 942 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6003 | 6082 | 6123 | 6104 | 6079 |
| Wt.of Mold (gm) | 4311 | 4311 | 4311 | 4311 | 4311 |
| Wt. of WS | 1692 | 1771 | 1813 | 1793 | 1769 |
| Mold Volume (cc) | 942 | 942 | 942 | 942 | 942 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 318 | 317 | 398 | 309 | 301 |
| Wt. of Tare & WS (gm) | 497.30 | 448.50 | 469.00 | 510.90 | 491.60 |
| Wt. of Tare & DS (gm) | 449.17 | 397.44 | 407.63 | 439.12 | 411.22 |
| Wt. of Tare (gm) | 86.70 | 84.30 | 84.20 | 109.60 | 84.40 |
| Wt. of Water (gm) | 48.13 | 51.06 | 61.37 | 71.78 | 80.38 |
| Wt. of DS (gm) | 362.47 | 313.14 | 323.43 | 329.52 | 326.82 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.80 | 1.88 | 1.92 | 1.90 | 1.88 |
| Wet Density (pcf) | 112.1 | 117.3 | 120.1 | 118.8 | 117.2 |
| **Moisture Content (%)** | **13.3** | **16.3** | **19.0** | **21.8** | **24.6** |
| **Dry Density (pcf)** | **99.0** | **100.9** | **100.9** | **97.5** | **94.0** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 23.0 | 26.0 | 29.5 |
| **Dry Unit Weight (pcf)** | 103.9 | 99.0 | 93.8 |

*Tested By* *SD* *Date* *4/19/2010* *Checked By* *Date*



*DCN:CT-S12 DATE:12/11/00 REVISION 5 \\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-03-05 Proctor.XLS]Sheet1*

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April 28, 2010

Project No. 2010-652-04

Mr. Ed Marks
Glover Construction
PO Box 40
Pleasant Hill, NC 27866

**Transmittal**
**Laboratory Test Results**
**Dare County C&D Landfill**

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
***Geotechnics, Inc.***

Michael P. Smith
Regional Manger

***We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.***

*DCN: Data Transmittal Letter Date: 1/28/05 Rev.: 1*

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# MOISTURE CONTENT

ASTM D 2216 (SOP-S1)

| | |
|---|---|
| Client | GLOVER CONSTRUCTION |
| Client Reference | DARE CO. C&D LF. |
| Project No. | 2010-652-04 |

| | | | | |
|---|---|---|---|---|
| Lab ID | .001 | .002 | .003 | .004 |
| Boring No. | STOCKPILE | STOCKPILE | STOCKPILE | STOCKPILE |
| Depth (ft) | A8-L1 | A10-L2 | A2-L2 | A11-L2 |
| Sample No. | CF-11 | CF-12 | CF-13 | CF-14 |
| Tare Number | 214 | 833 | 215 | 843 |
| Wt. of Tare & WS (gm) | 571.31 | 715.75 | 635.82 | 682.21 |
| Wt. of Tare & DS (gm) | 510.53 | 670.29 | 589.53 | 639.06 |
| Wt. of Tare (gm) | 171.58 | 259.30 | 172.64 | 262.15 |
| Wt. of Water (gm) | 60.78 | 45.46 | 46.29 | 43.15 |
| Wt. of DS (gm) | 338.95 | 410.99 | 416.89 | 376.91 |
| **Water Content (%)** | **17.9** | **11.1** | **11.1** | **11.4** |

*Notes :* *NA*

*Tested By* *DAW* *Date* *4/26/2010* *Checked By* *MMS* *Date* *4-28-10*

 DCN: CT-S1 DATE 6-30-98 REVISION: 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04 WATCONT.XLS]Sheet1*

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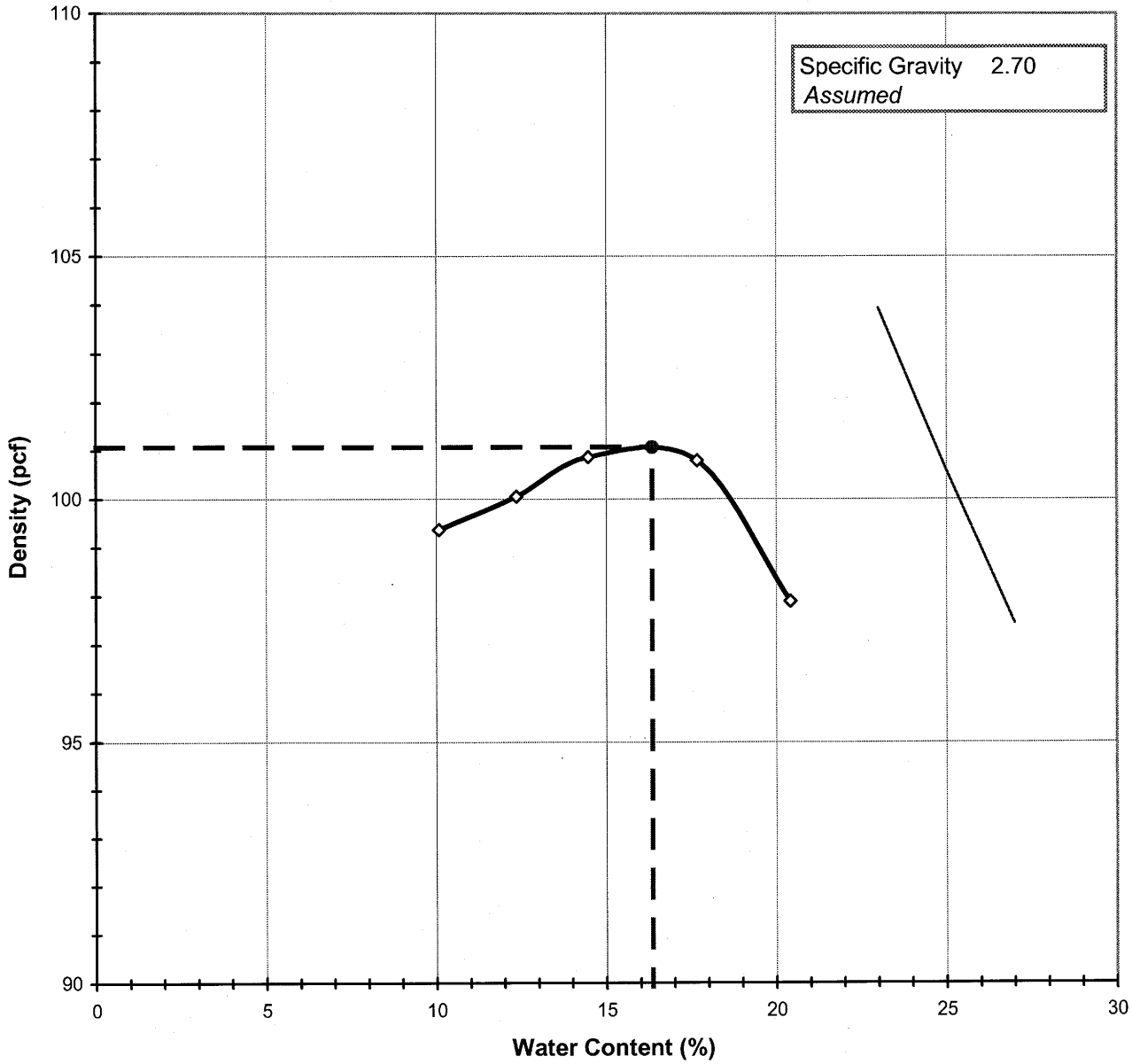
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | ACRE 10-L2 |
| Project No. | 2010-652-04 | Sample No. | CF-12 |
| Lab ID | 2010-652-04-02 | Test Method | **STANDARD** |

Visual Description BROWN SILTY SAND

**Optimum Water Content** **16.4**
**Maximum Dry Density** **101.1**




*Tested By* SD *Date* 4/27/2010 *Checked By* mms *Date* 4/28/10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5 \\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-02 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | ACRE 10-L2 |
| Project No. | 2010-652-04 | Sample No. | CF-12 |
| Lab ID | 2010-652-04-02 | | |

Visual Description BROWN SILTY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 18286 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4311 |
| Volume of the Mold(cc) | | 942 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 5962 | 6008 | 6054 | 6101 | 6090 |
| Wt.of Mold (gm) | 4311 | 4311 | 4311 | 4311 | 4311 |
| Wt. of WS | 1651 | 1697 | 1743 | 1791 | 1780 |
| Mold Volume (cc) | 942 | 942 | 942 | 942 | 942 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 312 | 399 | 310 | 311 | 300 |
| Wt. of Tare & WS (gm) | 530.90 | 460.90 | 551.20 | 531.40 | 486.10 |
| Wt. of Tare & DS (gm) | 490.00 | 419.73 | 495.46 | 464.33 | 422.50 |
| Wt. of Tare (gm) | 84.10 | 86.60 | 110.30 | 84.70 | 111.00 |
| Wt. of Water (gm) | 40.90 | 41.17 | 55.74 | 67.07 | 63.60 |
| Wt. of DS (gm) | 405.90 | 333.13 | 385.16 | 379.63 | 311.50 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.75 | 1.80 | 1.85 | 1.90 | 1.89 |
| Wet Density (pcf) | 109.4 | 112.4 | 115.5 | 118.6 | 117.9 |
| **Moisture Content (%)** | **10.1** | **12.4** | **14.5** | **17.7** | **20.4** |
| **Dry Density (pcf)** | **99.4** | **100.1** | **100.9** | **100.8** | **97.9** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 23.0 | 25.0 | 27.0 |
| **Dry Unit Weight (pcf)** | 103.9 | 100.6 | 97.4 |

*Tested By* SD *Date* 4/27/2010 *Checked By* TMS *Date* 4/28/10



DCN:CT-S12 DATE:12/11/00 REVISION 5 \\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-02 Proctor.XLS]Sheet1

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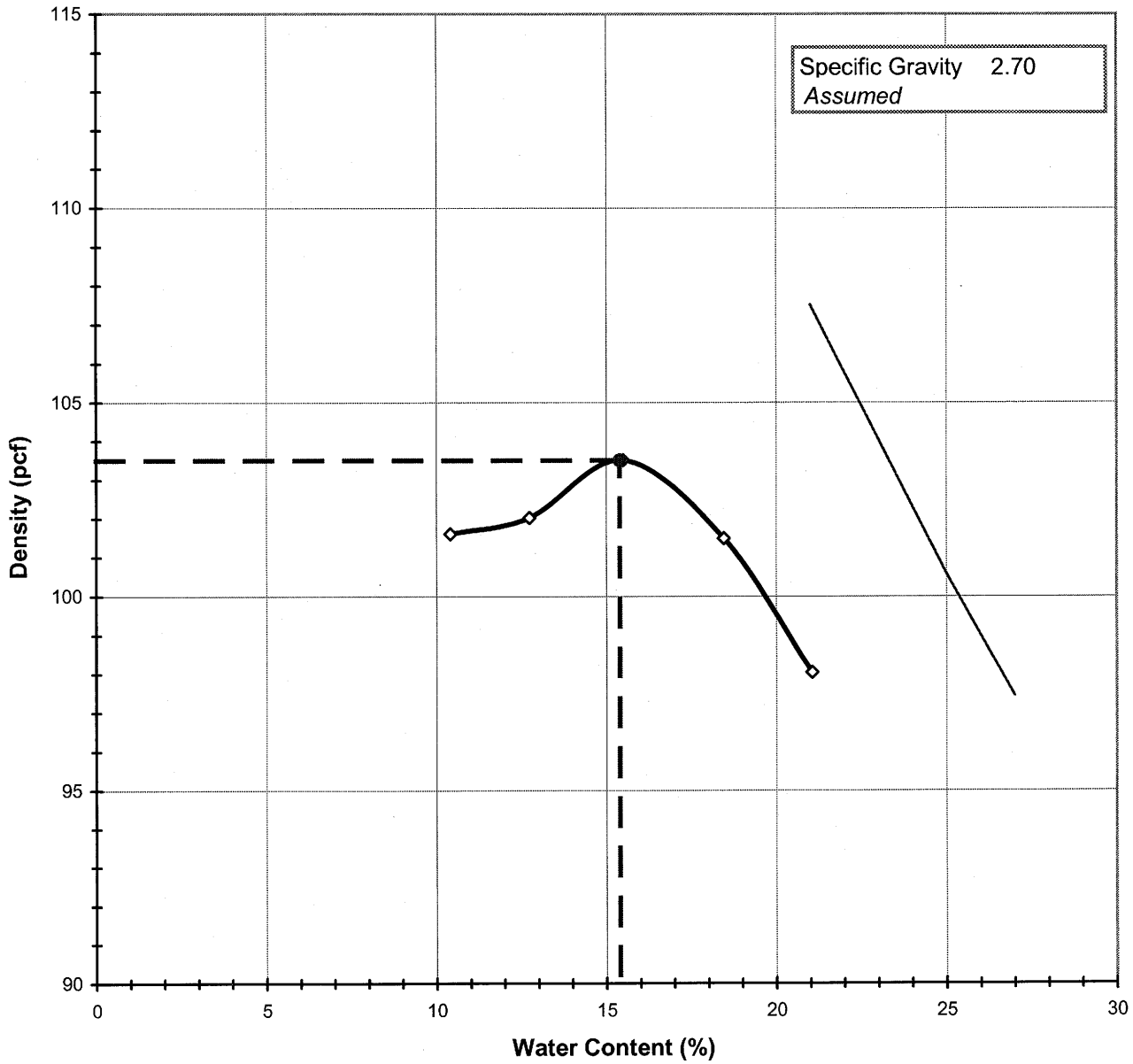
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | ACRE 11-L2 |
| Project No. | 2010-652-04 | Sample No. | CF-14 |
| Lab ID | 2010-652-04-04 | Test Method | **STANDARD** |

Visual Description GRAY SANDY SILT

**Optimum Water Content** **15.4**
**Maximum Dry Density** **103.5**




*Tested By* SD *Date* 4/27/2010 *Checked By* TMS *Date* 4/28/10



*DCN:CT-S12 DATE:12/11/00 REVISION 5 \\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-04 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF | Depth (ft) | ACRE 11-L2 |
| Project No. | 2010-652-04 | Sample No. | CF-14 |
| Lab ID | 2010-652-04-04 | | |

Visual Description GRAY SANDY SILT

| | |
|---|---|
| Total Weight of the Sample (gm) | 21994 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4310 |
| Volume of the Mold(cc) | | 942 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6004 | 6047 | 6115 | 6125 | 6102 |
| Wt.of Mold (gm) | 4310 | 4310 | 4310 | 4310 | 4310 |
| Wt. of WS | 1694 | 1737 | 1805 | 1815 | 1792 |
| Mold Volume (cc) | 942 | 942 | 942 | 942 | 942 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 306 | 303 | 307 | 304 | 305 |
| Wt. of Tare & WS (gm) | 441.80 | 517.20 | 478.90 | 521.40 | 473.30 |
| Wt. of Tare & DS (gm) | 408.50 | 471.32 | 429.50 | 457.38 | 405.72 |
| Wt. of Tare (gm) | 88.40 | 111.20 | 110.70 | 110.60 | 84.70 |
| Wt. of Water (gm) | 33.30 | 45.88 | 49.40 | 64.02 | 67.58 |
| Wt. of DS (gm) | 320.10 | 360.12 | 318.80 | 346.78 | 321.02 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.80 | 1.84 | 1.92 | 1.93 | 1.90 |
| Wet Density (pcf) | 112.2 | 115.0 | 119.6 | 120.2 | 118.7 |
| **Moisture Content (%)** | **10.4** | **12.7** | **15.5** | **18.5** | **21.1** |
| **Dry Density (pcf)** | **101.6** | **102.0** | **103.5** | **101.5** | **98.0** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 21.0 | 25.0 | 27.0 |
| **Dry Unit Weight (pcf)** | 107.5 | 100.6 | 97.4 |

*Tested By* *SD* *Date* *4/27/2010* *Checked By* *Date*



*DCN:CT-S12 DATE:12/11/00 REVISION 5 \\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-04 Proctor.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | ACRE 8-L1 |
| Project No. | 2010-652-04 | Sample No. | CF-11 |
| Lab ID | 2010-652-04-01 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED***

***USCS Classification*** ***SILTY SAND***

Tested By DAW Date 4/28/2010 Checked By TMS Date 4/28/10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-01 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | ACRE 8-L1 |
| Project No. | 2010-652-04 | Sample No. | CF-11 |
| Lab ID | 2010-652-04-01 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 214 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 571.31 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 510.53 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 171.58 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 60.78 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 338.95 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **17.9** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 338.95 |
| Dry Weight - 3/4" Sample (gm) | 296.0 | Weight of minus #200 material (gm) | 43.00 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 295.95 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 0.81 | 0.2 | 0.2 | 99.8 | **99.8** |
| #20 | 0.850 | 2.66 | 0.8 | 1.0 | 99.0 | **99.0** |
| #40 | 0.425 | 4.60 | 1.4 | 2.4 | 97.6 | **97.6** |
| #60 | 0.250 | 59.78 | 17.6 | 20.0 | 80.0 | **80.0** |
| #140 | 0.106 | 202.07 | 59.6 | 79.6 | 20.4 | **20.4** |
| #200 | 0.075 | 26.03 | 7.7 | 87.3 | 12.7 | **12.7** |
| Pan | - | 43.00 | 12.7 | 100.0 | - | **-** |

Tested By DAW Date 4/28/2010 Checked By TMS Date 4/28/10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *F:\DAR\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-01 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | ACRE 10-L2 |
| Project No. | 2010-652-04 | Sample No. | CF-12 |
| Lab ID | 2010-652-04-02 | Soil Color | **BROWN** |

| USCS | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 4/28/2010 Checked By TMS Date 4/28/10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *R:\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-02 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | ACRE 10-L2 |
| Project No. | 2010-652-04 | Sample No. | CF-12 |
| Lab ID | 2010-652-04-02 | Soil Color | **BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 833 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 715.75 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 670.29 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 259.30 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 45.46 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 410.99 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **11.1** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 410.99 |
| Dry Weight - 3/4" Sample (gm) | 360.9 | Weight of minus #200 material (gm) | 50.11 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 360.88 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.07 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 0.12 | 0.0 | 0.0 | 100.0 | **100.0** |
| #20 | 0.850 | 0.46 | 0.1 | 0.2 | 99.8 | **99.8** |
| #40 | 0.425 | 0.77 | 0.2 | 0.3 | 99.7 | **99.7** |
| #60 | 0.250 | 24.22 | 5.9 | 6.2 | 93.8 | **93.8** |
| #140 | 0.106 | 290.81 | 70.8 | 77.0 | 23.0 | **23.0** |
| #200 | 0.075 | 44.43 | 10.8 | 87.8 | 12.2 | **12.2** |
| Pan | - | 50.11 | 12.2 | 100.0 | - | **-** |

Tested By SD Date 4/28/2010 Checked By TMB Date 4/28/10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-02 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | ACRE 2-L2 |
| Project No. | 2010-652-04 | Sample No. | CF-13 |
| Lab ID | 2010-652-04-03 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 4/28/2010 Checked By TMK Date 4/28/10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-02 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | ACRE 2-L2 |
| Project No. | 2010-652-04 | Sample No. | CF-13 |
| Lab ID | 2010-652-04-03 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 215 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 635.82 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 589.53 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 172.64 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 46.29 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 416.89 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **11.1** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 416.89 |
| Dry Weight - 3/4" Sample (gm) | 362.0 | Weight of minus #200 material (gm) | 54.94 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 361.95 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.07 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 1.12 | 0.3 | 0.3 | 99.7 | **99.7** |
| #20 | 0.850 | 2.43 | 0.6 | 0.9 | 99.1 | **99.1** |
| #40 | 0.425 | 6.29 | 1.5 | 2.4 | 97.6 | **97.6** |
| #60 | 0.250 | 96.59 | 23.2 | 25.5 | 74.5 | **74.5** |
| #140 | 0.106 | 222.76 | 53.4 | 79.0 | 21.0 | **21.0** |
| #200 | 0.075 | 32.69 | 7.8 | 86.8 | 13.2 | **13.2** |
| Pan | - | 54.94 | 13.2 | 100.0 | - | **-** |

Tested By SD Date 4/28/2010 Checked By TMS Date 4/28/10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *R\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-02 SIEVON REV 4.XLS]Sheet1*

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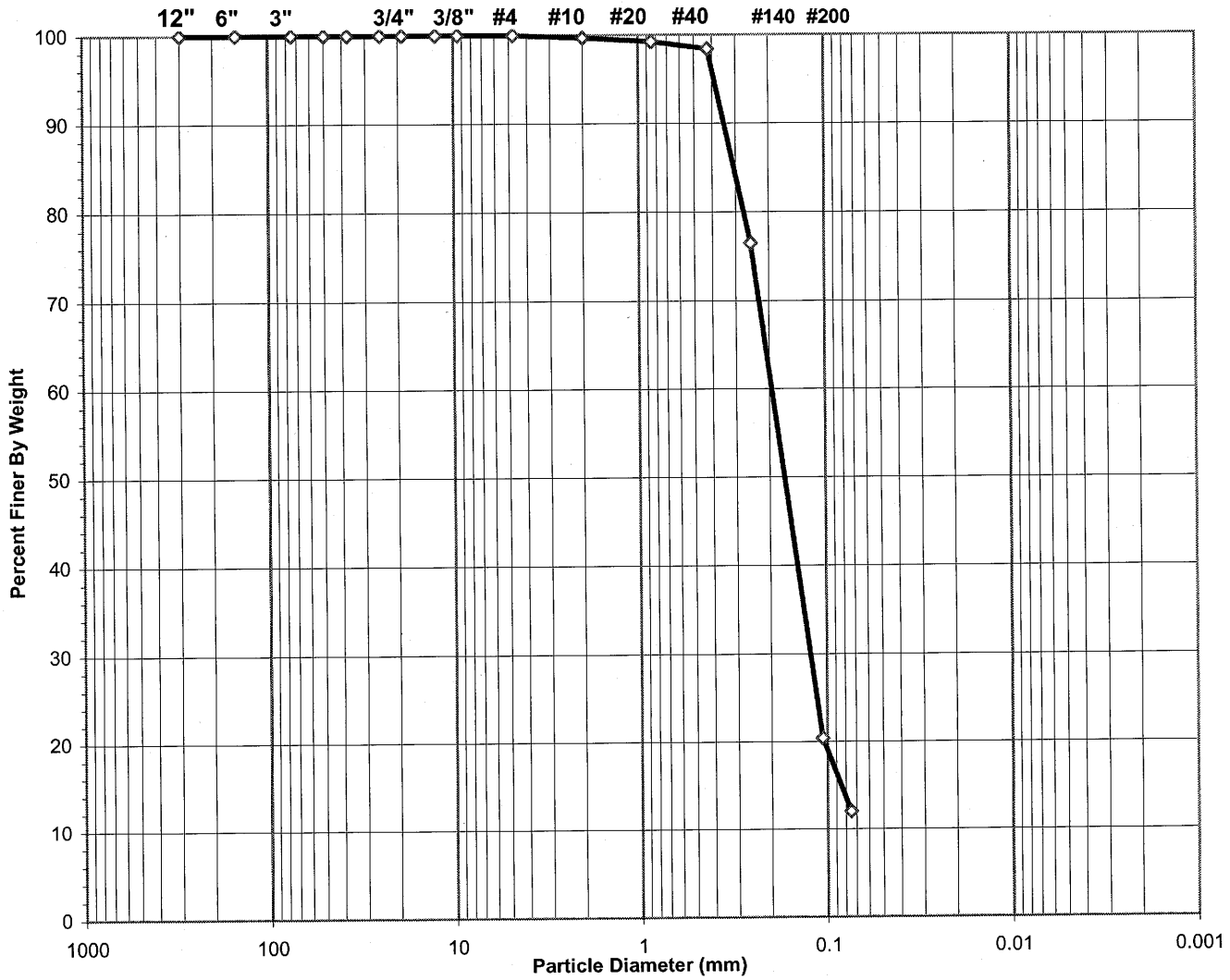
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | ACRE 11-L2 |
| Project No. | 2010-652-04 | Sample No. | CF-14 |
| Lab ID | 2010-652-04-04 | Soil Color | **GRAY** |

| USCS | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| | gravel | sand | silt and clay |




***USCS Symbol*** ***SP-SM, TESTED***

***USCS Classification*** ***POORLY GRADED SAND WITH SILT***

Tested By SD Date 4/28/2010 Checked By TMB Date 4/28/10



**DCN: CT-S3C DATE 6-25-98 REVISION: 2** *\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-04 Proctor.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | ACRE 11-L2 |
| Project No. | 2010-652-04 | Sample No. | CF-14 |
| Lab ID | 2010-652-04-04 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 843 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 682.21 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 639.06 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 262.15 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 43.15 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 376.91 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **11.4** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 376.91 |
| Dry Weight - 3/4" Sample (gm) | 331.7 | Weight of minus #200 material (gm) | 45.17 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 331.74 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.05 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 1.07 | 0.3 | 0.3 | 99.7 | **99.7** |
| #20 | 0.850 | 1.70 | 0.5 | 0.7 | 99.3 | **99.3** |
| #40 | 0.425 | 3.10 | 0.8 | 1.6 | 98.4 | **98.4** |
| #60 | 0.250 | 82.69 | 21.9 | 23.5 | 76.5 | **76.5** |
| #140 | 0.106 | 211.45 | 56.1 | 79.6 | 20.4 | **20.4** |
| #200 | 0.075 | 31.68 | 8.4 | 88.0 | 12.0 | **12.0** |
| Pan | - | 45.17 | 12.0 | 100.0 | - | **-** |

Tested By SD Date 4/28/2010 Checked By TMS Date 4/28/10





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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | ACRE 8-L1 |
| Project No. | 2010-652-04 | Sample No. | CF-11 |
| Lab ID | 2010-652-04-01 | Visual Description | **GRAY SILT** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 4/27/2010 *Checked By* TMS *Date* 4/28/10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-01 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | ACRE 10-L2 |
| Project No. | 2010-652-04 | Sample No. | CF-12 |
| Lab ID | 2010-652-04-02 | Visual Description | **BROWN SILT** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 4/27/2010 *Checked By* TMS *Date* 4/28/10

*page 1 of 1* DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-02 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | ACRE 2-L2 |
| Project No. | 2010-652-04 | Sample No. | CF-13 |
| Lab ID | 2010-652-04-03 | Visual Description | **GRAY SILT** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 4/27/2010 *Checked By* TMS *Date* 4/28/10



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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | STOCKPILE |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | ACRE 11-L2 |
| Project No. | 2010-652-04 | Sample No. | CF-14 |
| Lab ID | 2010-652-04-04 | Visual Description | **GRAY SANDY SILT** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 4/27/2010 *Checked By* TMS *Date* 4/28/10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-04-04 Proctor.XLS]Sheet1*

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Client: **Glover Construction**
Project: **DARE CO. C&D LF.**
Client Contact: **Mr. Ed Marks**
**(252) 536-2660** Fax: **(252) 536-4600**
Geotechnics Project No.: **2010-652-05**

# Geotechnics, Inc. Laboratory Testing Program

Start Date: **4/28/2010**
Report Due Date: **5/12/2010**
No. of Samples: **1**
Storage Location: **A1**

| Boring | Depth | Sample | Lab ID | Container | COMMENTS: (Tests performed are listed below each sample.) |
|---|---|---|---|---|---|
| BORROW PIT | ACRE 2 - L3 | CF-15 | 2010-652-05-01 | Bag | |
| Water Content | Sieve | A. Limits | Std. Proct | C.U. (rem) | |

**Test Totals**

| | | | | |
|---|---|---|---|---|
| 1 C.U. (rem) | 1 Std. Proct | 1 Sieve | 1 A. Limits | 1 Water Content |

HOLD –

CANCEL – MAT'L NO GOOD
per Jacob 5-3-10

**PLEASE NOTE: If the testing program or the "Report Due Date" shown above is NOT SATISFACTORY, please contact Geotechnics immediately so that we can meet your needs.**


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**Geotechnics**

*INTEGRITY IN TESTING*

May 21, 2010

Project No. 2010-652-06

Mr. Ed Marks
Glover Construction
PO Box 40
Pleasant Hill, NC 27866

**Transmittal**
**Laboratory Test Results**
**Dare Co. C & D Landfill**

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
***Geotechnics, Inc.***

Michael P. Smith
Regional Manger

***We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.***


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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW EXP. |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | 1-3 |
| Project No. | 2010-652-06 | Sample No. | S-1 |
| Lab ID | 2010-652-06-01 | Visual Description | **TAN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 5/20/2010 *Checked By* GEM *Date* 5-21-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW EXP. |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | 4-6 |
| Project No. | 2010-652-06 | Sample No. | S-2 |
| Lab ID | 2010-652-06-02 | Visual Description | **DARK GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 5/20/2010 *Checked By* GEM *Date* 5-21-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-06-01 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW EXP. |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | 7-10 |
| Project No. | 2010-652-06 | Sample No. | S-3 |
| Lab ID | 2010-652-06-03 | Visual Description | **GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 5/20/2010 *Checked By* GEM *Date* 5-21-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-06-02 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW EXP. |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | 1-10 COMP. |
| Project No. | 2010-652-06 | Sample No. | S-4 |
| Lab ID | 2010-652-06-04 | Visual Description | **GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 5/20/2010 *Checked By* GBM *Date* 5-21-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-06-03 Limit-(NP).xls]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW EXP. |
| Client Reference | DARE CO. C&D LF | Depth (ft) | 1-3 |
| Project No. | 2010-652-06 | Sample No. | S-1 |
| Lab ID | 2010-652-06-01 | Soil Color | **TAN** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***SP-SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***POORLY GRADED SAND WITH SILT***

Tested By SD Date 5/21/2010 Checked By GAM Date 5-21-10


DCN: CT-S3C DATE 6-25-98 REVISION 2 *\\server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-06-01 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW EXP. |
| Client Reference | DARE CO. C&D LF | Depth (ft) | 1-3 |
| Project No. | 2010-652-06 | Sample No. | S-1 |
| Lab ID | 2010-652-06-01 | Soil Color | **TAN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 839 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 579.53 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 551.67 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 257.99 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 27.86 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 293.68 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **9.5** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 293.68 |
| Dry Weight - 3/4" Sample (gm) | 263.8 | Weight of minus #200 material (gm) | 29.88 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 263.80 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 0.23 | 0.1 | 0.1 | 99.9 | **99.9** |
| #20 | 0.850 | 0.89 | 0.3 | 0.4 | 99.6 | **99.6** |
| #40 | 0.425 | 1.53 | 0.5 | 0.9 | 99.1 | **99.1** |
| #60 | 0.250 | 12.39 | 4.2 | 5.1 | 94.9 | **94.9** |
| #140 | 0.106 | 213.78 | 72.8 | 77.9 | 22.1 | **22.1** |
| #200 | 0.075 | 34.98 | 11.9 | 89.8 | 10.2 | **10.2** |
| Pan | - | 29.88 | 10.2 | 100.0 | - | **-** |

Tested By SD Date 5/21/2010 Checked By GEM Date 5-21-10



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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW EXP. |
| Client Reference | DARE CO. C&D LF | Depth (ft) | 4-6 |
| Project No. | 2010-652-06 | Sample No. | S-2 |
| Lab ID | 2010-652-06-02 | Soil Color | **DARK GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

| | | | | | |
|---|---|---|---|---|---|
| ***USCS Symbol*** | ***SP-SM, TESTED (NON PLASTIC FINES)*** | **D60 =** | **0.2** | **CC =** | **1.1** |
| ***USCS Classification*** | ***POORLY GRADED SAND WITH SILT*** | **D30 =** | **0.1** | **CU =** | **2.5** |
| | | **D10 =** | **0.1** | | |

Tested By SD Date 5/21/2010 Checked By GEM Date 5-21-10



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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW EXP. |
| Client Reference | DARE CO. C&D LF | Depth (ft) | 4-6 |
| Project No. | 2010-652-06 | Sample No. | S-2 |
| Lab ID | 2010-652-06-02 | Soil Color | **DARK GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 835 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 568.35 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 519.12 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 255.06 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 49.23 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 264.06 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **18.6** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 264.06 |
| Dry Weight - 3/4" Sample (gm) | 238.2 | Weight of minus #200 material (gm) | 25.91 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 238.15 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.07 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 0.75 | 0.3 | 0.3 | 99.7 | **99.7** |
| #20 | 0.850 | 2.73 | 1.0 | 1.3 | 98.7 | **98.7** |
| #40 | 0.425 | 5.31 | 2.0 | 3.4 | 96.6 | **96.6** |
| #60 | 0.250 | 47.92 | 18.1 | 21.5 | 78.5 | **78.5** |
| #140 | 0.106 | 157.69 | 59.7 | 81.2 | 18.8 | **18.8** |
| #200 | 0.075 | 23.68 | 9.0 | 90.2 | 9.8 | **9.8** |
| Pan | - | 25.91 | 9.8 | 100.0 | - | - |

Tested By SD Date 5/21/2010 Checked By GEM Date 5-21-10



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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW EXP. |
| Client Reference | DARE CO. C&D LF | Depth (ft) | 7-10 |
| Project No. | 2010-652-06 | Sample No. | S-3 |
| Lab ID | 2010-652-06-03 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

| | | | | | |
|---|---|---|---|---|---|
| ***USCS Symbol*** | ***SP, TESTED (NON PLASTIC FINES)*** | **D60 =** | **0.2** | **CC =** | **0.9** |
| ***USCS Classification*** | ***POORLY GRADED SAND*** | **D30 =** | **0.1** | **CU =** | **2.0** |
| | | **D10 =** | **0.1** | | |

Tested By SD Date 5/20/2010 Checked By GM Date 5-21-10



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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW EXP. |
| Client Reference | DARE CO. C&D LF | Depth (ft) | 7-10 |
| Project No. | 2010-652-06 | Sample No. | S-3 |
| Lab ID | 2010-652-06-03 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 831 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 681.08 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 598.40 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 262.37 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 82.68 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 336.03 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **24.6** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 336.03 |
| Dry Weight - 3/4" Sample (gm) | 323.3 | Weight of minus #200 material (gm) | 12.70 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 323.33 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 0.63 | 0.2 | 0.2 | 99.8 | **99.8** |
| #20 | 0.850 | 5.69 | 1.7 | 1.9 | 98.1 | **98.1** |
| #40 | 0.425 | 8.70 | 2.6 | 4.5 | 95.5 | **95.5** |
| #60 | 0.250 | 89.08 | 26.5 | 31.0 | 69.0 | **69.0** |
| #140 | 0.106 | 204.93 | 61.0 | 92.0 | 8.0 | **8.0** |
| #200 | 0.075 | 14.30 | 4.3 | 96.2 | 3.8 | **3.8** |
| Pan | - | 12.70 | 3.8 | 100.0 | - | **-** |

Tested By SD Date 5/20/2010 Checked By Gem Date 5-21-10



**DCN: CT-S3C DATE 6-25-98 REVISION 2** *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-06-03 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW EXP. |
| Client Reference | DARE CO. C&D LF | Depth (ft) | 1-10 COMP |
| Project No. | 2010-652-06 | Sample No. | S-4 |
| Lab ID | 2010-652-06-04 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

| | | | | | |
|---|---|---|---|---|---|
| ***USCS Symbol*** | ***SP-SM, TESTED (NON PLASTIC FINES)*** | **D60 =** | **0.2** | **CC =** | **0.9** |
| ***USCS Classification*** | ***POORLY GRADED SAND WITH SILT*** | **D30 =** | **0.1** | **CU =** | **2.2** |
| | | **D10 =** | **0.1** | | |

Tested By SD Date 5/21/2010 Checked By GEM Date 5-21-10



**DCN: CT-S3C DATE 6-25-98 REVISION 2** *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-06-04 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW EXP. |
| Client Reference | DARE CO. C&D LF | Depth (ft) | 1-10 COMP |
| Project No. | 2010-652-06 | Sample No. | S-4 |
| Lab ID | 2010-652-06-04 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 842 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 628.85 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 571.26 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 255.79 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 57.59 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 315.47 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **18.3** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 315.47 |
| Dry Weight - 3/4" Sample (gm) | 298.5 | Weight of minus #200 material (gm) | 16.95 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 298.52 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 0.47 | 0.1 | 0.1 | 99.9 | **99.9** |
| #20 | 0.850 | 2.75 | 0.9 | 1.0 | 99.0 | **99.0** |
| #40 | 0.425 | 5.10 | 1.6 | 2.6 | 97.4 | **97.4** |
| #60 | 0.250 | 86.86 | 27.5 | 30.2 | 69.8 | **69.8** |
| #140 | 0.106 | 185.54 | 58.8 | 89.0 | 11.0 | **11.0** |
| #200 | 0.075 | 17.80 | 5.6 | 94.6 | 5.4 | **5.4** |
| Pan | - | 16.95 | 5.4 | 100.0 | - | **-** |

Tested By SD Date 5/21/2010 Checked By GEM Date 5-21-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-06-04 SIEVON REV 4.XLS]Sheet1*

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*INTEGRITY IN TESTING*

May 27, 2010

Project No. 2010-652-07

Mr. Ed Marks
Glover Construction
PO Box 40
Pleasant Hill, NC 27866

**Transmittal**
**Laboratory Test Results**
**Dare County C&D Landfill**

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
***Geotechnics, Inc.***

Michael P. Smith
Regional Manger

***We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.***


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# ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 2 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-01 |
| Lab ID | 2010-652-07-01 | Soil Description | **GRAY/TAN LEAN CLAY** |

***Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.*** ( Minus No. 40 sieve material, Airdried)

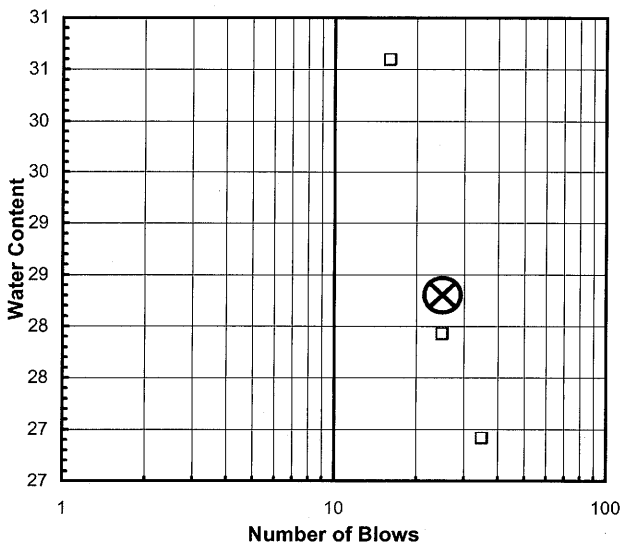
| **Liquid Limit Test** | **1** | **2** | **3** | |
|---|---|---|---|---|
| Tare Number | I | H | U | MULTIPOINT |
| Wt. of Tare & WS (gm) | 26.45 | 26.37 | 28.25 | |
| Wt. of Tare & DS (gm) | 23.81 | 23.91 | 25.47 | |
| Wt. of Tare (gm) | 15.18 | 15.10 | 15.14 | |
| Wt. of Water (gm) | 2.6 | 2.5 | 2.8 | |
| Wt. of DS (gm) | 8.6 | 8.8 | 10.3 | |
| **Moisture Content (%)** | **30.6** | **27.9** | **26.9** | |
| **Number of Blows** | **16** | **25** | **35** | |

| **Plastic Limit Test** | **1** | **2** | **Range** |
|---|---|---|---|
| Tare Number | E | O | |
| Wt. of Tare & WS (gm) | 21.27 | 21.37 | |
| Wt. of Tare & DS (gm) | 20.36 | 20.45 | |
| Wt. of Tare (gm) | 15.25 | 15.17 | |
| Wt. of Water (gm) | 0.9 | 0.9 | |
| Wt. of DS (gm) | 5.1 | 5.3 | |
| **Moisture Content (%)** | **17.8** | **17.4** | **0.4** |

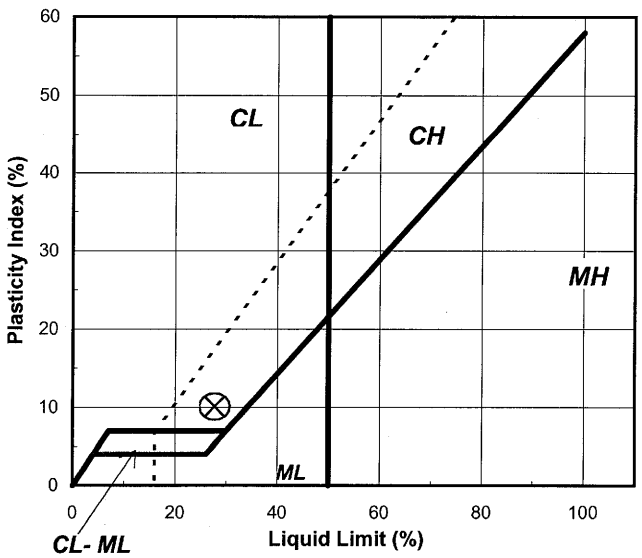
*Note: The acceptable range of the two Moisture contents is ± 2.6*

| **Test Results** | |
|---|---|
| **Liquid Limit (%)** | **28** |
| **Plastic Limit (%)** | **18** |
| **Plasticity Index (%)** | **10** |
| **USCS Symbol** | **CL** |

**Flow Curve**




**Plasticity Chart**




*Tested By* SD *Date* 5/24/2010 *Checked By,* TMS *Date* 5/25/10

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# ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 10 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-02 |
| Lab ID | 2010-652-07-02 | Soil Description | **GRAY SILT** |

***Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.*** ( Minus No. 40 sieve material, Airdried)

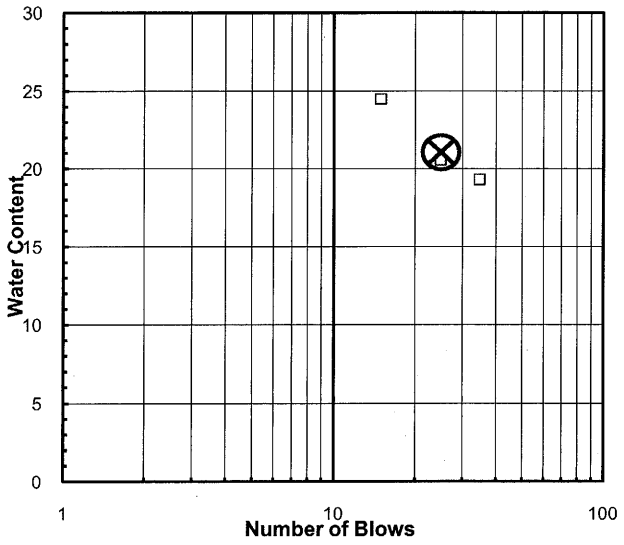
| **Liquid Limit Test** | **1** | **2** | **3** | |
|---|---|---|---|---|
| Tare Number | F | M | Q | **MULTIPOINT** |
| Wt. of Tare & WS (gm) | 28.09 | 29.19 | 30.23 | |
| Wt. of Tare & DS (gm) | 25.53 | 26.79 | 27.79 | |
| Wt. of Tare (gm) | 15.06 | 15.09 | 15.12 | |
| Wt. of Water (gm) | 2.6 | 2.4 | 2.4 | |
| Wt. of DS (gm) | 10.5 | 11.7 | 12.7 | |
| **Moisture Content (%)** | **24.5** | **20.5** | **19.3** | |
| **Number of Blows** | **15** | **25** | **35** | |

| **Plastic Limit Test** | **1** | **2** | **Range** |
|---|---|---|---|
| Tare Number | V | S | |
| Wt. of Tare & WS (gm) | 22.22 | 22.98 | |
| Wt. of Tare & DS (gm) | 21.15 | 21.77 | |
| Wt. of Tare (gm) | 15.22 | 15.14 | |
| Wt. of Water (gm) | 1.1 | 1.2 | |
| Wt. of DS (gm) | 5.9 | 6.6 | |
| **Moisture Content (%)** | **18.0** | **18.3** | **-0.2** |

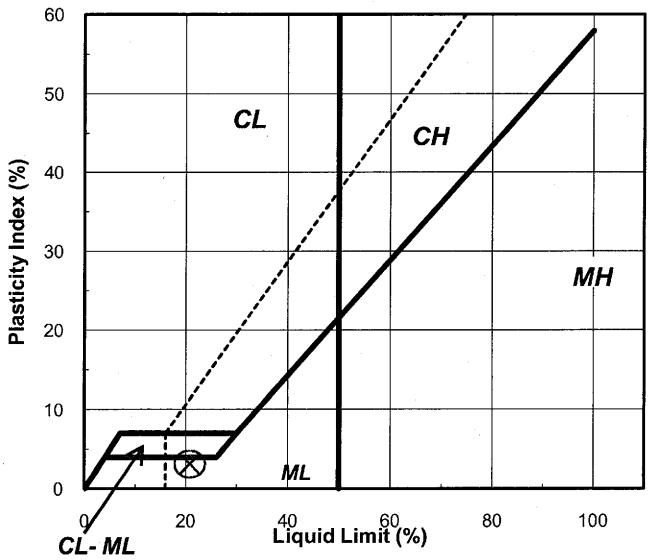
*Note: The acceptable range of the two Moisture contents is ± 2.6*

| **Test Results** | |
|---|---|
| **Liquid Limit (%)** | **21** |
| **Plastic Limit (%)** | **18** |
| **Plasticity Index (%)** | **3** |
| **USCS Symbol** | **ML** |

**Flow Curve**




**Plasticity Chart**




*Tested By* JBD *Date* 5/25/2010 *Checked By* GEM *Date* 5-26-10



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# ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 7 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-03 |
| Lab ID | 2010-652-07-03 | Soil Description | **GRAY LEAN CLAY** |

***Note: The* USCS *symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.***

( Minus No. 40 sieve material, Airdried)

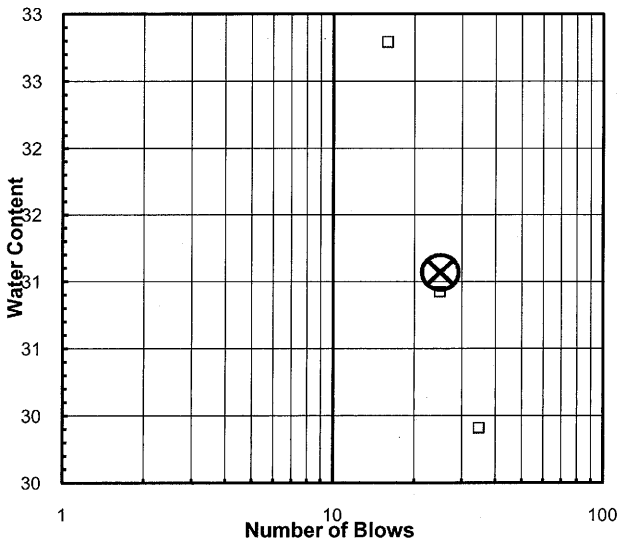
| **Liquid Limit Test** | **1** | **2** | **3** | |
|---|---|---|---|---|
| Tare Number | A-I | K-A | A-Q | MULTIPOINT |
| Wt. of Tare & WS (gm) | 26.77 | 25.61 | 26.34 | |
| Wt. of Tare & DS (gm) | 23.97 | 23.22 | 23.84 | |
| Wt. of Tare (gm) | 15.43 | 15.49 | 15.48 | |
| Wt. of Water (gm) | 2.8 | 2.4 | 2.5 | |
| Wt. of DS (gm) | 8.5 | 7.7 | 8.4 | |
| **Moisture Content (%)** | **32.8** | **30.9** | **29.9** | |
| **Number of Blows** | **16** | **25** | **35** | |

| **Plastic Limit Test** | **1** | **2** | **Range** |
|---|---|---|---|
| Tare Number | A-K | A-P | |
| Wt. of Tare & WS (gm) | 21.88 | 21.82 | |
| Wt. of Tare & DS (gm) | 20.94 | 20.91 | |
| Wt. of Tare (gm) | 15.50 | 15.55 | |
| Wt. of Water (gm) | 0.9 | 0.9 | |
| Wt. of DS (gm) | 5.4 | 5.4 | |
| **Moisture Content (%)** | **17.3** | **17.0** | **0.3** |

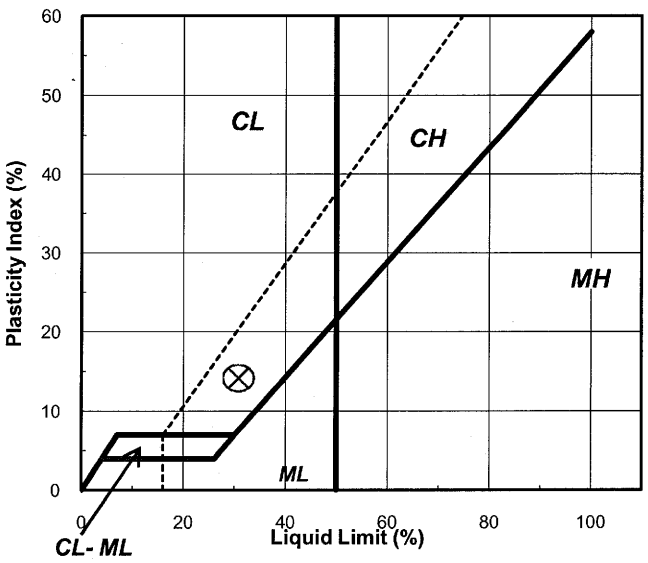
*Note: The acceptable range of the two Moisture contents is ± 2.6*

| **Test Results** | |
|---|---|
| **Liquid Limit (%)** | **31** |
| **Plastic Limit (%)** | **17** |
| **Plasticity Index (%)** | **14** |
| **USCS Symbol** | **CL** |

**Flow Curve**




**Plasticity Chart**




*Tested By* SD *Date* 5/25/2010 *Checked By* GDM *Date* 5-26-10



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# ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 6 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-04 |
| Lab ID | 2010-652-07-04 | Soil Description | **GRAY SILTY CLAY** |

***Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.*** ( Minus No. 40 sieve material, Airdried)

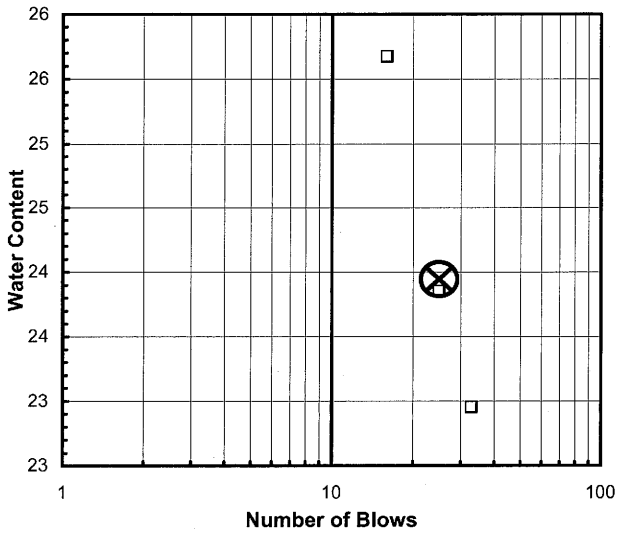
| **Liquid Limit Test** | **1** | **2** | **3** | |
|---|---|---|---|---|
| Tare Number | F | M | Q | MULTIPOINT |
| Wt. of Tare & WS (gm) | 31.90 | 28.54 | 32.37 | |
| Wt. of Tare & DS (gm) | 28.46 | 25.95 | 29.15 | |
| Wt. of Tare (gm) | 15.06 | 15.09 | 15.12 | |
| Wt. of Water (gm) | 3.4 | 2.6 | 3.2 | |
| Wt. of DS (gm) | 13.4 | 10.9 | 14.0 | |
| **Moisture Content (%)** | **25.7** | **23.8** | **23.0** | |
| **Number of Blows** | **16** | **25** | **33** | |

| **Plastic Limit Test** | **1** | **2** | **Range** |
|---|---|---|---|
| Tare Number | V | S | |
| Wt. of Tare & WS (gm) | 21.86 | 22.07 | |
| Wt. of Tare & DS (gm) | 20.76 | 20.91 | |
| Wt. of Tare (gm) | 15.22 | 15.16 | |
| Wt. of Water (gm) | 1.1 | 1.2 | |
| Wt. of DS (gm) | 5.5 | 5.8 | |
| **Moisture Content (%)** | **19.9** | **20.2** | **-0.3** |

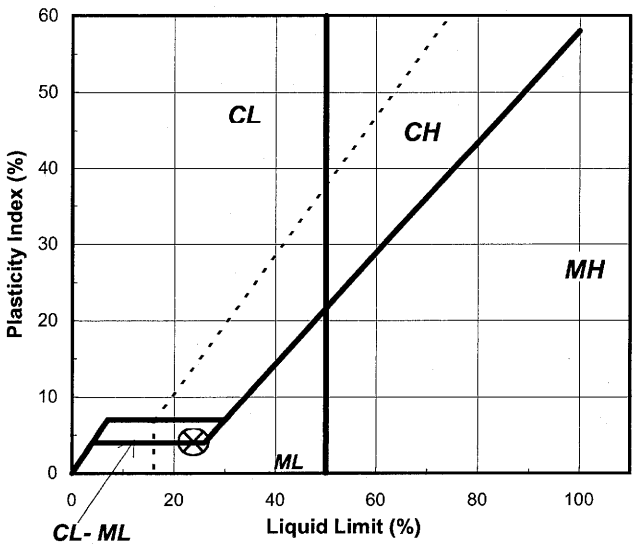
*Note: The acceptable range of the two Moisture contents is ± 2.6*

| **Test Results** | |
|---|---|
| **Liquid Limit (%)** | **24** |
| **Plastic Limit (%)** | **20** |
| **Plasticity Index (%)** | **4** |
| **USCS Symbol** | **CL-ML** |

**Flow Curve**




**Plasticity Chart**




*Tested By* SD *Date* 5/26/2010 *Checked By* GCM *Date* 5-27-10



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# ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 14 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-05 |
| Lab ID | 2010-652-07-05 | Soil Description | **GRAY SILTY CLAY** |

***Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.***

( Minus No. 40 sieve material, Airdried)

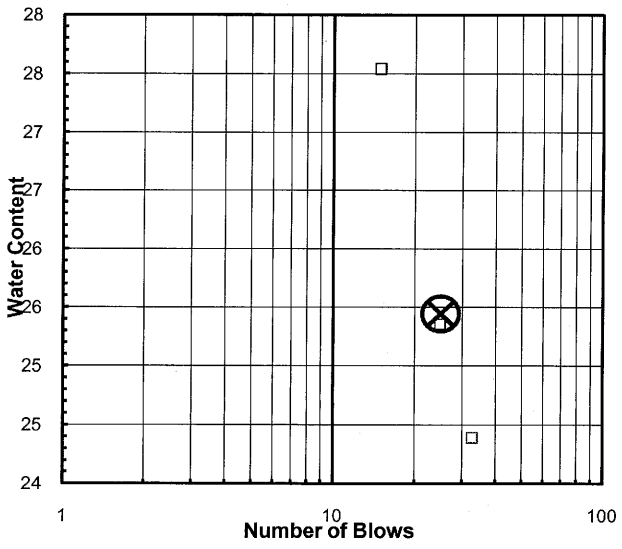
| **Liquid Limit Test** | **1** | **2** | **3** | |
|---|---|---|---|---|
| Tare Number | I | H | U | **MULTIPOINT** |
| Wt. of Tare & WS (gm) | 28.41 | 32.27 | 28.25 | |
| Wt. of Tare & DS (gm) | 25.56 | 28.80 | 25.68 | |
| Wt. of Tare (gm) | 15.21 | 15.11 | 15.14 | |
| Wt. of Water (gm) | 2.9 | 3.5 | 2.6 | |
| Wt. of DS (gm) | 10.4 | 13.7 | 10.5 | |
| **Moisture Content (%)** | **27.5** | **25.3** | **24.4** | |
| **Number of Blows** | **15** | **25** | **33** | |

| **Plastic Limit Test** | **1** | **2** | **Range** |
|---|---|---|---|
| Tare Number | E | O | |
| Wt. of Tare & WS (gm) | 21.50 | 21.84 | |
| Wt. of Tare & DS (gm) | 20.51 | 20.77 | |
| Wt. of Tare (gm) | 15.25 | 15.16 | |
| Wt. of Water (gm) | 1.0 | 1.1 | |
| Wt. of DS (gm) | 5.3 | 5.6 | |
| **Moisture Content (%)** | **18.8** | **19.1** | **-0.3** |

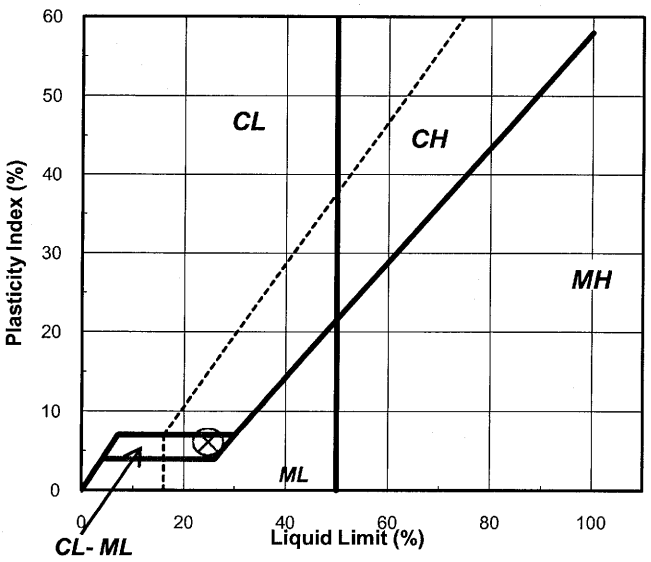
*Note: The acceptable range of the two Moisture contents is ± 2.6*

| **Test Results** | |
|---|---|
| **Liquid Limit (%)** | **25** |
| **Plastic Limit (%)** | **19** |
| **Plasticity Index (%)** | **6** |
| **USCS Symbol** | **CL-ML** |

**Flow Curve**




**Plasticity Chart**




*Tested By* SD *Date* 5/25/2010 *Checked By* GEM *Date* 5-26-10

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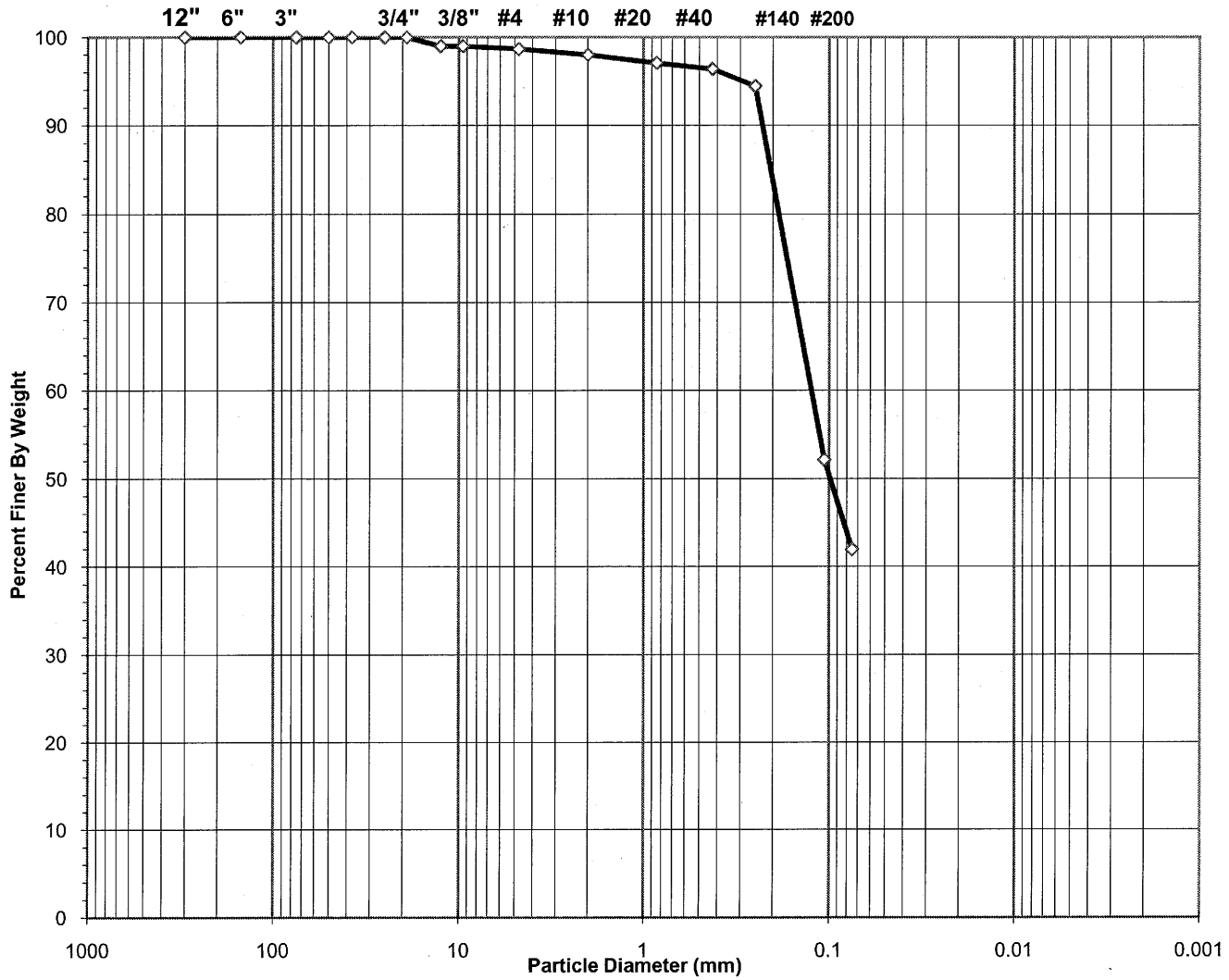
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 2 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-01 |
| Lab ID | 2010-652-07-01 | Soil Color | **GRAY** |

| | *SIEVE ANALYSIS* | | *HYDROMETER* |
|---|---|---|---|
| ***USCS*** | **gravel** | **sand** | **silt and clay** |




***USCS Symbol*** ***SC, TESTED***

***USCS Classification*** ***CLAYEY SAND***

Tested By SD Date 5/26/2010 Checked By Gam Date 5-26-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *G:\GLOVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-07-01 SIEVON REV 4.xls]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 2 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-01 |
| Lab ID | 2010-652-07-01 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 212 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 658.65 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 558.47 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 171.50 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 100.18 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 386.97 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **25.9** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 386.97 |
| Dry Weight - 3/4" Sample (gm) | NA | Weight of minus #200 material (gm) | 162.29 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 224.68 |
| Dry Weight + 3/4" Sample (gm) | NA | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 3.87 | 1.0 | 1.0 | 99.0 | **99.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 1.0 | 99.0 | **99.0** |
| #4 | 4.75 | 1.22 | 0.3 | 1.3 | 98.7 | **98.7** |
| #10 | 2.00 | 2.63 | 0.7 | 2.0 | 98.0 | **98.0** |
| #20 | 0.850 | 3.64 | 0.9 | 2.9 | 97.1 | **97.1** |
| #40 | 0.425 | 2.64 | 0.7 | 3.6 | 96.4 | **96.4** |
| #60 | 0.250 | 7.44 | 1.9 | 5.5 | 94.5 | **94.5** |
| #140 | 0.106 | 163.78 | 42.3 | 47.9 | 52.1 | **52.1** |
| #200 | 0.075 | 39.46 | 10.2 | 58.1 | 41.9 | **41.9** |
| Pan | - | 162.29 | 41.9 | 100.0 | - | **-** |

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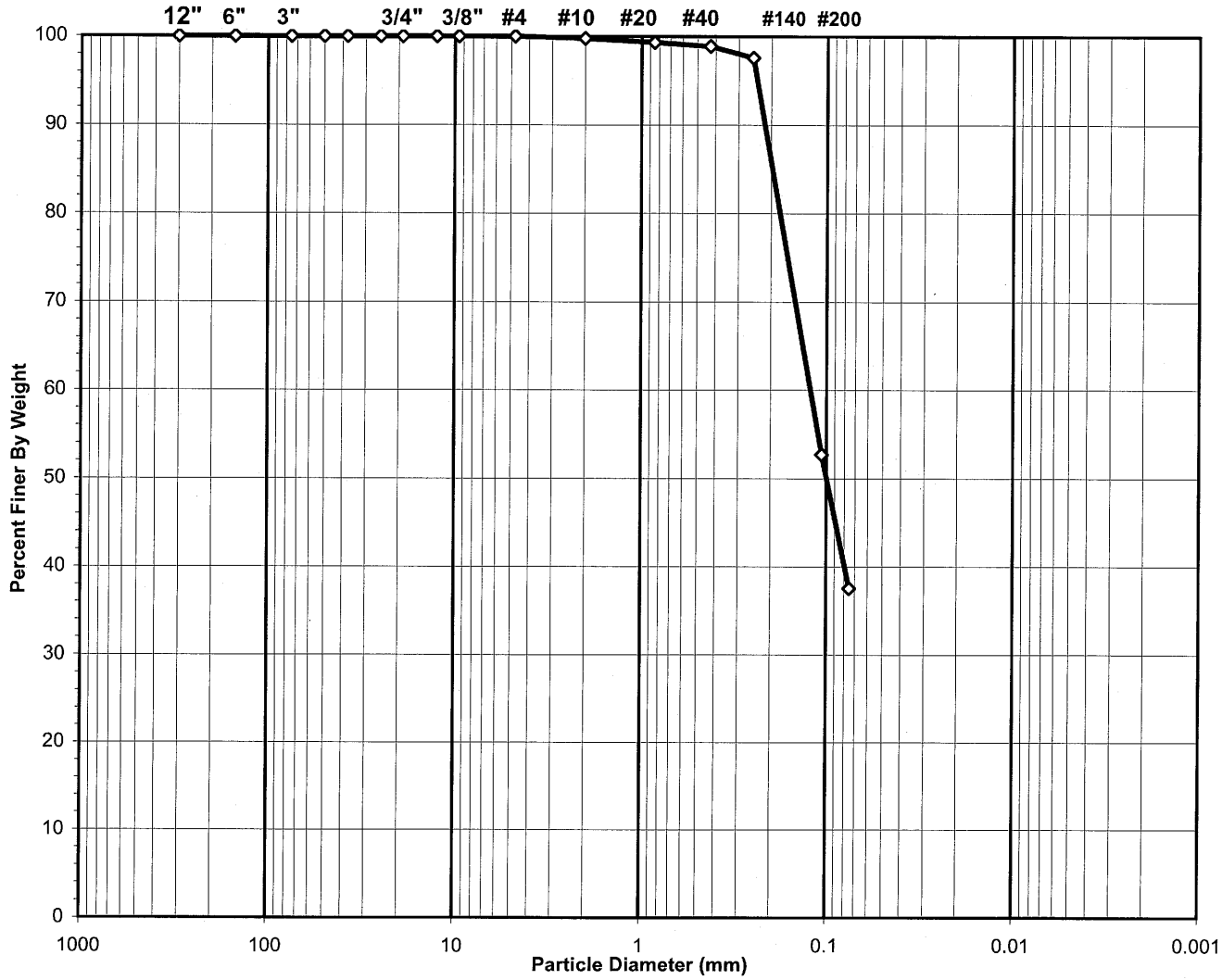
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 10 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-02 |
| Lab ID | 2010-652-07-02 | Soil Color | **GRAY** |

| USCS | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| | gravel | sand | silt and clay |




***USCS Symbol*** ***SM, TESTED***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 5/26/2010 Checked By GZM Date 5-26-10



**DCN: CT-S3C DATE 6-25-98 REVISION 2** *S:\server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-07-02 SIEVON REV 4.xls]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 10 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-02 |
| Lab ID | 2010-652-07-02 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 202 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 724.57 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 653.00 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 197.38 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 71.57 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 455.62 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **15.7** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 455.62 |
| Dry Weight - 3/4" Sample (gm) | NA | Weight of minus #200 material (gm) | 170.86 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 284.76 |
| Dry Weight + 3/4" Sample (gm) | NA | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 1.05 | 0.2 | 0.2 | 99.8 | **99.8** |
| #20 | 0.850 | 2.08 | 0.5 | 0.7 | 99.3 | **99.3** |
| #40 | 0.425 | 1.97 | 0.4 | 1.1 | 98.9 | **98.9** |
| #60 | 0.250 | 5.98 | 1.3 | 2.4 | 97.6 | **97.6** |
| #140 | 0.106 | 204.61 | 44.9 | 47.3 | 52.7 | **52.7** |
| #200 | 0.075 | 69.07 | 15.2 | 62.5 | 37.5 | **37.5** |
| Pan | - | 170.86 | 37.5 | 100.0 | - | - |

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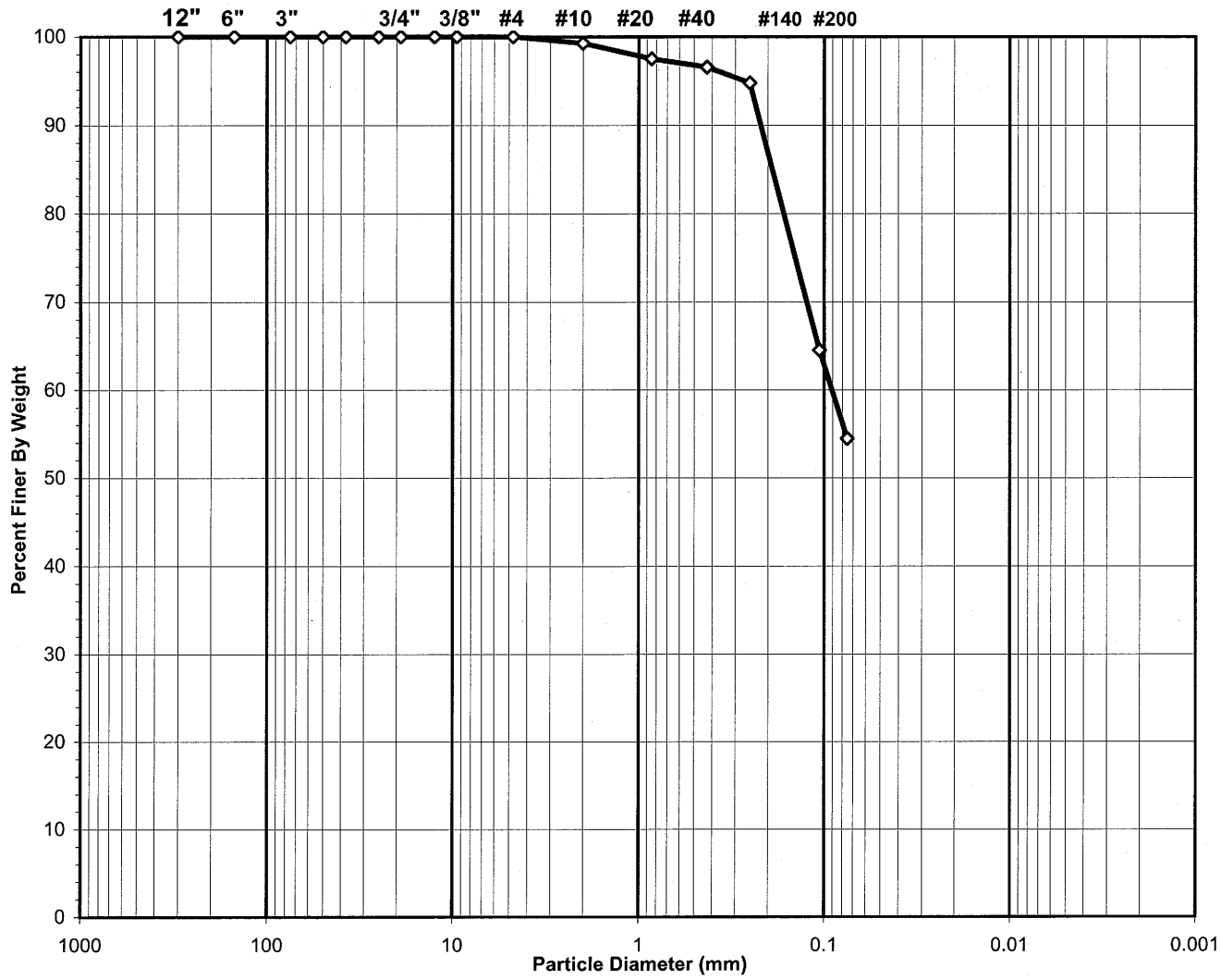
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 7 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-03 |
| Lab ID | 2010-652-07-03 | Soil Color | **GRAY** |

| | *SIEVE ANALYSIS* | | *HYDROMETER* |
|---|---|---|---|
| ***USCS*** | **gravel** | **sand** | **silt and clay** |




***USCS Symbol*** ***CL, TESTED***

***USCS Classification*** ***SANDY LEAN CLAY***

Tested By SD Date 5/26/2010 Checked By Gem Date 5-26-10



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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 7 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-03 |
| Lab ID | 2010-652-07-03 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 211 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 658.61 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 593.71 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 171.16 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 64.90 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 422.55 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **15.4** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 422.55 |
| Dry Weight - 3/4" Sample (gm) | NA | Weight of minus #200 material (gm) | 230.03 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 192.52 |
| Dry Weight + 3/4" Sample (gm) | NA | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 3.13 | 0.7 | 0.7 | 99.3 | **99.3** |
| #20 | 0.850 | 7.54 | 1.8 | 2.5 | 97.5 | **97.5** |
| #40 | 0.425 | 4.01 | 0.9 | 3.5 | 96.5 | **96.5** |
| #60 | 0.250 | 7.43 | 1.8 | 5.2 | 94.8 | **94.8** |
| #140 | 0.106 | 127.79 | 30.2 | 35.5 | 64.5 | **64.5** |
| #200 | 0.075 | 42.62 | 10.1 | 45.6 | 54.4 | **54.4** |
| Pan | - | 230.03 | 54.4 | 100.0 | - | - |

Tested By SD Date 5/26/2010 Checked By GM Date 5-26-10



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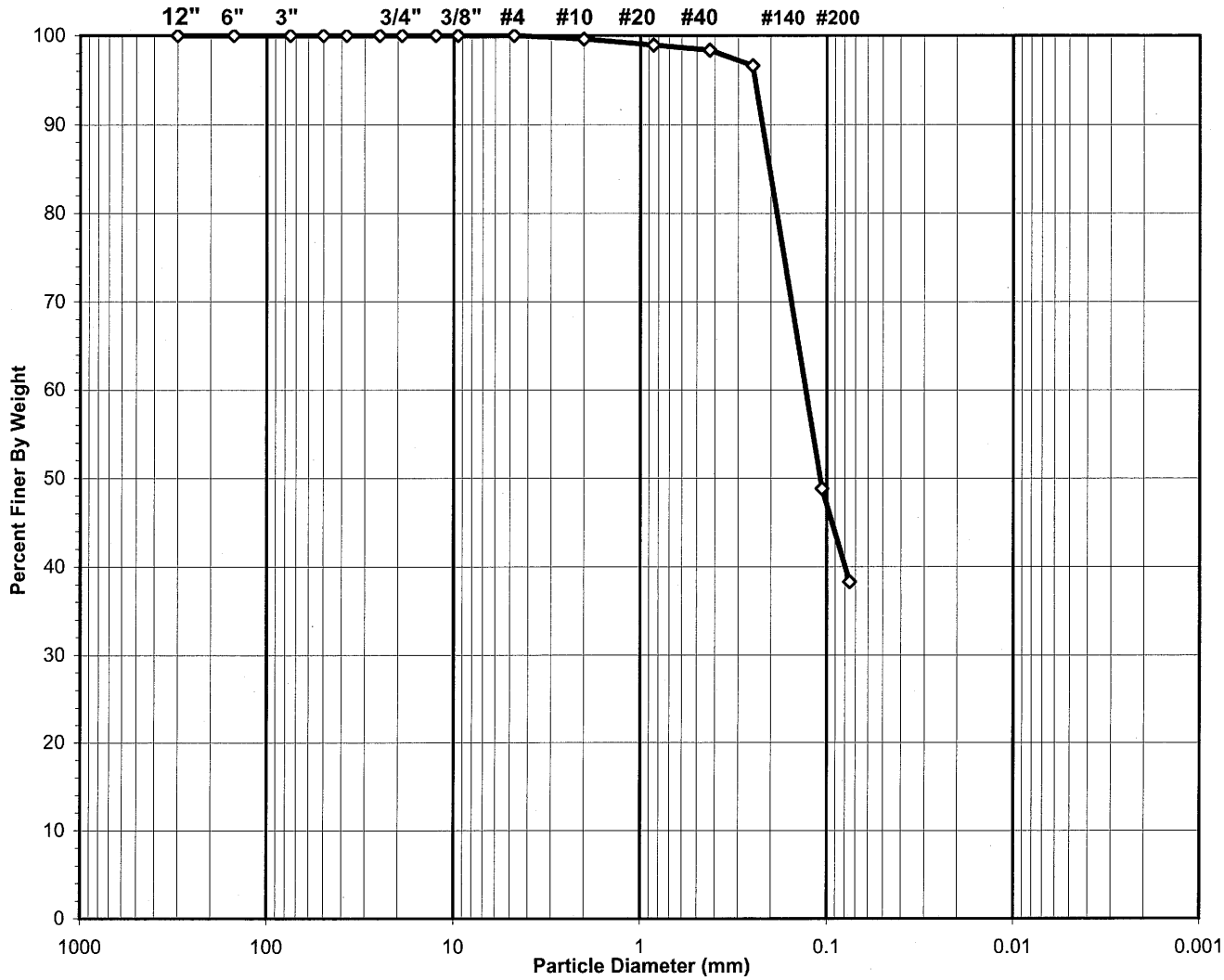
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 6 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-04 |
| Lab ID | 2010-652-07-04 | Soil Color | **GRAY** |

| | *SIEVE ANALYSIS* | | *HYDROMETER* |
|---|---|---|---|
| ***USCS*** | **gravel** | **sand** | **silt and clay** |




***USCS Symbol*** ***SC-SM, TESTED***

***USCS Classification*** ***SILTY, CLAYEY SAND***

Tested By SD Date 5/26/2010 Checked By GEM Date 5-27-10



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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 6 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-04 |
| Lab ID | 2010-652-07-04 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 217 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 802.78 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 683.78 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 171.08 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 119.00 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 512.70 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **23.2** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 512.70 |
| Dry Weight - 3/4" Sample (gm) | NA | Weight of minus #200 material (gm) | 196.33 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 316.37 |
| Dry Weight + 3/4" Sample (gm) | NA | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 2.04 | 0.4 | 0.4 | 99.6 | **99.6** |
| #20 | 0.850 | 3.52 | 0.7 | 1.1 | 98.9 | **98.9** |
| #40 | 0.425 | 2.84 | 0.6 | 1.6 | 98.4 | **98.4** |
| #60 | 0.250 | 9.06 | 1.8 | 3.4 | 96.6 | **96.6** |
| #140 | 0.106 | 245.08 | 47.8 | 51.2 | 48.8 | **48.8** |
| #200 | 0.075 | 53.83 | 10.5 | 61.7 | 38.3 | **38.3** |
| Pan | - | 196.33 | 38.3 | 100.0 | - | **-** |

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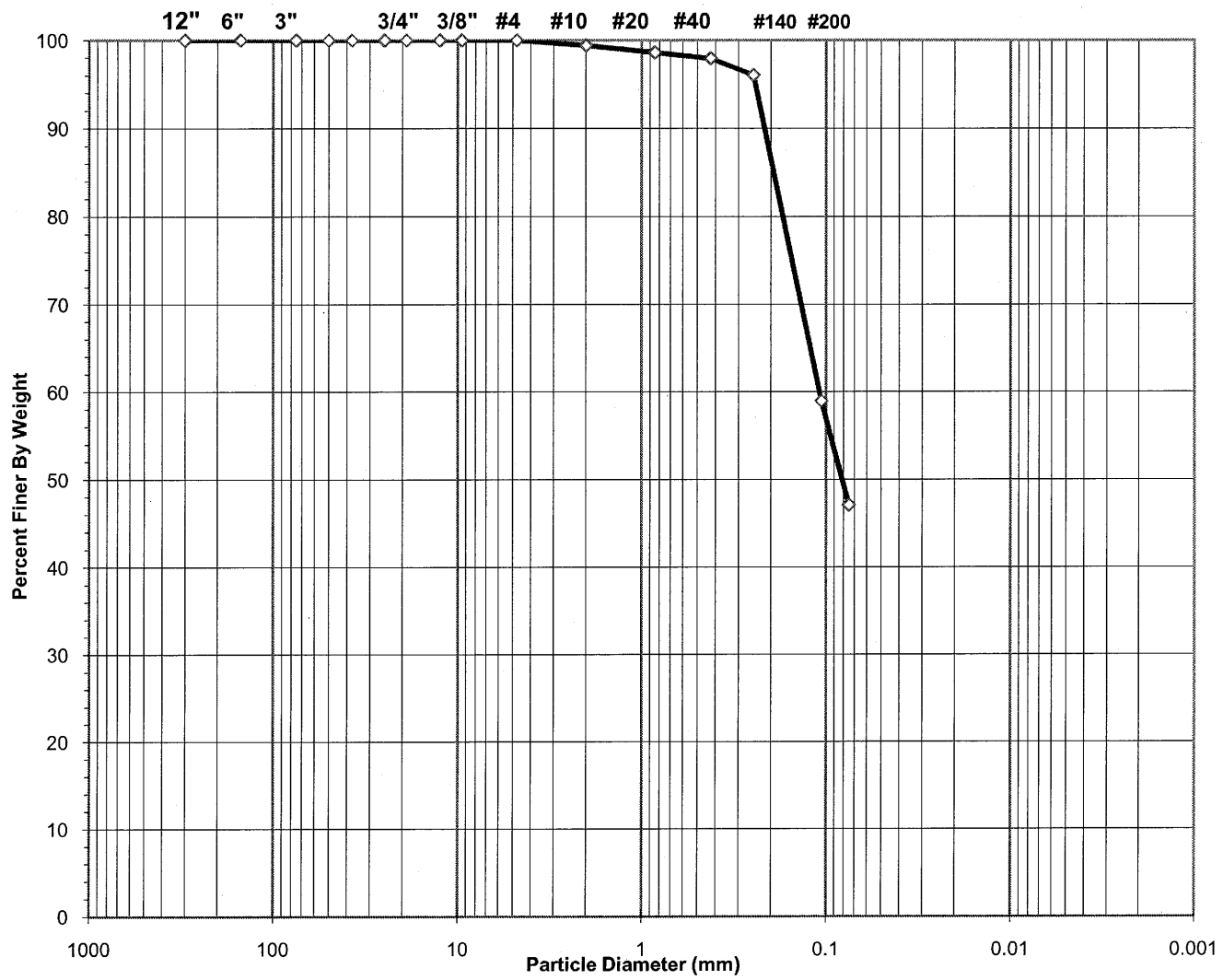
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 14 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-05 |
| Lab ID | 2010-652-07-05 | Soil Color | **GRAY** |

| | *SIEVE ANALYSIS* | | *HYDROMETER* |
|---|---|---|---|
| *USCS* | **gravel** | **sand** | **silt and clay** |




***USCS Symbol*** ***SC-SM, TESTED***

***USCS Classification*** ***SILTY, CLAYEY SAND***

Tested By SD Date 5/26/2010 Checked By GEM Date 5-26-10



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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 14 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-05 |
| Lab ID | 2010-652-07-05 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | P-12 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 662.54 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 564.24 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 196.54 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 98.30 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 367.70 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **26.7** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 367.70 |
| Dry Weight - 3/4" Sample (gm) | NA | Weight of minus #200 material (gm) | 173.15 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 194.55 |
| Dry Weight + 3/4" Sample (gm) | NA | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 2.15 | 0.6 | 0.6 | 99.4 | **99.4** |
| #20 | 0.850 | 2.90 | 0.8 | 1.4 | 98.6 | **98.6** |
| #40 | 0.425 | 2.45 | 0.7 | 2.0 | 98.0 | **98.0** |
| #60 | 0.250 | 6.95 | 1.9 | 3.9 | 96.1 | **96.1** |
| #140 | 0.106 | 136.44 | 37.1 | 41.0 | 59.0 | **59.0** |
| #200 | 0.075 | 43.66 | 11.9 | 52.9 | 47.1 | **47.1** |
| Pan | - | 173.15 | 47.1 | 100.0 | - | **-** |

Tested By SD Date 5/26/2010 Checked By GEM Date 5-26-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-07-05 SIEVON REV 4.xls]Sheet1*

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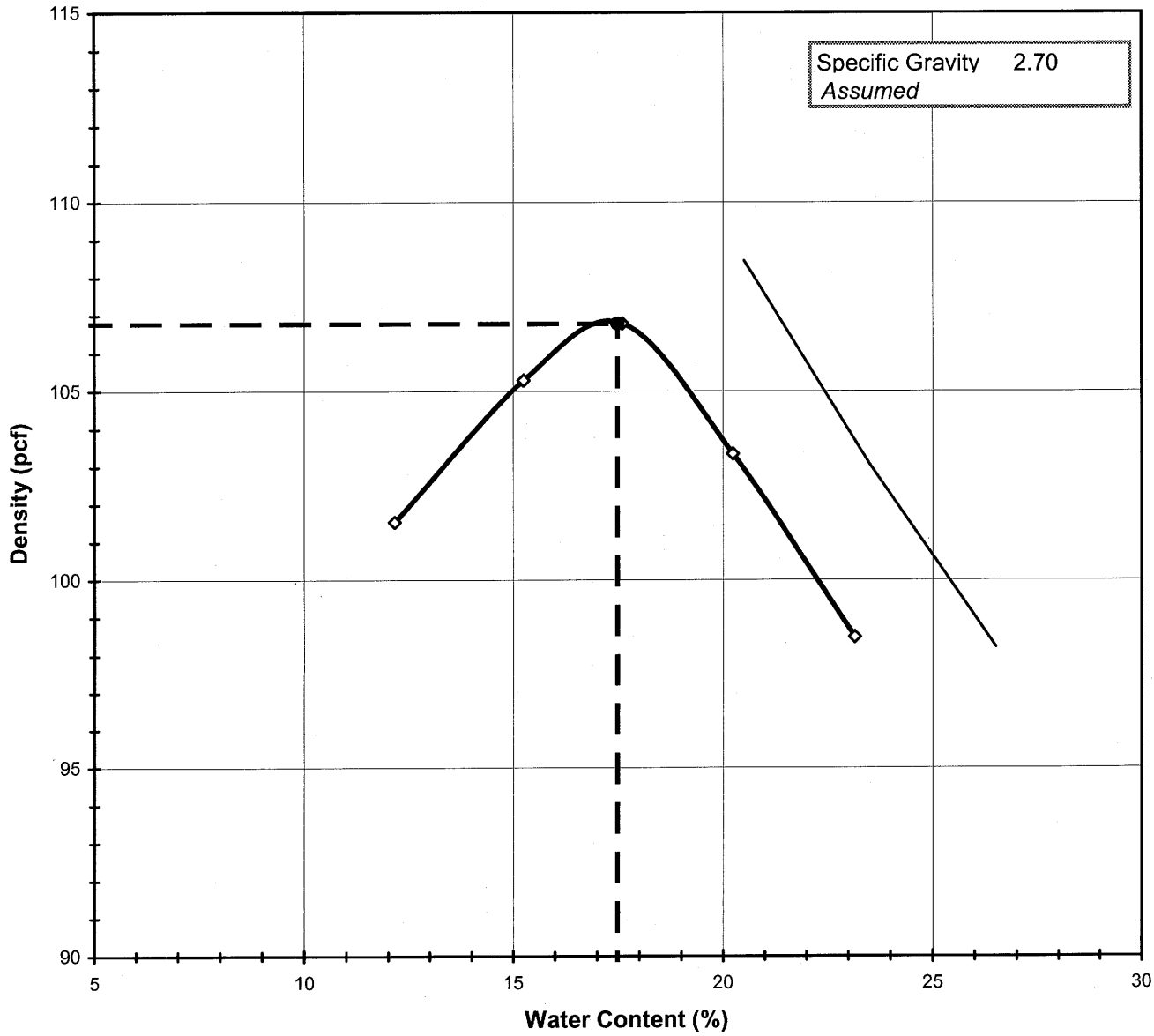
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 2 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-01 |
| Lab ID | 2010-652-07-01 | Test Method | **STANDARD** |

Visual Description GRAY CLAYEY SAND

**Optimum Water Content** **17.5**
**Maximum Dry Density** **106.8**




*Tested By* SD *Date* 5/26/2010 *Checked By* GEM *Date* 5-27-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-07-01 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 2 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-01 |
| Lab ID | 2010-652-07-01 | | |

Visual Description GRAY CLAYEY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 22921 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4310 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6028 | 6140 | 6204 | 6184 | 6139 |
| Wt.of Mold (gm) | 4310 | 4310 | 4310 | 4310 | 4310 |
| Wt. of WS | 1718 | 1830 | 1894 | 1874 | 1829 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 311 | 308 | 309 | 317 | 315 |
| Wt. of Tare & WS (gm) | 477.10 | 505.20 | 503.60 | 562.50 | 552.20 |
| Wt. of Tare & DS (gm) | 434.48 | 453.02 | 444.64 | 482.02 | 469.13 |
| Wt. of Tare (gm) | 83.90 | 110.90 | 109.60 | 84.30 | 110.30 |
| Wt. of Water (gm) | 42.62 | 52.18 | 58.96 | 80.48 | 83.07 |
| Wt. of DS (gm) | 350.58 | 342.12 | 335.04 | 397.72 | 358.83 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.83 | 1.94 | 2.01 | 1.99 | 1.94 |
| Wet Density (pcf) | 113.9 | 121.3 | 125.6 | 124.3 | 121.3 |
| **Moisture Content (%)** | **12.2** | **15.3** | **17.6** | **20.2** | **23.2** |
| **Dry Density (pcf)** | **101.5** | **105.3** | **106.8** | **103.3** | **98.5** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 20.5 | 23.5 | 26.5 |
| **Dry Unit Weight (pcf)** | 108.5 | 103.1 | 98.2 |

*Tested By* SD *Date* 5/26/2010 *Checked By* GBM *Date* 5-27-10



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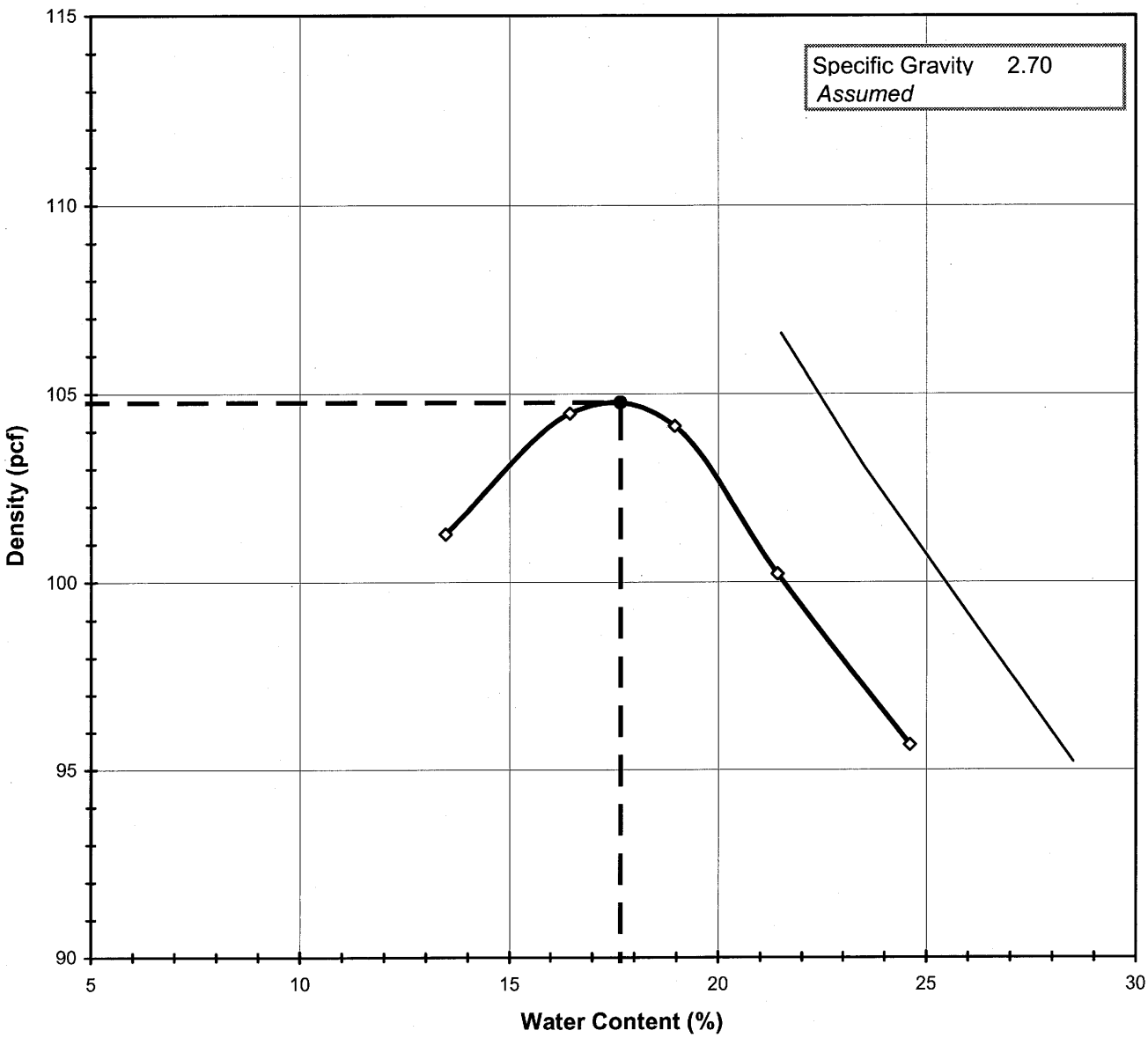
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 14 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-05 |
| Lab ID | 2010-652-07-05 | Test Method | **STANDARD** |

Visual Description GRAY SILTY CLYEY SAND

**Optimum Water Content** **17.7**
**Maximum Dry Density** **104.8**




*Tested By* *SD* *Date* *5/26/2010* *Checked By* GEM *Date* 5-27-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-07-05 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 14 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-07 | Sample No. | UPPER CF-05 |
| Lab ID | 2010-652-07-05 | | |

Visual Description GRAY SILTY CLYEY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 19427 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4310 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6043 | 6145 | 6179 | 6145 | 6108 |
| Wt.of Mold (gm) | 4310 | 4310 | 4310 | 4310 | 4310 |
| Wt. of WS | 1733 | 1835 | 1869 | 1835 | 1798 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 398 | 306 | 301 | 399 | K-7 |
| Wt. of Tare & WS (gm) | 409.00 | 476.40 | 473.30 | 512.30 | 595.10 |
| Wt. of Tare & DS (gm) | 370.46 | 421.57 | 411.30 | 437.24 | 499.62 |
| Wt. of Tare (gm) | 84.10 | 88.50 | 84.40 | 86.70 | 111.60 |
| Wt. of Water (gm) | 38.54 | 54.83 | 62.00 | 75.06 | 95.48 |
| Wt. of DS (gm) | 286.36 | 333.07 | 326.90 | 350.54 | 388.02 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.84 | 1.95 | 1.99 | 1.95 | 1.91 |
| Wet Density (pcf) | 114.9 | 121.7 | 123.9 | 121.7 | 119.2 |
| **Moisture Content (%)** | **13.5** | **16.5** | **19.0** | **21.4** | **24.6** |
| **Dry Density (pcf)** | **101.3** | **104.5** | **104.1** | **100.2** | **95.7** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 21.5 | 23.5 | 28.5 |
| **Dry Unit Weight (pcf)** | 106.6 | 103.1 | 95.2 |

*Tested By* SD *Date* 5/26/2010 *Checked By* GEM *Date* 5-27-10



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June 8, 2010

Project No. 2010-652-08

Mr. Ed Marks
Glover Construction
PO Box 40
Pleasant Hill, NC 27866

**Transmittal**
**Laboratory Test Results**
**Dare County C&D Landfill**

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
***Geotechnics, Inc.***

Michael P. Smith
Regional Manger

***We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.***


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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 3 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-08 | Sample No. | UPPER CF-06 |
| Lab ID | 2010-652-08-01 | Visual Description | **GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* JBD *Date* 6/7/2010 *Checked By* GEM *Date* 6·8·10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-08-01 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 11 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-08 | Sample No. | UPPER CF-07 |
| Lab ID | 2010-652-08-02 | Soil Description | **GRAY SILT** |

***Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.*** ( Minus No. 40 sieve material, Airdried)

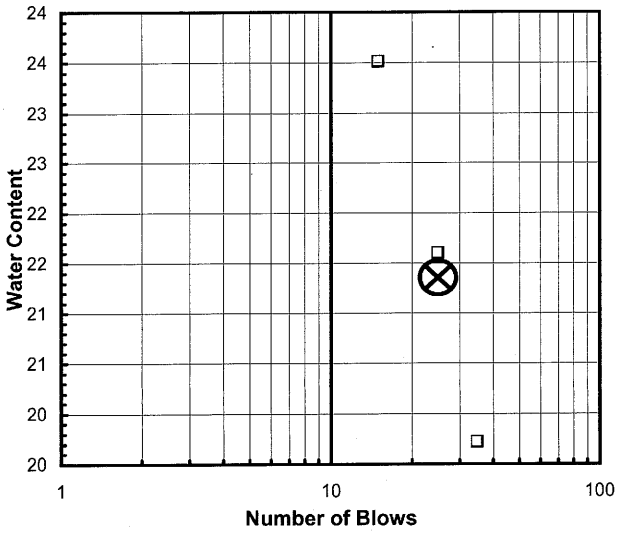
| **Liquid Limit Test** | **1** | **2** | **3** | |
|---|---|---|---|---|
| Tare Number | G | Y | W | MULTIPOINT |
| Wt. of Tare & WS (gm) | 30.18 | 33.53 | 31.37 | |
| Wt. of Tare & DS (gm) | 27.30 | 30.34 | 28.69 | |
| Wt. of Tare (gm) | 15.05 | 15.57 | 15.10 | |
| Wt. of Water (gm) | 2.9 | 3.2 | 2.7 | |
| Wt. of DS (gm) | 12.3 | 14.8 | 13.6 | |
| **Moisture Content (%)** | **23.5** | **21.6** | **19.7** | |
| **Number of Blows** | **15** | **25** | **35** | |

| **Plastic Limit Test** | **1** | **2** | **Range** |
|---|---|---|---|
| Tare Number | B | T | |
| Wt. of Tare & WS (gm) | 22.69 | 23.41 | |
| Wt. of Tare & DS (gm) | 21.55 | 22.18 | |
| Wt. of Tare (gm) | 15.15 | 15.18 | |
| Wt. of Water (gm) | 1.1 | 1.2 | |
| Wt. of DS (gm) | 6.4 | 7.0 | |
| **Moisture Content (%)** | **17.8** | **17.6** | **0.2** |

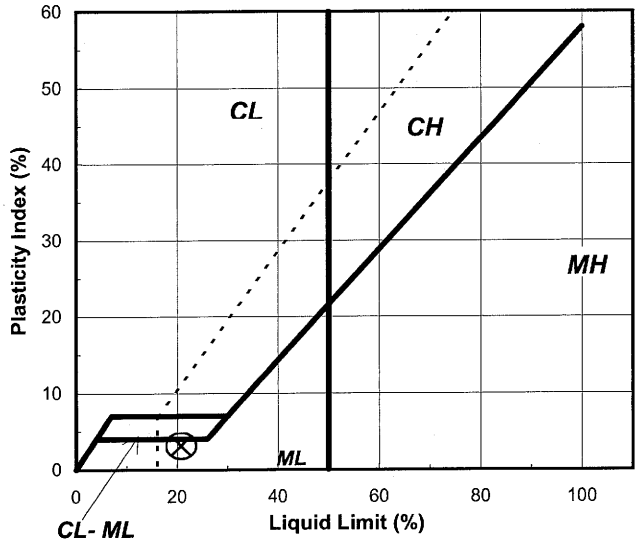
*Note: The acceptable range of the two Moisture contents is ± 2.6*

| **Test Results** | |
|---|---|
| **Liquid Limit (%)** | **21** |
| **Plastic Limit (%)** | **18** |
| **Plasticity Index (%)** | **3** |
| **USCS Symbol** | **ML** |

**Flow Curve**




**Plasticity Chart**




*Tested By* JBD *Date* 6/7/2010 *Checked By* GEM *Date* 6-8-10



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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 8 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-08 | Sample No. | UPPER CF-08 |
| Lab ID | 2010-652-08-03 | Visual Description | **GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* JBD *Date* 6/7/2010 *Checked By* GEM *Date* 6-8-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2

*\\Server\data drive\2010 PROJECTS\2010-609 R.S.G\[2010-609-08-03 Limit-(NP).xls]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 3 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-08 | Sample No. | UPPER CF-06 |
| Lab ID | 2010-652-08-01 | Soil Color | **GRAY** |

| | *SIEVE ANALYSIS* | | *HYDROMETER* |
|---|---|---|---|
| *USCS* | **gravel** | **sand** | **silt and clay** |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By DAW Date 6/4/2010 Checked By GEM Date 6-8-10


**DCN: CT-S3C DATE 6-25-98 REVISION 2** *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-08-01 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 3 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-08 | Sample No. | UPPER CF-06 |
| Lab ID | 2010-652-08-01 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 829 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 643.66 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 590.38 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 261.63 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 53.28 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 328.75 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **16.2** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 328.75 |
| Dry Weight - 3/4" Sample (gm) | 222.2 | Weight of minus #200 material (gm) | 106.53 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 222.22 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 0.13 | 0.0 | 0.0 | 100.0 | **100.0** |
| #20 | 0.850 | 2.19 | 0.7 | 0.7 | 99.3 | **99.3** |
| #40 | 0.425 | 2.35 | 0.7 | 1.4 | 98.6 | **98.6** |
| #60 | 0.250 | 11.94 | 3.6 | 5.1 | 94.9 | **94.9** |
| #140 | 0.106 | 162.86 | 49.5 | 54.6 | 45.4 | **45.4** |
| #200 | 0.075 | 42.75 | 13.0 | 67.6 | 32.4 | **32.4** |
| Pan | - | 106.53 | 32.4 | 100.0 | - | **-** |

Tested By DAW Date 6/4/2010 Checked By GCM Date 6-8-10





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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 11 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-08 | Sample No. | UPPER CF-07 |
| Lab ID | 2010-652-08-02 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 6/2/2010 Checked By GEM Date 6-8-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-08-02 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 11 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-08 | Sample No. | UPPER CF-07 |
| Lab ID | 2010-652-08-02 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 838 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 822.41 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 732.81 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 261.70 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 89.60 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 471.11 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **19.0** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 471.11 |
| Dry Weight - 3/4" Sample (gm) | 267.0 | Weight of minus #200 material (gm) | 204.11 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 267.00 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 0.41 | 0.1 | 0.1 | 99.9 | **99.9** |
| #20 | 0.850 | 1.63 | 0.3 | 0.4 | 99.6 | **99.6** |
| #40 | 0.425 | 1.67 | 0.4 | 0.8 | 99.2 | **99.2** |
| #60 | 0.250 | 5.50 | 1.2 | 2.0 | 98.0 | **98.0** |
| #140 | 0.106 | 197.34 | 41.9 | 43.8 | 56.2 | **56.2** |
| #200 | 0.075 | 60.45 | 12.8 | 56.7 | 43.3 | **43.3** |
| Pan | - | 204.11 | 43.3 | 100.0 | - | **-** |

Tested By SD Date 6/2/2010 Checked By GEM Date 6-8-10





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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 8 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-08 | Sample No. | UPPER CF-08 |
| Lab ID | 2010-652-08-03 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 6/2/2010 Checked By GZM Date 6-8-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *C:\Documents and Settings\Owner\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-08-03 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 8 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-08 | Sample No. | UPPER CF-08 |
| Lab ID | 2010-652-08-03 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 835 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 791.34 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 699.10 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 255.06 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 92.24 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 444.04 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **20.8** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 444.04 |
| Dry Weight - 3/4" Sample (gm) | 361.8 | Weight of minus #200 material (gm) | 82.28 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 361.76 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 0.92 | 0.2 | 0.2 | 99.8 | **99.8** |
| #20 | 0.850 | 1.12 | 0.3 | 0.5 | 99.5 | **99.5** |
| #40 | 0.425 | 2.00 | 0.5 | 0.9 | 99.1 | **99.1** |
| #60 | 0.250 | 32.40 | 7.3 | 8.2 | 91.8 | **91.8** |
| #140 | 0.106 | 275.48 | 62.0 | 70.2 | 29.8 | **29.8** |
| #200 | 0.075 | 49.84 | 11.2 | 81.5 | 18.5 | **18.5** |
| Pan | - | 82.28 | 18.5 | 100.0 | - | - |

Tested By SD Date 6/2/2010 Checked By GEM Date 6-8-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-08-03 SIEVON REV 4.XLS]Sheet1*

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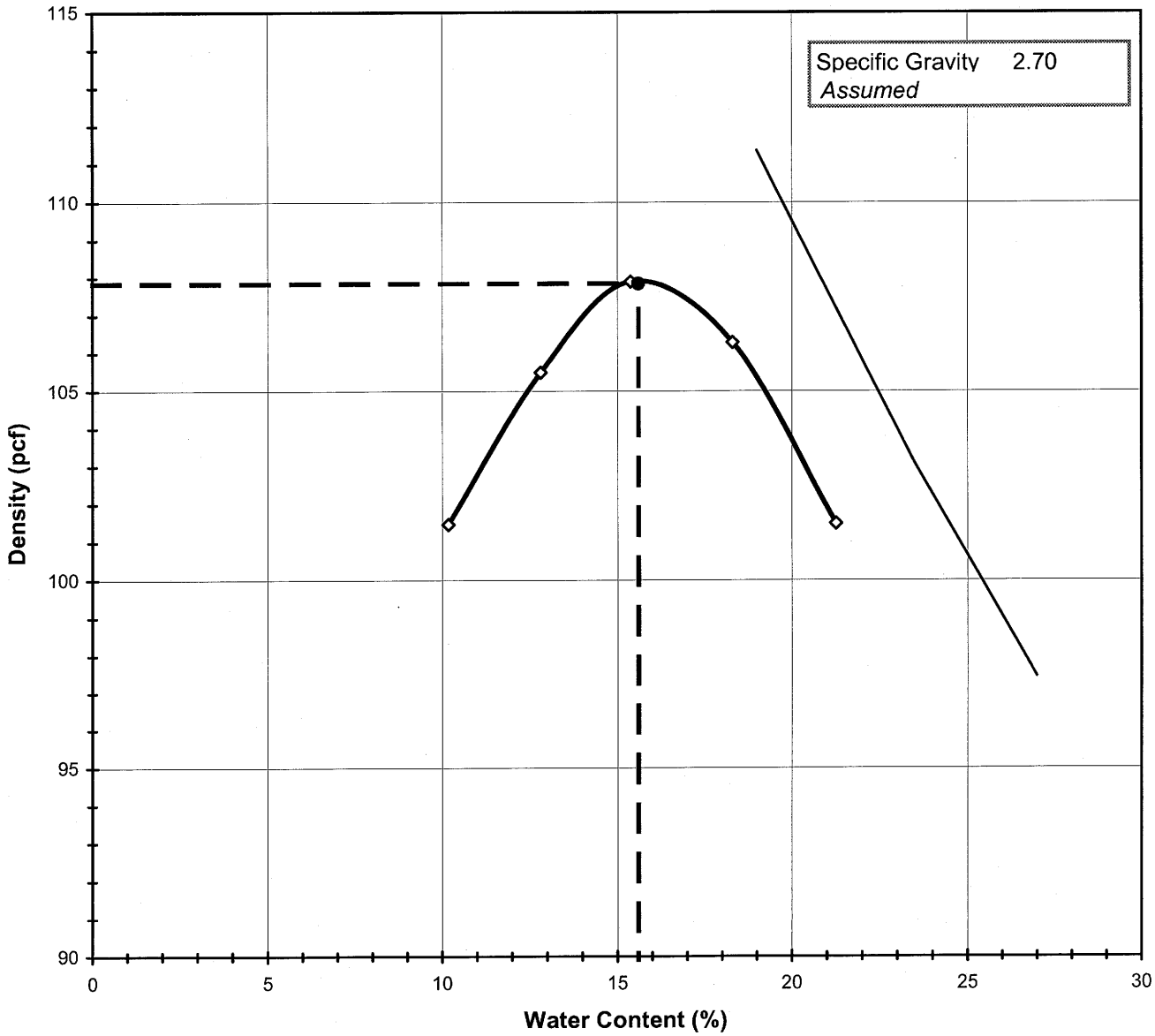
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 3 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-08 | Sample No. | UPPER CF-06 |
| Lab ID | 2010-652-08-01 | Test Method | **STANDARD** |

Visual Description GRAY SILTY SAND

**Optimum Water Content** **15.6**
**Maximum Dry Density** **107.9**




*Tested By* SD *Date* 6/3/2010 *Checked By* GEM *Date* 6-14-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-08-01 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 3 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 4 |
| Project No. | 2010-652-08 | Sample No. | UPPER CF-06 |
| Lab ID | 2010-652-08-01 | | |

Visual Description GRAY SILTY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 20813 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4309 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 5995 | 6104 | 6187 | 6206 | 6165 |
| Wt.of Mold (gm) | 4309 | 4309 | 4309 | 4309 | 4309 |
| Wt. of WS | 1686 | 1795 | 1878 | 1897 | 1856 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 398 | K-7 | 311 | 315 | 399 |
| Wt. of Tare & WS (gm) | 422.30 | 431.70 | 476.90 | 601.70 | 429.80 |
| Wt. of Tare & DS (gm) | 391.08 | 395.24 | 424.60 | 525.65 | 369.65 |
| Wt. of Tare (gm) | 84.40 | 110.80 | 84.50 | 110.20 | 86.70 |
| Wt. of Water (gm) | 31.22 | 36.46 | 52.30 | 76.05 | 60.15 |
| Wt. of DS (gm) | 306.68 | 284.44 | 340.10 | 415.45 | 282.95 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.79 | 1.91 | 2.00 | 2.02 | 1.97 |
| Wet Density (pcf) | 111.8 | 119.0 | 124.5 | 125.7 | 123.1 |
| **Moisture Content (%)** | **10.2** | **12.8** | **15.4** | **18.3** | **21.3** |
| **Dry Density (pcf)** | **101.5** | **105.5** | **107.9** | **106.3** | **101.5** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 19.0 | 23.5 | 27.0 |
| **Dry Unit Weight (pcf)** | 111.4 | 103.1 | 97.4 |

*Tested By* SD *Date* 6/3/2010 *Checked By* GEM *Date* 6-14-10



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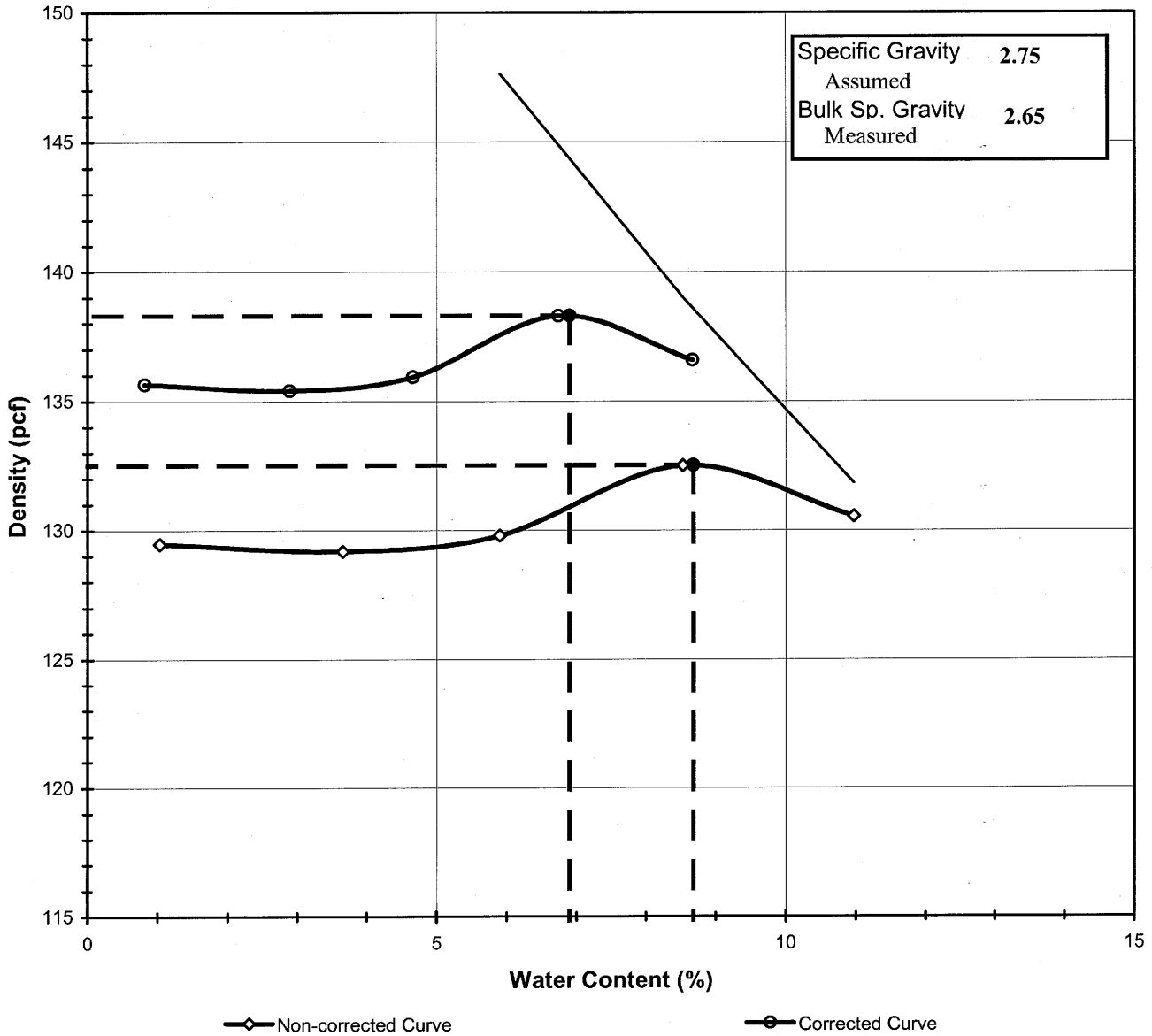
# MOISTURE - DENSITY RELATIONSHIP
## (Corrected for Oversize Particles)

*ASTM D 4718, D 698-91 (SOP-S12,S39)*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | HANSON |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-08 | Sample No. | BASE COURSE-01 |
| Lab ID | 2010-652-08-04 | Test Method | STANDARD |

Visual Description ABC STONE

| | | | |
|---|---|---|---|
| **Optimum Water Content** | **8.7** | **Corrected Water Content** | **6.9** |
| **Maximum Dry Density** | **132.5** | **Corrected Dry Density** | **138.3** |




*Tested By* SD *Date* 6/7/2010 *Checked By* GEM *Date* 6-14-10



DCN:CT-S 39 DATE:2/28/01 Revision 6 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-08-04 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP
## (Corrected for Oversize Particles)

*ASTM D 4718, D 698-91 (SOP-S12,S39)*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | HANSON |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-08 | Sample No. | BASE COURSE-01 |
| Lab ID | 2010-652-08-04 | | |

Visual Description: ABC STONE

| | |
|---|---|
| Total Weight of the Sample (gm) | NA |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity(gm/cc) | 2.75 |

| | |
|---|---|
| Percent Retained on 3/4" (Dry) | 21.00 |
| Percent Retained on 3/8" (Dry) | NA |
| Percent Retained on #4 (Dry) | NA |
| Oversize Material | Not included |
| Procedure Used | C |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | G | 174 |
| Mold ID | G | 173 |
| Mold diameter | | 6" |
| Weight of the Mold | | 5559 |
| Volume Of the Mold | | 2122 |

## Mold/Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 10007 | 10113 | 10234 | 10450 | 10485 |
| Wt.of Mold (gm) | 5559 | 5559 | 5559 | 5559 | 5559 |
| Wt. of WS | 4448 | 4554 | 4675 | 4891 | 4926 |
| Mold Volume (cc) | 2122 | 2122 | 2122 | 2122 | 2122 |

## Moisture Content/Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | K-7 | G-5 | 398 | 399 | 315 |
| Wt. of Tare & WS (gm) | 828.10 | 909.40 | 888.60 | 835.41 | 1014.20 |
| Wt. of Tare & DS (gm) | 820.76 | 882.57 | 843.75 | 776.58 | 924.88 |
| Wt. of Tare (gm) | 111.20 | 148.40 | 84.30 | 86.90 | 110.70 |
| Wt. of Water (gm) | 7.34 | 26.83 | 44.85 | 58.83 | 89.32 |
| Wt. of DS (gm) | 709.56 | 734.17 | 759.45 | 689.68 | 814.18 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 2.10 | 2.15 | 2.20 | 2.30 | 2.32 |
| Wet Density (pcf) | 130.8 | 133.9 | 137.5 | 143.8 | 144.9 |
| **Moisture Content (%)** | **1.0** | **3.7** | **5.9** | **8.5** | **11.0** |
| **Dry Density (pcf)** | **129.5** | **129.2** | **129.8** | **132.5** | **130.5** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 5.9 | 8.5 | 11.0 |
| **Dry Unit Weight (pcf)** | 147.6 | 139.0 | 131.8 |

*Tested By* SD *Date* 6/10/2010 *Checked By* GBM *Date* 6-14-10



DCN:CT-S 39 DATE:2/28/01 Revision 6 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-08-04 Proctor.XLS]Sheet1*

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June 17, 2010

Project No. 2010-652-09

Mr. Ed Marks
Glover Construction
PO Box 40
Pleasant Hill, NC 27866

**Transmittal**
**Laboratory Test Results**
**Dare County C&D Landfill**

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
***Geotechnics, Inc.***

Michael P. Smith
Regional Manger

***We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.***


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# ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 9 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-09 |
| Lab ID | 2010-652-09-01 | Soil Description | **GRAY LEAN CLAY** |

***Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.*** ( Minus No. 40 sieve material, Airdried)

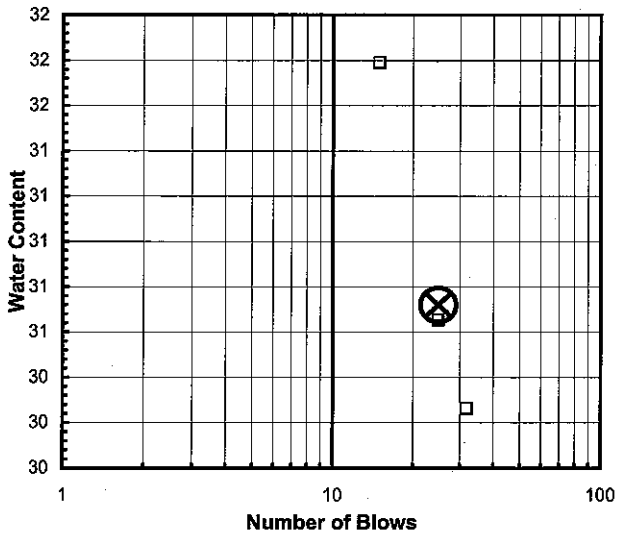
| **Liquid Limit Test** | **1** | **2** | **3** | |
|---|---|---|---|---|
| Tare Number | J | L | A | MULTIPOINT |
| Wt. of Tare & WS (gm) | 25.06 | 26.24 | 25.22 | |
| Wt. of Tare & DS (gm) | 22.66 | 23.65 | 22.89 | |
| Wt. of Tare (gm) | 15.11 | 15.20 | 15.19 | |
| Wt. of Water (gm) | 2.4 | 2.6 | 2.3 | |
| Wt. of DS (gm) | 7.6 | 8.5 | 7.7 | |
| **Moisture Content (%)** | **31.8** | **30.7** | **30.3** | |
| **Number of Blows** | **15** | **25** | **32** | |

| **Plastic Limit Test** | **1** | **2** | **Range** |
|---|---|---|---|
| Tare Number | U | S | |
| Wt. of Tare & WS (gm) | 21.73 | 21.38 | |
| Wt. of Tare & DS (gm) | 20.78 | 20.50 | |
| Wt. of Tare (gm) | 15.15 | 15.16 | |
| Wt. of Water (gm) | 0.9 | 0.9 | |
| Wt. of DS (gm) | 5.6 | 5.3 | |
| **Moisture Content (%)** | **16.9** | **16.5** | **0.4** |

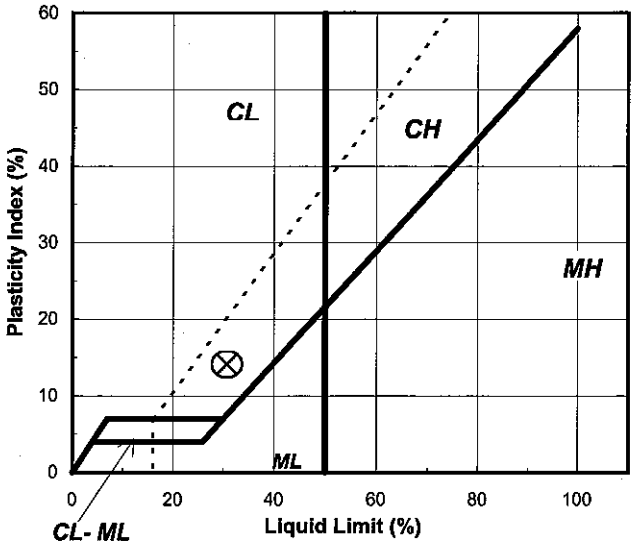
*Note: The acceptable range of the two Moisture contents is ± 2.6*

| **Test Results** | |
|---|---|
| **Liquid Limit (%)** | **31** |
| **Plastic Limit (%)** | **17** |
| **Plasticity Index (%)** | **14** |
| **USCS Symbol** | **CL** |

**Flow Curve**




**Plasticity Chart**

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 15 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-10 |
| Lab ID | 2010-652-09-02 | Visual Description | **GRAY** |

( Minus No. 40 sieve material, Wet Method)

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 6/11/2010 *Checked By* GZM *Date* 6-14-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2

*\\Server\data drive\Data Sheets\[Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 1 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-11 |
| Lab ID | 2010-652-09-03 | Soil Description | **GRAY LEAN CLAY** |

***Note: The* USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.** ( Minus No. 40 sieve material, Airdried)

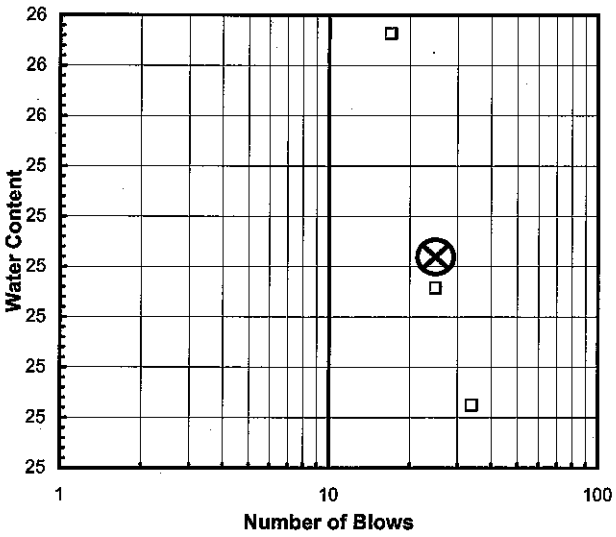
| **Liquid Limit Test** | **1** | **2** | **3** | |
|---|---|---|---|---|
| Tare Number | B | G | Y | **MULTIPOINT** |
| Wt. of Tare & WS (gm) | 27.49 | 27.04 | 27.74 | |
| Wt. of Tare & DS (gm) | 24.97 | 24.62 | 25.31 | |
| Wt. of Tare (gm) | 15.15 | 15.00 | 15.56 | |
| Wt. of Water (gm) | 2.5 | 2.4 | 2.4 | |
| Wt. of DS (gm) | 9.8 | 9.6 | 9.8 | |
| **Moisture Content (%)** | **25.7** | **25.2** | **24.9** | |
| **Number of Blows** | **17** | **25** | **34** | |

| **Plastic Limit Test** | **1** | **2** | **Range** |
|---|---|---|---|
| Tare Number | T | W | |
| Wt. of Tare & WS (gm) | 21.41 | 21.13 | |
| Wt. of Tare & DS (gm) | 20.56 | 20.32 | |
| Wt. of Tare (gm) | 15.17 | 15.11 | |
| Wt. of Water (gm) | 0.9 | 0.8 | |
| Wt. of DS (gm) | 5.4 | 5.2 | |
| **Moisture Content (%)** | **15.8** | **15.5** | **0.2** |

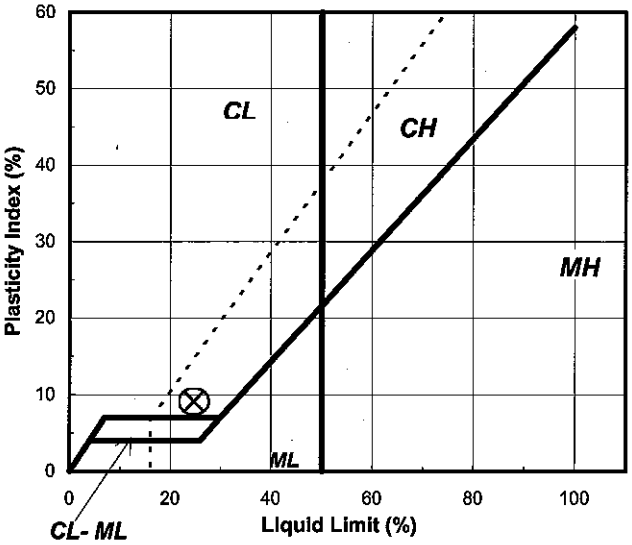
*Note: The acceptable range of the two Moisture contents is ± 2.6*

| **Test Results** | |
|---|---|
| **Liquid Limit (%)** | **25** |
| **Plastic Limit (%)** | **16** |
| **Plasticity Index (%)** | **9** |
| **USCS Symbol** | **CL** |

**Flow Curve**




**Plasticity Chart**

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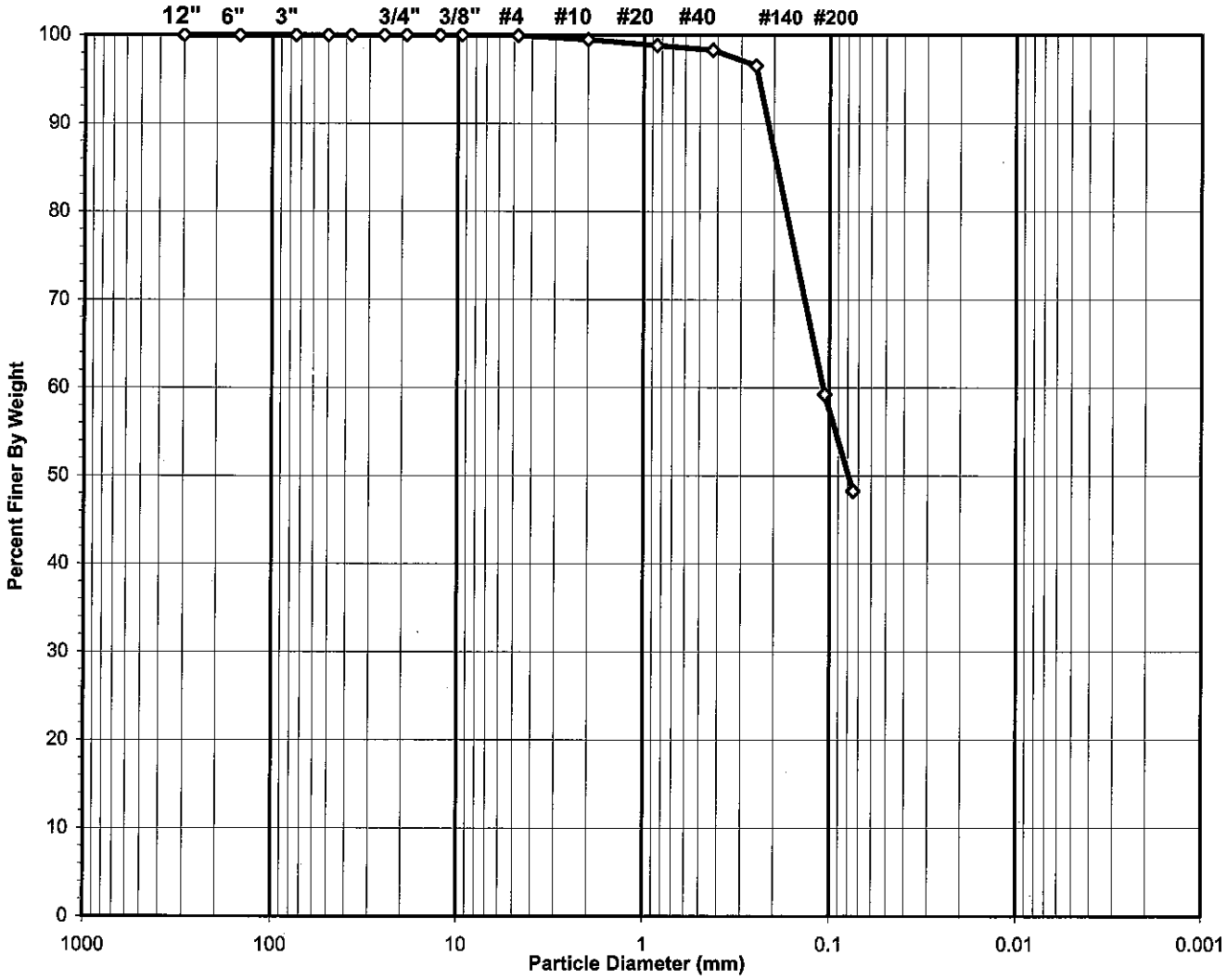
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 9 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-09 |
| Lab ID | 2010-652-09-01 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |




***USCS Symbol*** ***SC, TESTED***

***USCS Classification*** ***CLAYEY SAND***

Tested By SD Date 6/9/2010 Checked By GEM Date 6-11-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-09-01 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 9 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-09 |
| Lab ID | 2010-652-09-01 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 216 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 775.14 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 653.53 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 170.78 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 121.61 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 482.75 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **25.2** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 482.75 |
| Dry Weight - 3/4" Sample (gm) | 249.9 | Weight of minus #200 material (gm) | 232.86 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 249.89 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.35 | 0.1 | 0.1 | 99.9 | **99.9** |
| #10 | 2.00 | 2.19 | 0.5 | 0.5 | 99.5 | **99.5** |
| #20 | 0.850 | 3.22 | 0.7 | 1.2 | 98.8 | **98.8** |
| #40 | 0.425 | 2.46 | 0.5 | 1.7 | 98.3 | **98.3** |
| #60 | 0.250 | 8.55 | 1.8 | 3.5 | 96.5 | **96.5** |
| #140 | 0.106 | 180.09 | 37.3 | 40.8 | 59.2 | **59.2** |
| #200 | 0.075 | 53.03 | 11.0 | 51.8 | 48.2 | **48.2** |
| Pan | - | 232.86 | 48.2 | 100.0 | - | - |

Tested By SD Date 6/9/2010 Checked By GEM Date 6-11-10



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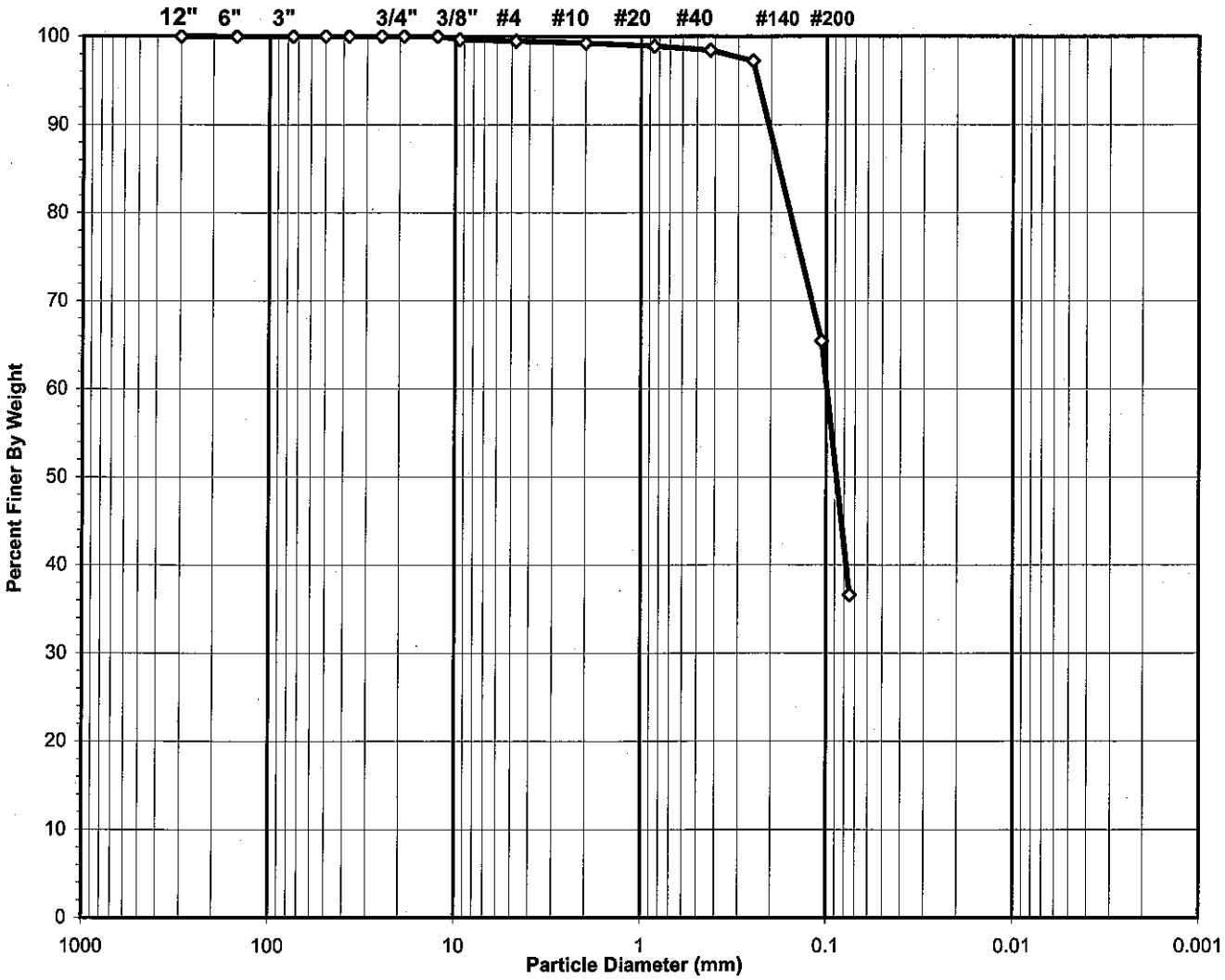
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 15 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-10 |
| Lab ID | 2010-652-09-02 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |




***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 6/10/2010 Checked By GEM Date 6-14-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Harper\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-09-02 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 15 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-10 |
| Lab ID | 2010-652-09-02 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 839 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 661.38 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 605.07 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 257.91 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 56.31 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 347.16 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **16.2** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 347.16 |
| Dry Weight - 3/4" Sample (gm) | 220.1 | Weight of minus #200 material (gm) | 127.08 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 220.08 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 1.32 | 0.4 | 0.4 | 99.6 | **99.6** |
| #4 | 4.75 | 0.49 | 0.1 | 0.5 | 99.5 | **99.5** |
| #10 | 2.00 | 0.89 | 0.3 | 0.8 | 99.2 | **99.2** |
| #20 | 0.850 | 1.13 | 0.3 | 1.1 | 98.9 | **98.9** |
| #40 | 0.425 | 1.63 | 0.5 | 1.6 | 98.4 | **98.4** |
| #60 | 0.250 | 4.18 | 1.2 | 2.8 | 97.2 | **97.2** |
| #140 | 0.106 | 110.34 | 31.8 | 34.6 | 65.4 | **65.4** |
| #200 | 0.075 | 100.10 | 28.8 | 63.4 | 36.6 | **36.6** |
| Pan | - | 127.08 | 36.6 | 100.0 | - | **-** |

Tested By SD Date 6/10/2010 Checked By GEM Date 6-14-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-09-02 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 1 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-11 |
| Lab ID | 2010-652-09-03 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***SC, TESTED***

***USCS Classification*** ***CLAYEY SAND***

Tested By SD Date 6/10/2010 Checked By GM Date 6-16-10


DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-09-03 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 1 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-11 |
| Lab ID | 2010-652-09-03 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 829 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 662.54 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 585.34 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 261.58 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 77.20 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 323.76 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **23.8** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 323.76 |
| Dry Weight - 3/4" Sample (gm) | 166.0 | Weight of minus #200 material (gm) | 157.81 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 165.95 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.24 | 0.1 | 0.1 | 99.9 | **99.9** |
| #10 | 2.00 | 1.11 | 0.3 | 0.4 | 99.6 | **99.6** |
| #20 | 0.850 | 1.74 | 0.5 | 1.0 | 99.0 | **99.0** |
| #40 | 0.425 | 1.84 | 0.6 | 1.5 | 98.5 | **98.5** |
| #60 | 0.250 | 5.65 | 1.7 | 3.3 | 96.7 | **96.7** |
| #140 | 0.106 | 115.04 | 35.5 | 38.8 | 61.2 | **61.2** |
| #200 | 0.075 | 40.33 | 12.5 | 51.3 | 48.7 | **48.7** |
| Pan | - | 157.81 | 48.7 | 100.0 | - | - |

Tested By SD Date 6/10/2010 Checked By Gem Date 6-16-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *er\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-09-03 SIEVON REV 4.XLS]Sheet1*

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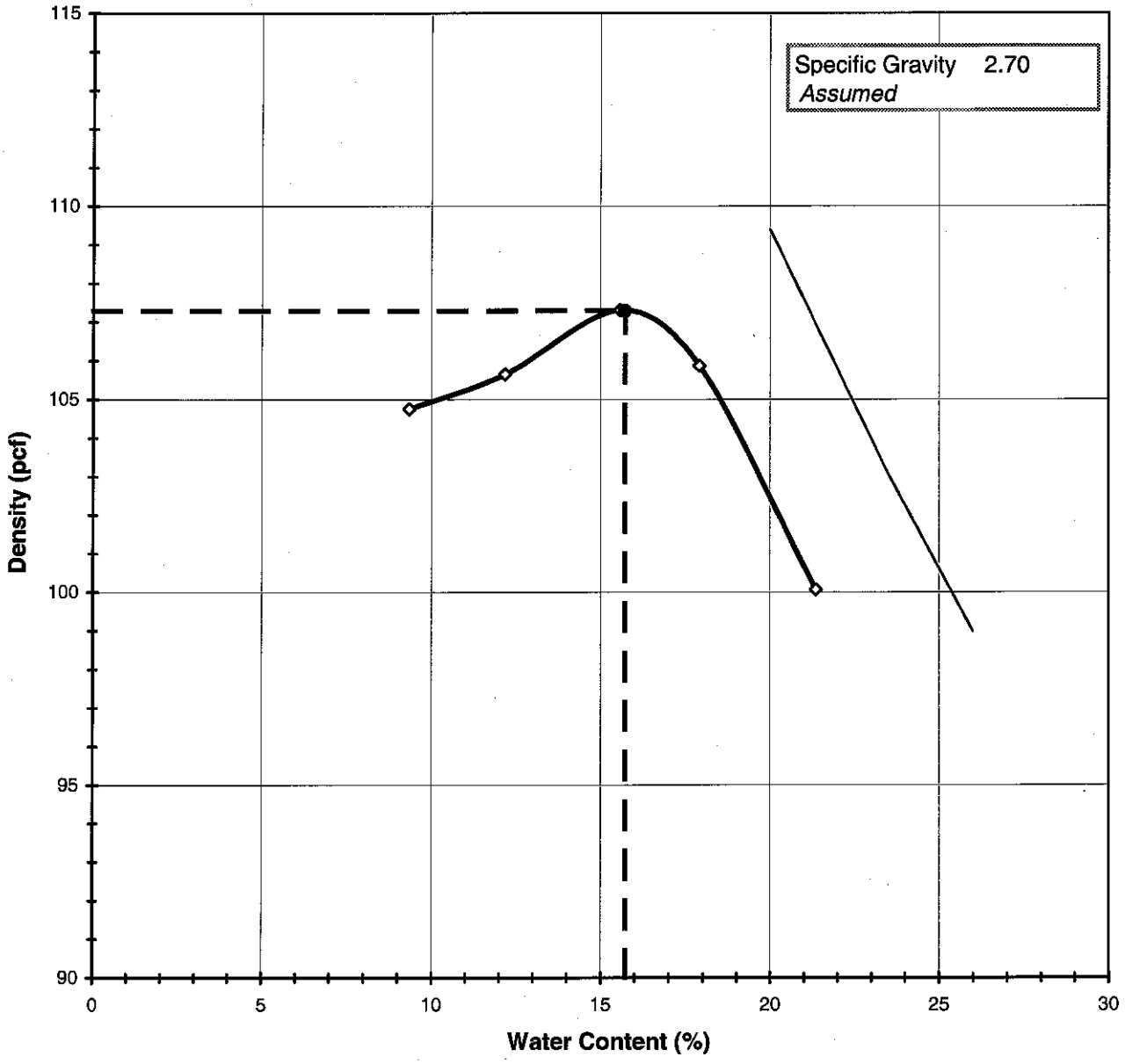
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 15 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-10 |
| Lab ID | 2010-652-09-02 | Test Method | **STANDARD** |

Visual Description GRAY SILTY SAND

**Optimum Water Content** **15.7**
**Maximum Dry Density** **107.3**




*Tested By* SD *Date* 6/16/2010 *Checked By* GBM *Date* 6-17-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-09-02 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 15 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-10 |
| Lab ID | 2010-652-09-02 | | |

Visual Description GRAY SILTY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 21010 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4308 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6036 | 6096 | 6179 | 6191 | 6140 |
| Wt.of Mold (gm) | 4308 | 4308 | 4308 | 4308 | 4308 |
| Wt. of WS | 1728 | 1788 | 1871 | 1883 | 1832 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 317 | 305 | K-7 | 309 | 399 |
| Wt. of Tare & WS (gm) | 588.10 | 446.20 | 463.10 | 476.20 | 584.90 |
| Wt. of Tare & DS (gm) | 544.99 | 406.93 | 415.55 | 420.60 | 497.30 |
| Wt. of Tare (gm) | 83.80 | 84.40 | 110.40 | 110.00 | 87.20 |
| Wt. of Water (gm) | 43.11 | 39.27 | 47.55 | 55.60 | 87.60 |
| Wt. of DS (gm) | 461.19 | 322.53 | 305.15 | 310.60 | 410.10 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.84 | 1.90 | 1.99 | 2.00 | 1.95 |
| Wet Density (pcf) | 114.5 | 118.5 | 124.0 | 124.8 | 121.4 |
| **Moisture Content (%)** | **9.3** | **12.2** | **15.6** | **17.9** | **21.4** |
| **Dry Density (pcf)** | **104.8** | **105.7** | **107.3** | **105.9** | **100.1** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 20.0 | 23.5 | 26.0 |
| **Dry Unit Weight (pcf)** | 109.4 | 103.1 | 99.0 |

*Tested By* SD *Date* 6/16/2010 *Checked By* GZM *Date* 6-17-10



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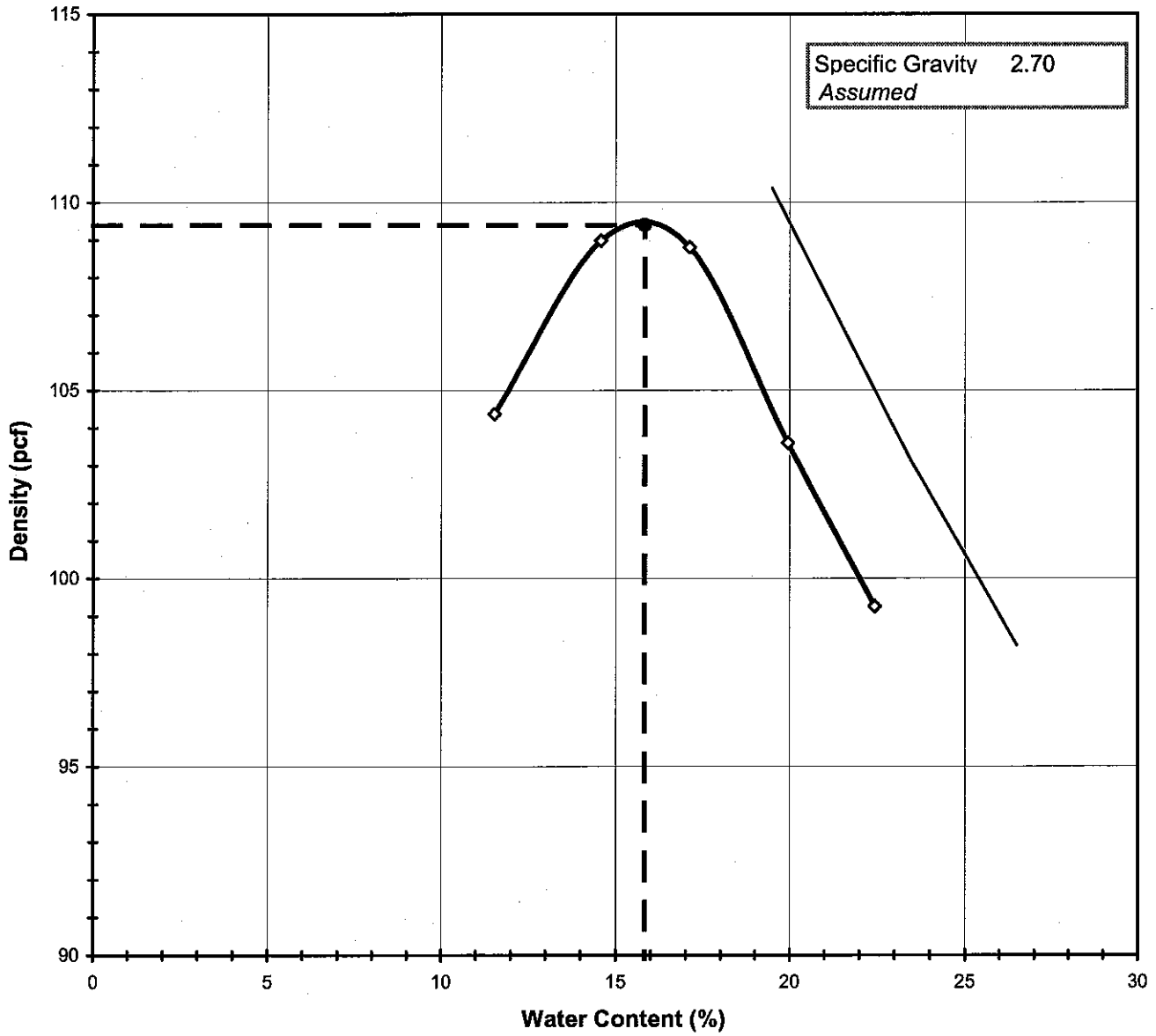
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 1 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-01 |
| Lab ID | 2010-652-09-03 | Test Method | **STANDARD** |

Visual Description GRAY CLAYEY SAND

**Optimum Water Content** **15.8**
**Maximum Dry Density** **109.4**




*Tested By* SD *Date* 6/15/2010 *Checked By* GSM *Date* 6-16-10



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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 1 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-09 | Sample No. | UPPER CF-01 |
| Lab ID | 2010-652-09-03 | | |

Visual Description GRAY CLAYEY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 22210 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4308 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6064 | 6191 | 6230 | 6182 | 6141 |
| Wt.of Mold (gm) | 4308 | 4308 | 4308 | 4308 | 4308 |
| Wt. of WS | 1756 | 1883 | 1922 | 1874 | 1833 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 304 | 311 | 306 | 307 | 315 |
| Wt. of Tare & WS (gm) | 477.00 | 436.60 | 619.00 | 575.80 | 563.10 |
| Wt. of Tare & DS (gm) | 439.07 | 391.70 | 541.49 | 498.47 | 480.20 |
| Wt. of Tare (gm) | 110.30 | 83.90 | 88.50 | 110.90 | 110.90 |
| Wt. of Water (gm) | 37.93 | 44.90 | 77.51 | 77.33 | 82.90 |
| Wt. of DS (gm) | 328.77 | 307.80 | 452.99 | 387.57 | 369.30 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.87 | 2.00 | 2.04 | 1.99 | 1.95 |
| Wet Density (pcf) | 116.4 | 124.9 | 127.4 | 124.3 | 121.5 |
| **Moisture Content (%)** | **11.5** | **14.6** | **17.1** | **20.0** | **22.4** |
| **Dry Density (pcf)** | **104.4** | **109.0** | **108.8** | **103.6** | **99.3** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 19.5 | 23.5 | 26.5 |
| **Dry Unit Weight (pcf)** | 110.4 | 103.1 | 98.2 |

*Tested By* SD *Date* 6/15/2010 *Checked By* Gem *Date* 6-15-10



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June 23, 2010

Project No. 2010-652-10

Mr. Ed Marks
Glover Construction
PO Box 40
Pleasant Hill, NC 27866

**Transmittal**
**Laboratory Test Results**
**Dare County C&D Landfill**

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
***Geotechnics, Inc.***

Michael P. Smith
Regional Manger

***We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.***


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# ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 4 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-10 | Sample No. | UPPER CF-12 |
| Lab ID | 2010-652-10-01 | Soil Description | **GRAY SILT** |

***Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.*** ( Minus No. 40 sieve material, Airdried)

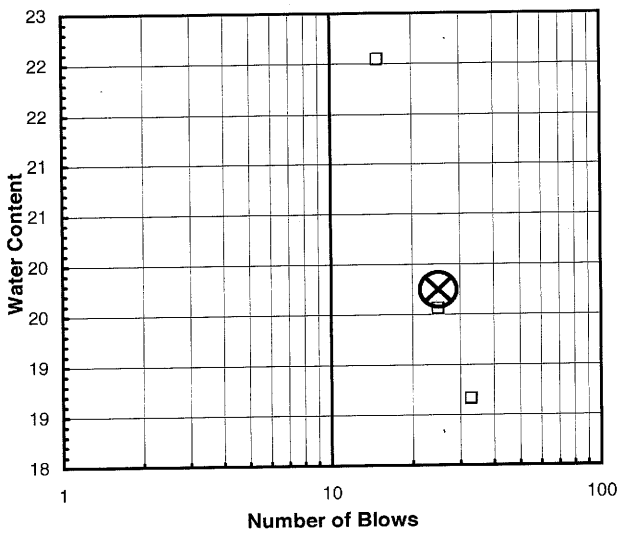
| **Liquid Limit Test** | **1** | **2** | **3** | |
|---|---|---|---|---|
| Tare Number | K | R | H | MULTIPOINT |
| Wt. of Tare & WS (gm) | 30.15 | 31.33 | 31.08 | |
| Wt. of Tare & DS (gm) | 27.45 | 28.68 | 28.57 | |
| Wt. of Tare (gm) | 15.20 | 15.13 | 15.12 | |
| Wt. of Water (gm) | 2.7 | 2.7 | 2.5 | |
| Wt. of DS (gm) | 12.3 | 13.6 | 13.5 | |
| **Moisture Content (%)** | **22.0** | **19.6** | **18.7** | |
| **Number of Blows** | **15** | **25** | **33** | |

| **Plastic Limit Test** | **1** | **2** | **Range** |
|---|---|---|---|
| Tare Number | C | N | |
| Wt. of Tare & WS (gm) | 21.46 | 21.88 | |
| Wt. of Tare & DS (gm) | 20.56 | 20.92 | |
| Wt. of Tare (gm) | 15.22 | 15.26 | |
| Wt. of Water (gm) | 0.9 | 1.0 | |
| Wt. of DS (gm) | 5.3 | 5.7 | |
| **Moisture Content (%)** | **16.9** | **17.0** | **-0.1** |

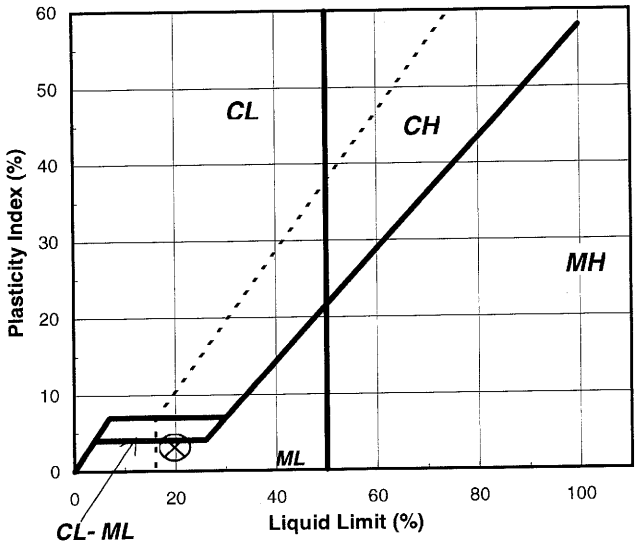
*Note: The acceptable range of the two Moisture contents is ± 2.6*

| **Test Results** | |
|---|---|
| **Liquid Limit (%)** | **20** |
| **Plastic Limit (%)** | **17** |
| **Plasticity Index (%)** | **3** |
| **USCS Symbol** | **ML** |

**Flow Curve**




**Plasticity Chart**




*Tested By* SD *Date* 6/17/2010 *Checked By* TMS *Date* 6/21/10



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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 5 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-10 | Sample No. | UPPER CF-13 |
| Lab ID | 2010-652-10-02 | Visual Description | **GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 6/18/2010 *Checked By* [illegible] *Date* 6/21/10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-11-01 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 16 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-10 | Sample No. | UPPER CF-14 |
| Lab ID | 2010-652-10-03 | Soil Description | **GRAY LEAN CLAY** |

***Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.*** ( Minus No. 40 sieve material, Airdried)

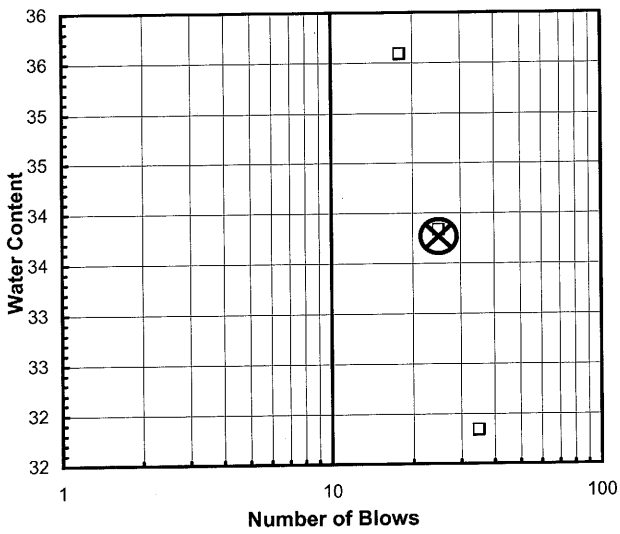
| **Liquid Limit Test** | **1** | **2** | **3** | |
|---|---|---|---|---|
| Tare Number | I | Q | F | MULTIPOINT |
| Wt. of Tare & WS (gm) | 25.83 | 25.86 | 25.35 | |
| Wt. of Tare & DS (gm) | 23.04 | 23.15 | 22.87 | |
| Wt. of Tare (gm) | 15.20 | 15.14 | 15.08 | |
| Wt. of Water (gm) | 2.8 | 2.7 | 2.5 | |
| Wt. of DS (gm) | 7.8 | 8.0 | 7.8 | |
| **Moisture Content (%)** | **35.6** | **33.8** | **31.8** | |
| **Number of Blows** | **18** | **25** | **35** | |

| **Plastic Limit Test** | **1** | **2** | **Range** |
|---|---|---|---|
| Tare Number | P | M | |
| Wt. of Tare & WS (gm) | 21.53 | 21.25 | |
| Wt. of Tare & DS (gm) | 20.47 | 20.24 | |
| Wt. of Tare (gm) | 15.16 | 15.13 | |
| Wt. of Water (gm) | 1.1 | 1.0 | |
| Wt. of DS (gm) | 5.3 | 5.1 | |
| **Moisture Content (%)** | **20.0** | **19.8** | **0.2** |

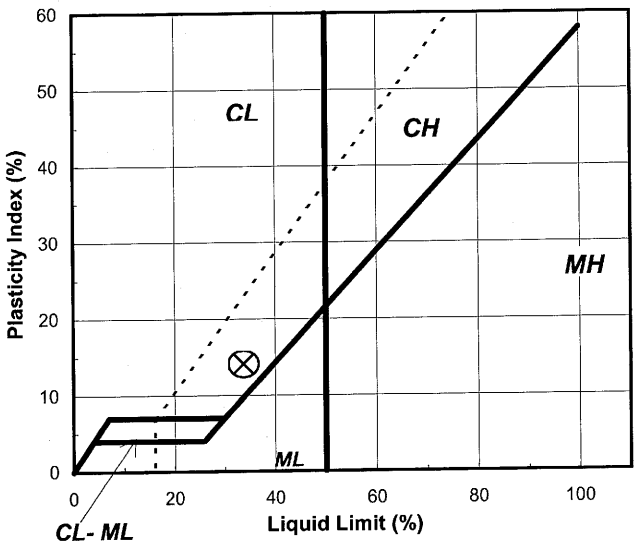
*Note: The acceptable range of the two Moisture contents is ± 2.6*

| **Test Results** | |
|---|---|
| **Liquid Limit (%)** | **34** |
| **Plastic Limit (%)** | **20** |
| **Plasticity Index (%)** | **14** |
| **USCS Symbol** | **CL** |

**Flow Curve**




**Plasticity Chart**

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 4 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-10 | Sample No. | UPPER CF-12 |
| Lab ID | 2010-652-10-01 | Soil Color | **GRAY** |

| USCS | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 6/18/2010 Checked By GEM Date 6-21-10



**DCN: CT-S3C DATE 6-25-98 REVISION 2** *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-10-01 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 4 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-10 | Sample No. | UPPER CF-12 |
| Lab ID | 2010-652-10-01 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 215 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 680.52 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 645.28 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 172.45 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 35.24 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 472.83 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **7.5** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 472.83 |
| Dry Weight - 3/4" Sample (gm) | 326.6 | Weight of minus #200 material (gm) | 146.27 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 326.56 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 1.86 | 0.4 | 0.4 | 99.6 | **99.6** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.4 | 99.6 | **99.6** |
| #4 | 4.75 | 1.41 | 0.3 | 0.7 | 99.3 | **99.3** |
| #10 | 2.00 | 2.94 | 0.6 | 1.3 | 98.7 | **98.7** |
| #20 | 0.850 | 4.23 | 0.9 | 2.2 | 97.8 | **97.8** |
| #40 | 0.425 | 3.72 | 0.8 | 3.0 | 97.0 | **97.0** |
| #60 | 0.250 | 23.33 | 4.9 | 7.9 | 92.1 | **92.1** |
| #140 | 0.106 | 238.65 | 50.5 | 58.4 | 41.6 | **41.6** |
| #200 | 0.075 | 50.42 | 10.7 | 69.1 | 30.9 | **30.9** |
| Pan | - | 146.27 | 30.9 | 100.0 | - | - |

Tested By SD Date 6/18/2010 Checked By GEM Date 6-21-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-10-01 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 5 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-10 | Sample No. | UPPER CF-13 |
| Lab ID | 2010-652-10-02 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 6/17/2010 Checked By GEM Date 6-21-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-10-02 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 5 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-10 | Sample No. | UPPER CF-13 |
| Lab ID | 2010-652-10-02 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 202 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 898.65 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 808.78 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 197.40 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 89.87 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 611.38 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **14.7** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 611.38 |
| Dry Weight - 3/4" Sample (gm) | 439.4 | Weight of minus #200 material (gm) | 171.96 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 439.42 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.73 | 0.1 | 0.1 | 99.9 | **99.9** |
| #4 | 4.75 | 3.49 | 0.6 | 0.7 | 99.3 | **99.3** |
| #10 | 2.00 | 3.96 | 0.6 | 1.3 | 98.7 | **98.7** |
| #20 | 0.850 | 5.38 | 0.9 | 2.2 | 97.8 | **97.8** |
| #40 | 0.425 | 7.32 | 1.2 | 3.4 | 96.6 | **96.6** |
| #60 | 0.250 | 50.16 | 8.2 | 11.6 | 88.4 | **88.4** |
| #140 | 0.106 | 312.96 | 51.2 | 62.8 | 37.2 | **37.2** |
| #200 | 0.075 | 55.42 | 9.1 | 71.9 | 28.1 | **28.1** |
| Pan | - | 171.96 | 28.1 | 100.0 | - | - |

Tested By SD Date 6/17/2010 Checked By GEM Date 6-21-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-10-02 SIEVON REV 4.XLS]Sheet1*

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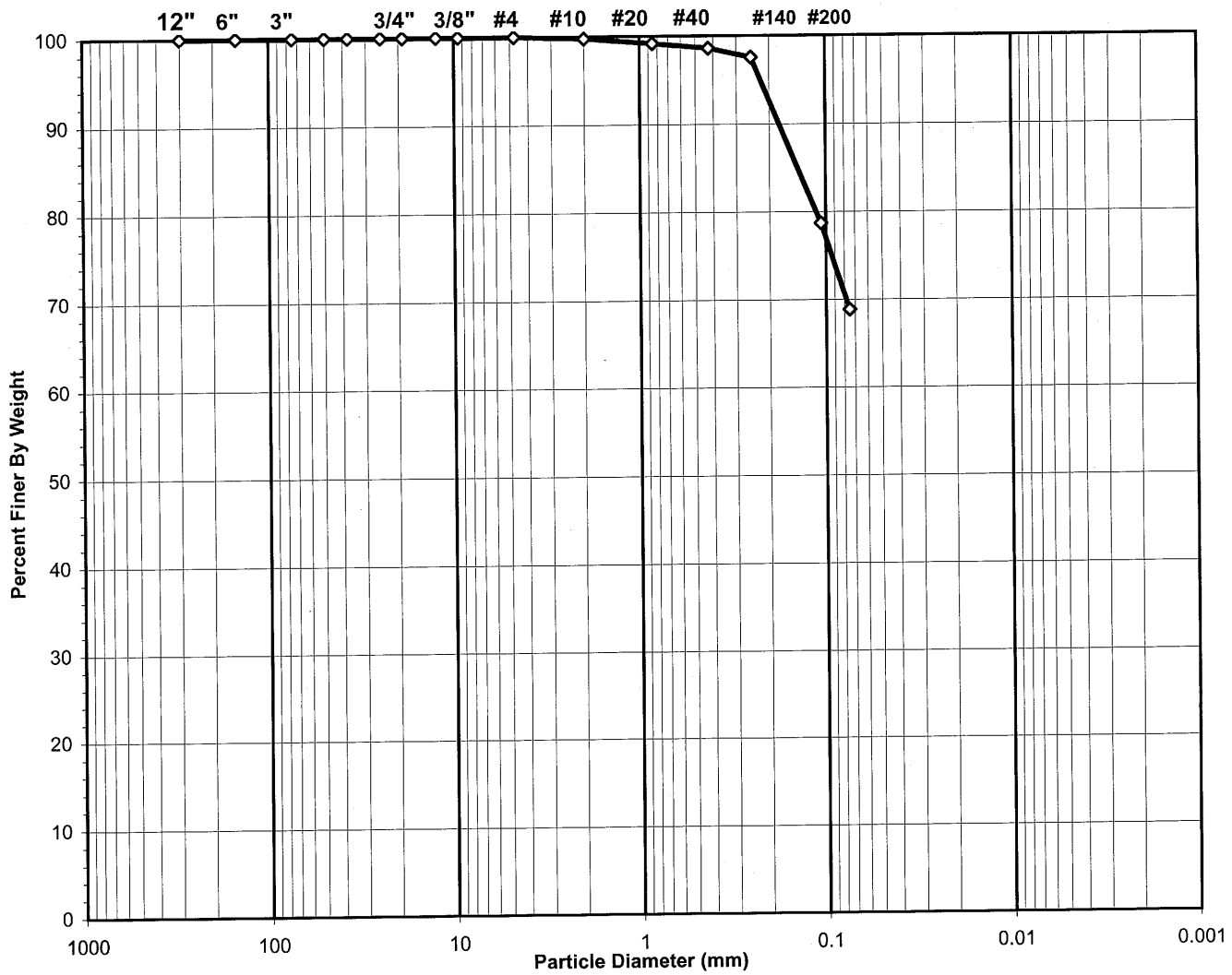
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 16 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-10 | Sample No. | UPPER CF-14 |
| Lab ID | 2010-652-10-03 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |




***USCS Symbol*** ***CL, TESTED***

***USCS Classification*** ***SANDY LEAN CLAY***

Tested By SD Date 6/21/2010 Checked By GEM Date 6-22-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *S:\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-10-03 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 16 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-10 | Sample No. | UPPER CF-14 |
| Lab ID | 2010-652-10-03 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 839 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 705.44 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 613.07 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 258.14 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 92.37 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 354.93 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **26.0** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 354.93 |
| Dry Weight - 3/4" Sample (gm) | 110.6 | Weight of minus #200 material (gm) | 244.37 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 110.56 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 0.83 | 0.2 | 0.2 | 99.8 | **99.8** |
| #20 | 0.850 | 2.18 | 0.6 | 0.8 | 99.2 | **99.2** |
| #40 | 0.425 | 1.97 | 0.6 | 1.4 | 98.6 | **98.6** |
| #60 | 0.250 | 3.70 | 1.0 | 2.4 | 97.6 | **97.6** |
| #140 | 0.106 | 66.91 | 18.9 | 21.3 | 78.7 | **78.7** |
| #200 | 0.075 | 34.97 | 9.9 | 31.1 | 68.9 | **68.9** |
| Pan | - | 244.37 | 68.9 | 100.0 | - | **-** |

Tested By SD Date 6/21/2010 Checked By GEM Date 6-22-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-10-03 SIEVON REV 4.XLS]Sheet1*

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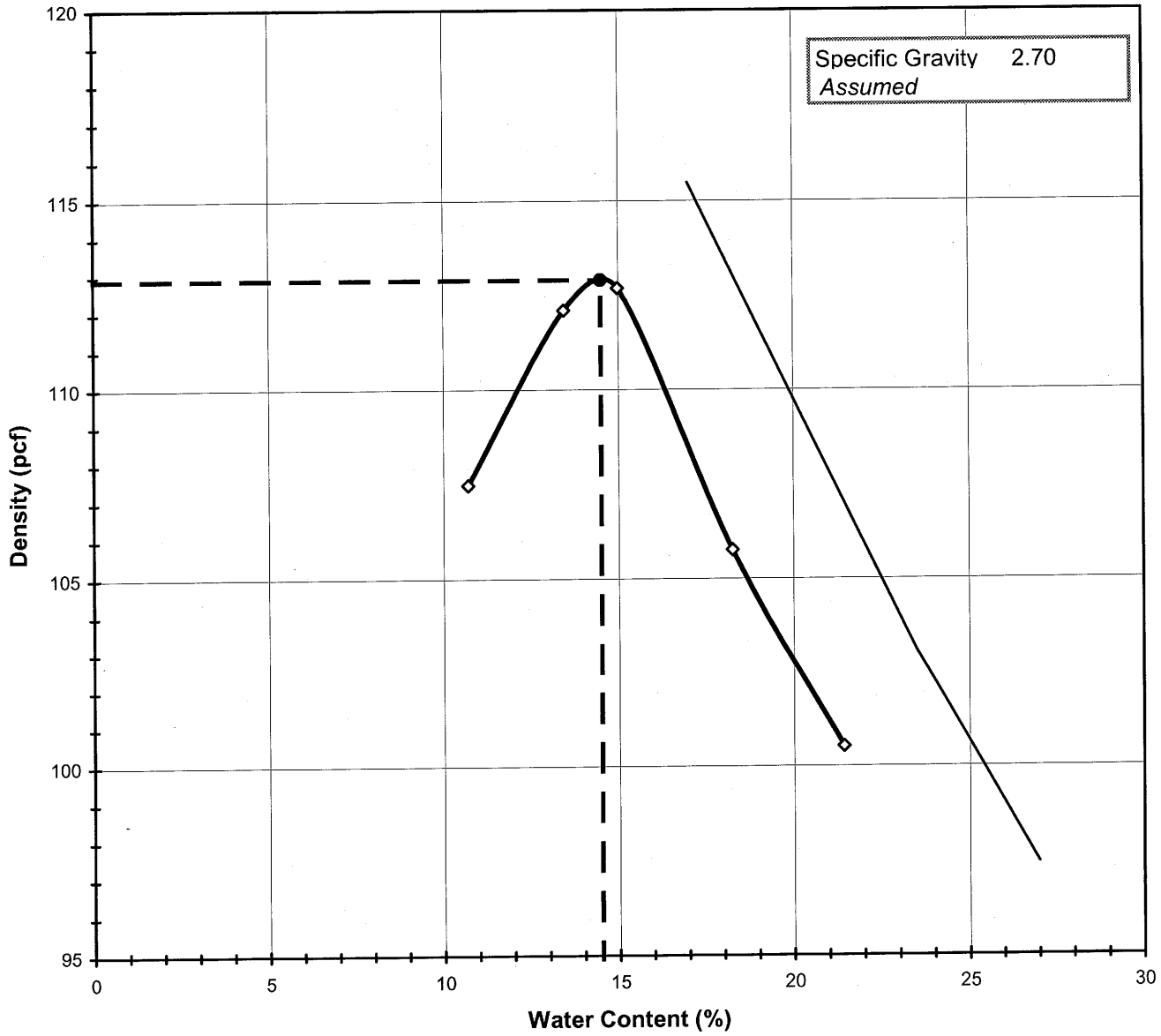
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 4 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-10 | Sample No. | UPPER CF-12 |
| Lab ID | 2010-652-10-01 | Test Method | **STANDARD** |

Visual Description GRAY SILTY SAND

**Optimum Water Content** **14.5**
**Maximum Dry Density** **112.9**




*Tested By* SD *Date* 6/17/2010 *Checked By* TMS *Date* 6-21-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-10-01 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 4 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-10 | Sample No. | UPPER CF-12 |
| Lab ID | 2010-652-10-01 | | |

Visual Description GRAY SILTY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 16299 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4308 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6103 | 6226 | 6262 | 6194 | 6149 |
| Wt.of Mold (gm) | 4308 | 4308 | 4308 | 4308 | 4308 |
| Wt. of WS | 1795 | 1918 | 1954 | 1886 | 1841 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | A-1 | 825 | 815 | 819 | 826 |
| Wt. of Tare & WS (gm) | 371.40 | 528.90 | 637.50 | 688.40 | 587.60 |
| Wt. of Tare & DS (gm) | 344.84 | 482.53 | 572.14 | 603.08 | 508.23 |
| Wt. of Tare (gm) | 96.70 | 137.60 | 136.10 | 135.80 | 137.70 |
| Wt. of Water (gm) | 26.56 | 46.37 | 65.36 | 85.32 | 79.37 |
| Wt. of DS (gm) | 248.14 | 344.93 | 436.04 | 467.28 | 370.53 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.91 | 2.04 | 2.08 | 2.00 | 1.96 |
| Wet Density (pcf) | 119.0 | 127.2 | 129.6 | 125.1 | 122.1 |
| **Moisture Content (%)** | **10.7** | **13.4** | **15.0** | **18.3** | **21.4** |
| **Dry Density (pcf)** | **107.5** | **112.1** | **112.7** | **105.8** | **100.5** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 17.0 | 23.5 | 27.0 |
| **Dry Unit Weight (pcf)** | 115.5 | 103.1 | 97.4 |

*Tested By* SD *Date* 6/17/2010 *Checked By* TMS *Date* 6-21-10



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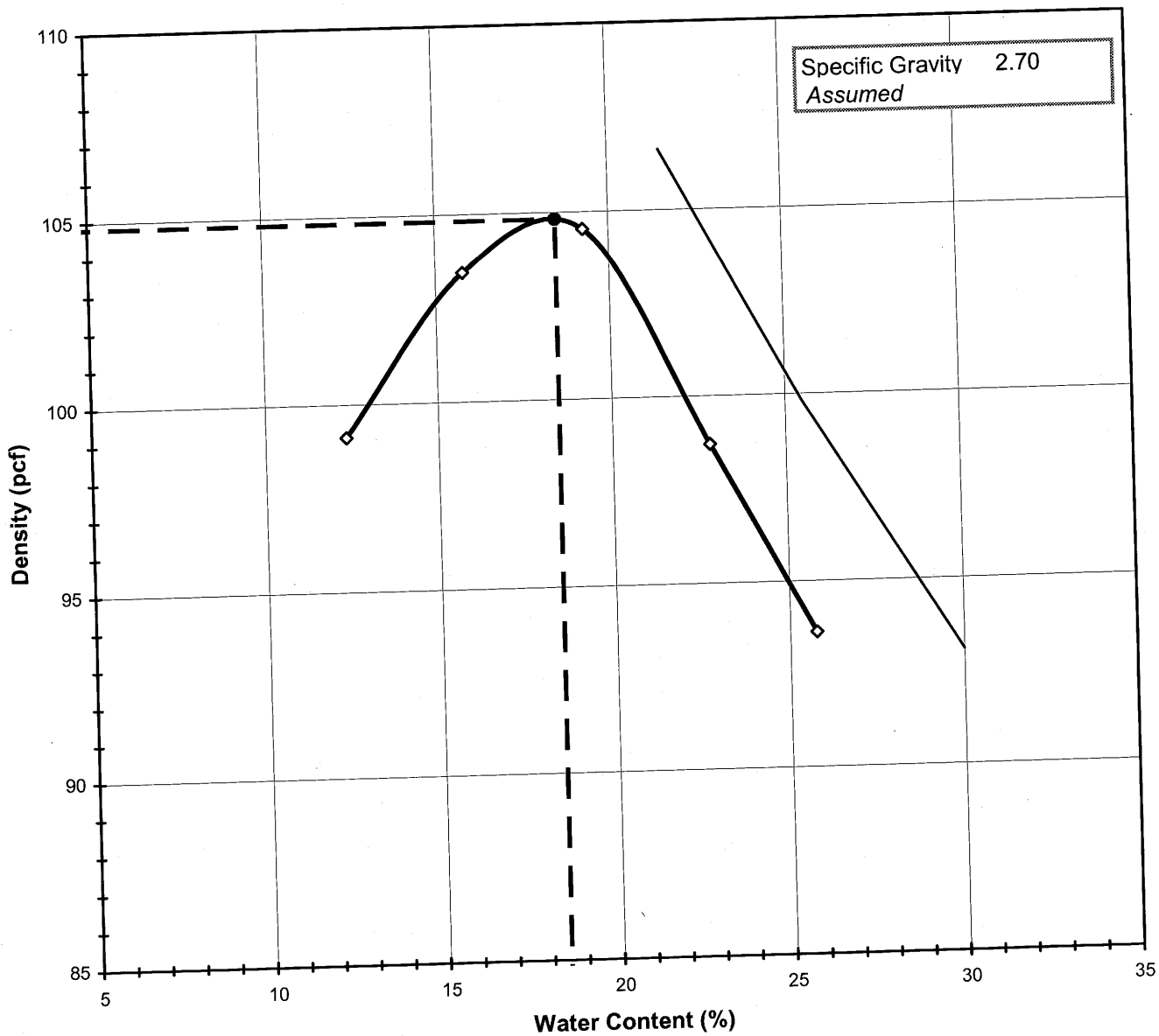
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 16 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-10 | Sample No. | UPPER CF-14 |
| Lab ID | 2010-652-10-03 | Test Method | **STANDARD** |

Visual Description GRAY SANDY LEAN CLAY

**Optimum Water Content** **18.5**
**Maximum Dry Density** **104.8**




*Tested By* SD *Date* 6/22/2010 *Checked By* GAM *Date* 6-23-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-10-03 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 16 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 5 |
| Project No. | 2010-652-10 | Sample No. | UPPER CF-14 |
| Lab ID | 2010-652-10-03 | | |

Visual Description: GRAY SANDY LEAN CLAY

| | |
|---|---|
| Total Weight of the Sample (gm) | 23481 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4307 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 5987 | 6114 | 6187 | 6135 | 6083 |
| Wt.of Mold (gm) | 4307 | 4307 | 4307 | 4307 | 4307 |
| Wt. of WS | 1680 | 1807 | 1880 | 1828 | 1776 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 303 | 308 | 310 | 398 | 311 |
| Wt. of Tare & WS (gm) | 422.50 | 461.60 | 613.30 | 552.00 | 495.20 |
| Wt. of Tare & DS (gm) | 388.31 | 413.90 | 532.00 | 465.08 | 411.01 |
| Wt. of Tare (gm) | 111.10 | 111.60 | 110.10 | 84.10 | 84.30 |
| Wt. of Water (gm) | 34.19 | 47.70 | 81.30 | 86.92 | 84.19 |
| Wt. of DS (gm) | 277.21 | 302.30 | 421.90 | 380.98 | 326.71 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.78 | 1.92 | 2.00 | 1.94 | 1.89 |
| Wet Density (pcf) | 111.3 | 119.8 | 124.7 | 121.2 | 117.8 |
| **Moisture Content (%)** | **12.3** | **15.8** | **19.3** | **22.8** | **25.8** |
| **Dry Density (pcf)** | **99.1** | **103.4** | **104.5** | **98.7** | **93.6** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 21.5 | 25.5 | 30.0 |
| **Dry Unit Weight (pcf)** | 106.6 | 99.8 | 93.1 |

*Tested By* SD *Date* 6/22/2010 *Checked By* Gam *Date* 6-23-10



DCN:CT-S12 DATE:12/11/00 REVISION 5 \\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-10-03 Proctor.XLS]Sheet1

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June 24, 2010

Project No. 2010-652-11

Mr. Ed Marks
Glover Construction
PO Box 40
Pleasant Hill, NC 27866

**Transmittal**
**Laboratory Test Results**
**Dare County C&D Landfill**

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
***Geotechnics, Inc.***

Michael P. Smith
Regional Manger

***We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.***


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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 12 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-11 | Sample No. | UPPER CF_15 |
| Lab ID | 2010-652-11-01 | Visual Description | **GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 6/18/2010 *Checked By* TMS *Date* 6/21/10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-11-01 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 13 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-11 | Sample No. | UPPER CF-16 |
| Lab ID | 2010-652-11-02 | Soil Description | **GRAY LEAN CLAY** |

***Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.*** ( Minus No. 40 sieve material, Airdried)

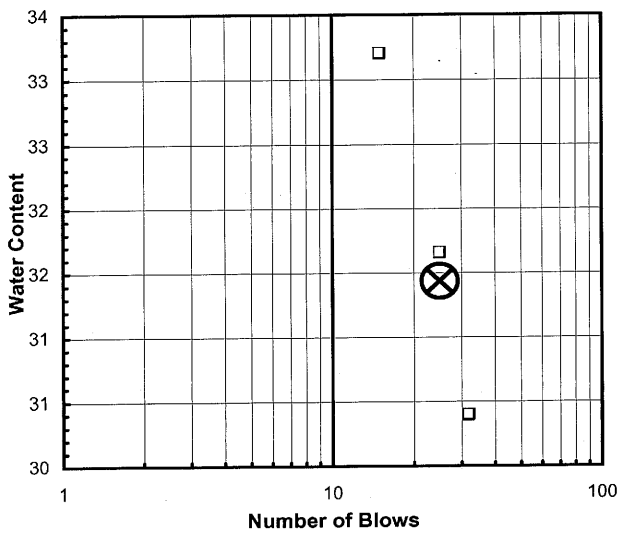
| **Liquid Limit Test** | **1** | **2** | **3** | |
|---|---|---|---|---|
| Tare Number | A-M | A-O | A-T | MULTIPOINT |
| Wt. of Tare & WS (gm) | 24.83 | 25.32 | 25.63 | |
| Wt. of Tare & DS (gm) | 22.62 | 22.93 | 23.12 | |
| Wt. of Tare (gm) | 15.35 | 15.38 | 15.56 | |
| Wt. of Water (gm) | 2.2 | 2.4 | 2.5 | |
| Wt. of DS (gm) | 7.3 | 7.6 | 7.6 | |
| **Moisture Content (%)** | **30.4** | **31.7** | **33.2** | |
| **Number of Blows** | **32** | **25** | **15** | |

| **Plastic Limit Test** | **1** | **2** | **Range** |
|---|---|---|---|
| Tare Number | A-L | A-Q | |
| Wt. of Tare & WS (gm) | 21.87 | 21.48 | |
| Wt. of Tare & DS (gm) | 21.00 | 20.68 | |
| Wt. of Tare (gm) | 15.49 | 15.46 | |
| Wt. of Water (gm) | 0.9 | 0.8 | |
| Wt. of DS (gm) | 5.5 | 5.2 | |
| **Moisture Content (%)** | **15.8** | **15.3** | **0.5** |

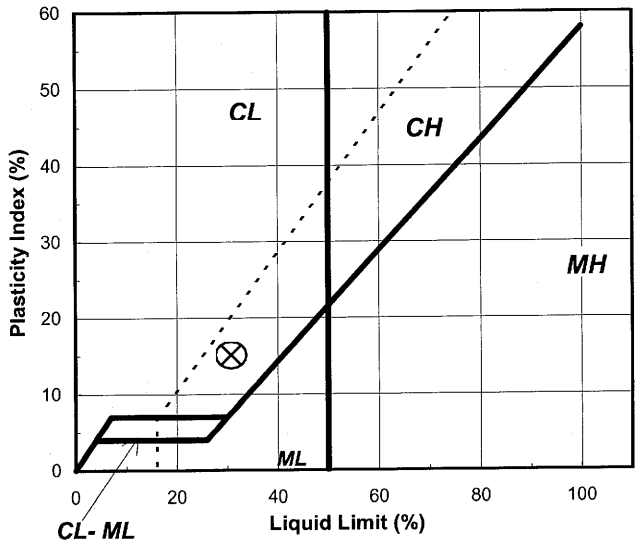
*Note: The acceptable range of the two Moisture contents is ± 2.6*

| **Test Results** | |
|---|---|
| **Liquid Limit (%)** | **31** |
| **Plastic Limit (%)** | **16** |
| **Plasticity Index (%)** | **15** |
| **USCS Symbol** | **CL** |

**Flow Curve**




**Plasticity Chart**




*Tested By* SD *Date* 6/23/2010 *Checked By* GEM *Date* 6-24-10



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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 12 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-11 | Sample No. | UPPPER CF-15 |
| Lab ID | 2010-652-11-01 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***ML, TESTED***

***USCS Classification*** ***SANDY SILT (NON-PLASTIC)***

Tested By SD Date 6/18/2010 Checked By TMS Date 6/21/10


DCN: CT-S3C DATE 6-25-98 REVISION 2 *S:\DRIVER\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-11-01 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 12 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-11 | Sample No. | UPPPER CF-15 |
| Lab ID | 2010-652-11-01 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 211 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 784.25 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 697.83 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 171.17 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 86.42 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 526.66 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **16.4** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 526.66 |
| Dry Weight - 3/4" Sample (gm) | 232.4 | Weight of minus #200 material (gm) | 294.31 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 232.35 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 1.86 | 0.4 | 0.4 | 99.6 | **99.6** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.4 | 99.6 | **99.6** |
| #4 | 4.75 | 1.41 | 0.3 | 0.6 | 99.4 | **99.4** |
| #10 | 2.00 | 1.34 | 0.3 | 0.9 | 99.1 | **99.1** |
| #20 | 0.850 | 1.92 | 0.4 | 1.2 | 98.8 | **98.8** |
| #40 | 0.425 | 3.17 | 0.6 | 1.8 | 98.2 | **98.2** |
| #60 | 0.250 | 11.49 | 2.2 | 4.0 | 96.0 | **96.0** |
| #140 | 0.106 | 123.50 | 23.4 | 27.5 | 72.5 | **72.5** |
| #200 | 0.075 | 87.66 | 16.6 | 44.1 | 55.9 | **55.9** |
| Pan | - | 294.31 | 55.9 | 100.0 | - | - |

Tested By SD Date 6/18/2010 Checked By TMS Date 6/21/10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *R:\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-11-01 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 13 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-11 | Sample No. | UPPER CF-16 |
| Lab ID | 2010-652-11-02 | Soil Color | **GRAY** |

| USCS | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| | gravel | sand | silt and clay |

***USCS Symbol*** ***CL, TESTED***

***USCS Classification*** ***SANDY LEAN CLAY***

Tested By SD Date 6/23/2010 Checked By GEM Date 6-24-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Shared\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-11-02 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 13 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-11 | Sample No. | UPPER CF-16 |
| Lab ID | 2010-652-11-02 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 839 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 688.48 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 615.12 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 258.11 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 73.36 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 357.01 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **20.5** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 357.01 |
| Dry Weight - 3/4" Sample (gm) | 158.9 | Weight of minus #200 material (gm) | 198.09 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 158.92 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.20 | 0.1 | 0.1 | 99.9 | **99.9** |
| #10 | 2.00 | 2.75 | 0.8 | 0.8 | 99.2 | **99.2** |
| #20 | 0.850 | 3.37 | 0.9 | 1.8 | 98.2 | **98.2** |
| #40 | 0.425 | 3.19 | 0.9 | 2.7 | 97.3 | **97.3** |
| #60 | 0.250 | 8.81 | 2.5 | 5.1 | 94.9 | **94.9** |
| #140 | 0.106 | 89.54 | 25.1 | 30.2 | 69.8 | **69.8** |
| #200 | 0.075 | 51.06 | 14.3 | 44.5 | 55.5 | **55.5** |
| Pan | - | 198.09 | 55.5 | 100.0 | - | - |

Tested By SD Date 6/23/2010 Checked By GEM Date 6-24-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-11-02 SIEVON REV 4.XLS]Sheet1*

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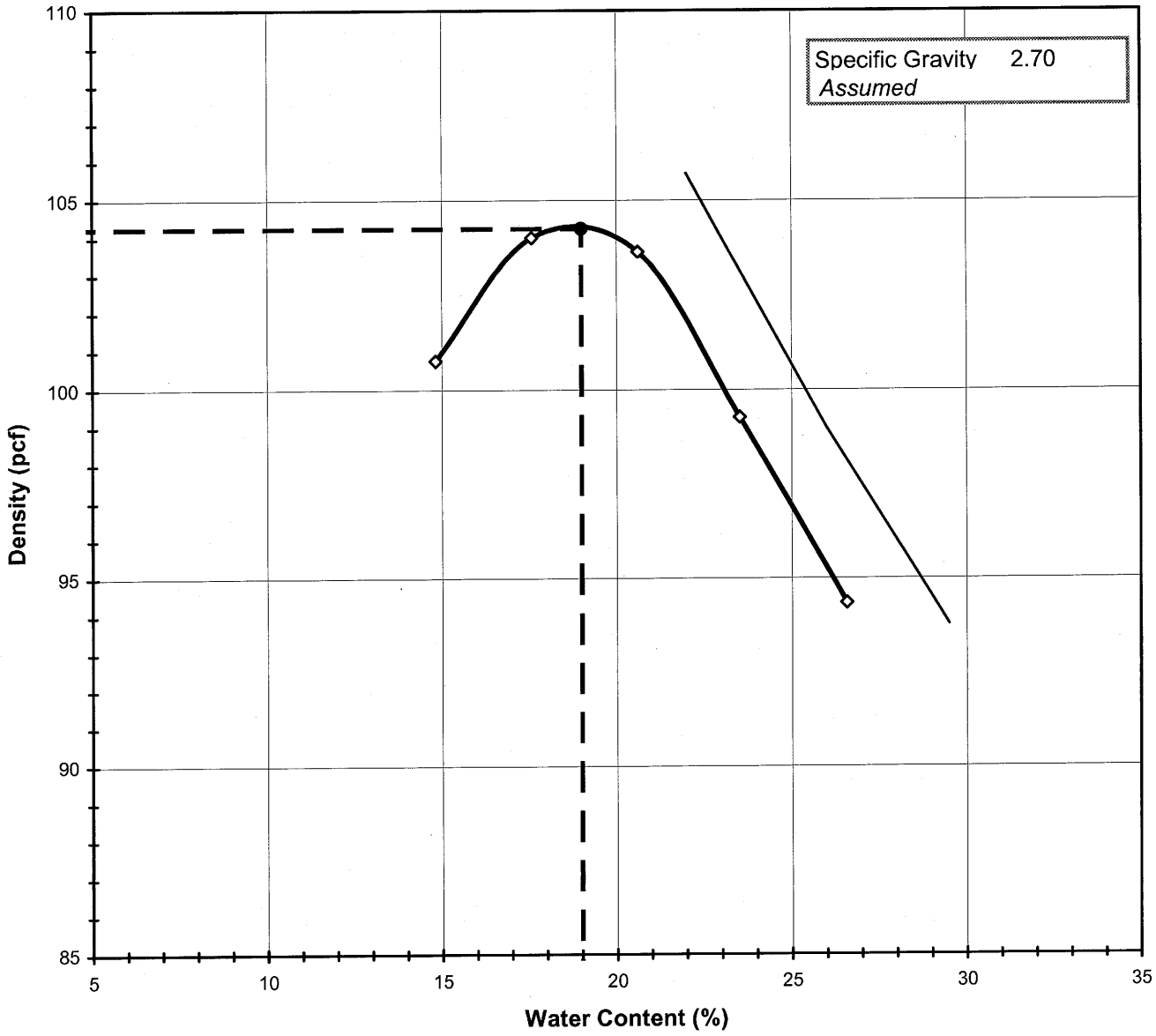
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 13 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-11 | Sample No. | UPPER CF-16 |
| Lab ID | 2010-652-11-02 | Test Method | **STANDARD** |

Visual Description GRAY SANDY LEAN CLAY

| | |
|---|---|
| **Optimum Water Content** | **19.0** |
| **Maximum Dry Density** | **104.3** |




*Tested By* SD *Date* 6/23/2010 *Checked By* GEM *Date* 6-24-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-11-02 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | ACRE 13 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 6 |
| Project No. | 2010-652-11 | Sample No. | UPPER CF-16 |
| Lab ID | 2010-652-11-02 | | |

Visual Description GRAY SANDY LEAN CLAY

| | |
|---|---|
| Total Weight of the Sample (gm) | 25814 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4308 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 6053 | 6152 | 6193 | 6157 | 6109 |
| Wt.of Mold (gm) | 4308 | 4308 | 4308 | 4308 | 4308 |
| Wt. of WS | 1745 | 1845 | 1886 | 1850 | 1801 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 312 | 318 | 301 | 314 | 300 |
| Wt. of Tare & WS (gm) | 358.40 | 455.20 | 619.70 | 503.70 | 626.40 |
| Wt. of Tare & DS (gm) | 322.97 | 400.07 | 528.24 | 423.94 | 518.18 |
| Wt. of Tare (gm) | 83.90 | 86.50 | 84.70 | 84.90 | 110.90 |
| Wt. of Water (gm) | 35.43 | 55.13 | 91.46 | 79.76 | 108.22 |
| Wt. of DS (gm) | 239.07 | 313.57 | 443.54 | 339.04 | 407.28 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.85 | 1.96 | 2.00 | 1.97 | 1.91 |
| Wet Density (pcf) | 115.7 | 122.3 | 125.0 | 122.6 | 119.4 |
| **Moisture Content (%)** | **14.8** | **17.6** | **20.6** | **23.5** | **26.6** |
| **Dry Density (pcf)** | **100.8** | **104.0** | **103.6** | **99.3** | **94.3** |

## Zero Air Voids

| | | | | |
|---|---|---|---|---|
| **Moisture Content (%)** | | 22.0 | 26.0 | 29.5 |
| **Dry Unit Weight (pcf)** | | 105.7 | 99.0 | 93.8 |

*Tested By* SD *Date* 6/23/2010 *Checked By* GEM *Date* 6-24-10



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June 21, 2010

Project No. 2010-652-12

Mr. Ed Marks
Glover Construction
PO Box 40
Pleasant Hill, NC 27866

**Transmittal**
**Laboratory Test Results**
**Dare County C&D Landfill**

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
***Geotechnics, Inc.***

Michael P. Smith
Regional Manger

***We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.***


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# ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | COMP. ACRE 7 & 13 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-12 | Sample No. | UPPER CF-17 |
| Lab ID | 2010-652-12-01 | Soil Description | **GRAY LEAN CLAY** |

***Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.*** ( Minus No. 40 sieve material, Airdried)

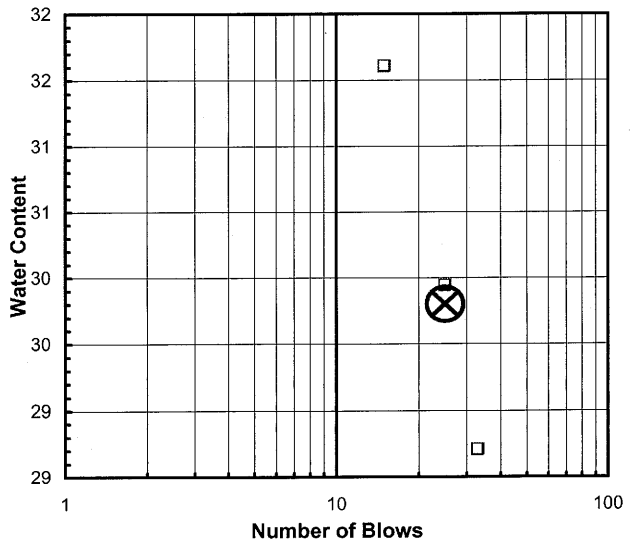
| **Liquid Limit Test** | **1** | **2** | **3** | |
|---|---|---|---|---|
| Tare Number | I | Q | F | MULTIPOINT |
| Wt. of Tare & WS (gm) | 26.11 | 25.98 | 26.10 | |
| Wt. of Tare & DS (gm) | 23.49 | 23.48 | 23.64 | |
| Wt. of Tare (gm) | 15.20 | 15.13 | 15.07 | |
| Wt. of Water (gm) | 2.6 | 2.5 | 2.5 | |
| Wt. of DS (gm) | 8.3 | 8.4 | 8.6 | |
| **Moisture Content (%)** | **31.6** | **29.9** | **28.7** | |
| **Number of Blows** | **15** | **25** | **33** | |

| **Plastic Limit Test** | **1** | **2** | **Range** |
|---|---|---|---|
| Tare Number | M | P | |
| Wt. of Tare & WS (gm) | 21.75 | 21.16 | |
| Wt. of Tare & DS (gm) | 20.80 | 20.31 | |
| Wt. of Tare (gm) | 15.10 | 15.15 | |
| Wt. of Water (gm) | 0.9 | 0.9 | |
| Wt. of DS (gm) | 5.7 | 5.2 | |
| **Moisture Content (%)** | **16.7** | **16.5** | **0.2** |

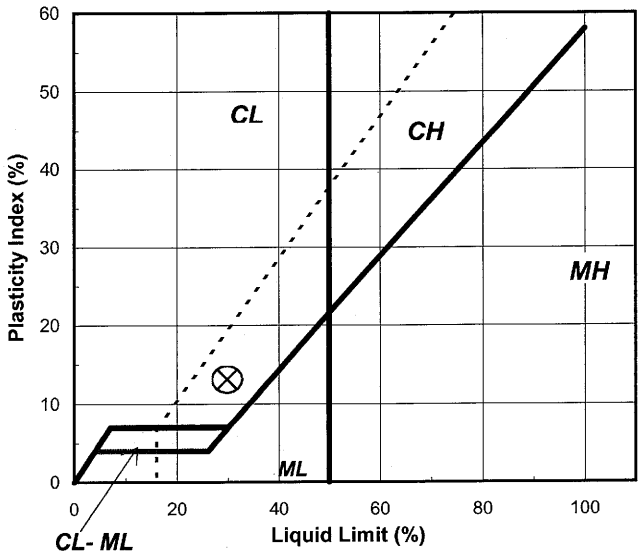
*Note: The acceptable range of the two Moisture contents is ± 2.6*

| **Test Results** | |
|---|---|
| **Liquid Limit (%)** | **30** |
| **Plastic Limit (%)** | **17** |
| **Plasticity Index (%)** | **13** |
| **USCS Symbol** | **CL** |

**Flow Curve**




**Plasticity Chart**




*Tested By* SD *Date* 6/18/2010 *Checked By* TMS *Date* 6/21/10



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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | COMP. ACRE 7 & 13 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-12 | Sample No. | UPPER CF-17 |
| Lab ID | 2010-652-12-01 | Soil Color | **GRAY** |

| | *SIEVE ANALYSIS* | | *HYDROMETER* |
|---|---|---|---|
| ***USCS*** | **gravel** | **sand** | **silt and clay** |

***USCS Symbol*** ***CL, TESTED***

***USCS Classification*** ***SANDY LEAN CLAY***

Tested By SD Date 6/21/2010 Checked By TMS Date 6/21/10



DCN: CT-S3C DATE 6-25-98 REVISION 12 *G:\DATA\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-12-01 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | COMP. ACRE 7 & 13 |
| Client Reference | DARE CO. C&D LF. | Depth (ft) | LIFT 3 |
| Project No. | 2010-652-12 | Sample No. | UPPER CF-17 |
| Lab ID | 2010-652-12-01 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 210 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 728.27 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 689.03 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 172.87 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 39.24 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 516.16 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **7.6** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 516.16 |
| Dry Weight - 3/4" Sample (gm) | 254.9 | Weight of minus #200 material (gm) | 261.23 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 254.93 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 1.31 | 0.3 | 0.3 | 99.7 | **99.7** |
| #20 | 0.850 | 5.21 | 1.0 | 1.3 | 98.7 | **98.7** |
| #40 | 0.425 | 3.47 | 0.7 | 1.9 | 98.1 | **98.1** |
| #60 | 0.250 | 9.90 | 1.9 | 3.9 | 96.1 | **96.1** |
| #140 | 0.106 | 180.90 | 35.0 | 38.9 | 61.1 | **61.1** |
| #200 | 0.075 | 54.14 | 10.5 | 49.4 | 50.6 | **50.6** |
| Pan | - | 261.23 | 50.6 | 100.0 | - | **-** |

Tested By SD Date 6/21/2010 Checked By TMS Date 6/21/10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *S:\DRIVE\Data Drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-12-01 SIEVON REV 4.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | COMP. ACRE 7 & 13 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 3 |
| Project No. | 2010-652 | Sample No. | UPPER CF-17 |
| Lab ID | 2010-652-12-01 | | |

Visual Description GRAY SANDY LEAN CLAY

| | |
|---|---|
| Total Weight of the Sample (gm) | 0 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4308 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 5910 | 5998 | 6058 | 6052 | 6012 |
| Wt.of Mold (gm) | 4308 | 4308 | 4308 | 4308 | 4308 |
| Wt. of WS | 1602 | 1690 | 1750 | 1744 | 1704 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 312 | JB-01 | JB-01 | 818 | 317 |
| Wt. of Tare & WS (gm) | 318.56 | 291.90 | 311.70 | 284.84 | 350.06 |
| Wt. of Tare & DS (gm) | 290.31 | 262.90 | 277.00 | 259.62 | 308.20 |
| Wt. of Tare (gm) | 84.14 | 87.10 | 87.10 | 137.55 | 135.57 |
| Wt. of Water (gm) | 28.25 | 29.00 | 34.70 | 25.22 | 41.86 |
| Wt. of DS (gm) | 206.17 | 175.80 | 189.90 | 122.07 | 172.63 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.70 | 1.80 | 1.86 | 1.85 | 1.81 |
| Wet Density (pcf) | 106.2 | 112.0 | 116.0 | 115.6 | 113.0 |
| **Moisture Content (%)** | **13.7** | **16.5** | **18.3** | **20.7** | **24.2** |
| **Dry Density (pcf)** | **93.4** | **96.2** | **98.1** | **95.8** | **90.9** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 25.0 | 28.0 | 32.0 |
| **Dry Unit Weight (pcf)** | 100.6 | 95.9 | 90.4 |

*Tested By* JRB *Date* 6.16.10 *Checked By* GEM *Date* 6-21-10



DCN:CT-S12 DATE:12/11/00 REVISION 5 \\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-12-01 Proctor.XLS]Sheet1

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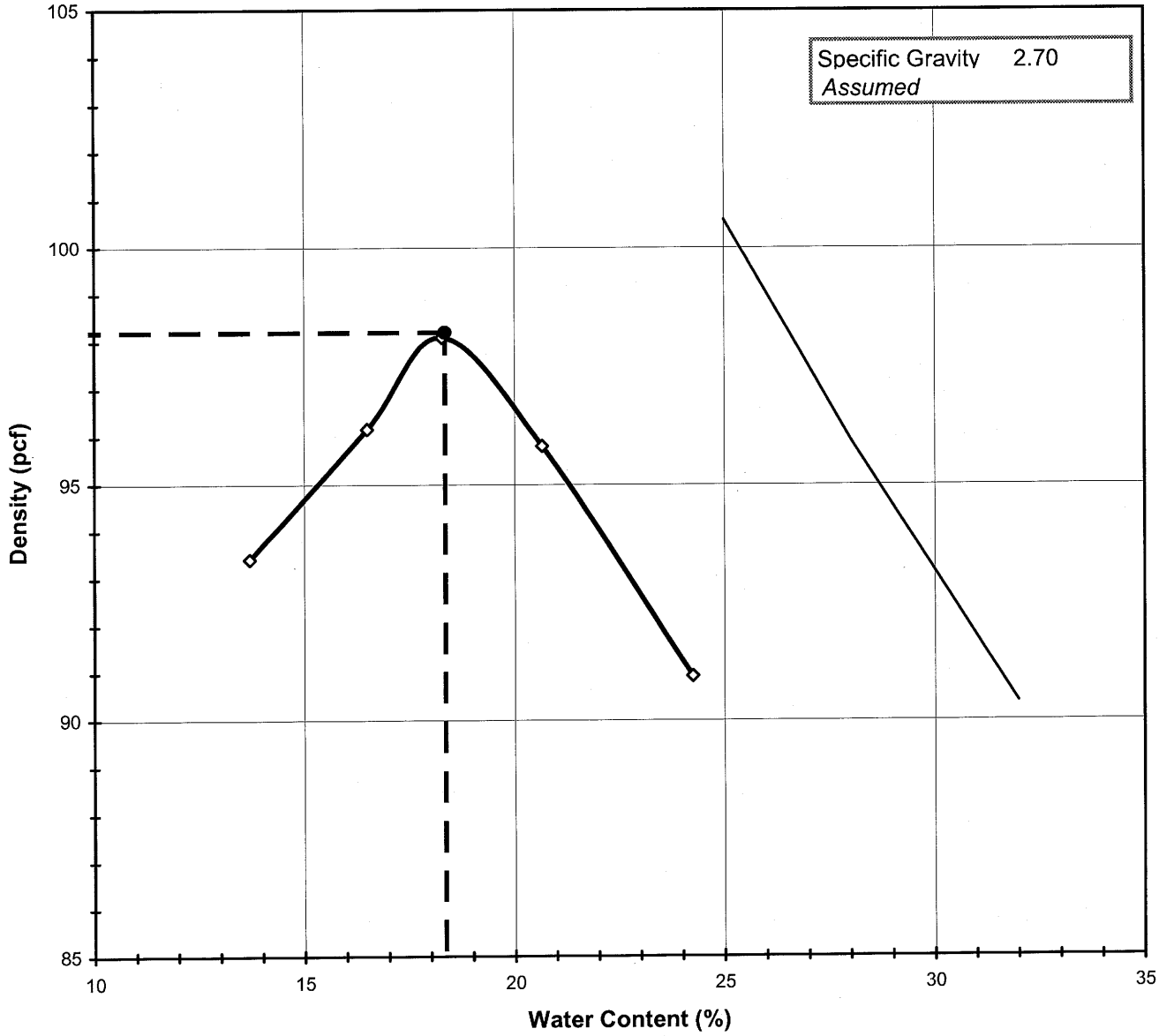
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | COMP. ACRE 7 & 13 |
| Client Reference | DARE CO. C&D LF | Depth (ft) | LIFT 3 |
| Project No. | 2010-652 | Sample No. | UPPER CF-17 |
| Lab ID | 2010-652-12-01 | Test Method | **STANDARD** |

Visual Description GRAY SANDY LEAN CLAY

| | |
|---|---|
| **Optimum Water Content** | **18.4** |
| **Maximum Dry Density** | **98.2** |




*Tested By* JRB *Date* 6.16.10 *Checked By* GZM *Date* 6-21-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-12-01 Proctor.XLS]Sheet1*

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July 15, 2010

Project No. 2010-652-13

Mr. Ed Marks
Glover Construction
PO Box 40
Pleasant Hill, NC 27866

**Transmittal**
**Laboratory Test Results**
**Dare County C&D Landfill**

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
***Geotechnics, Inc.***

Michael P. Smith
Regional Manger

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-5 |
| Lab ID | 2010-652-13-01 | Visual Description | **GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/8/2010 *Checked By* GEM *Date* 7-9-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2

*\\Server\data drive\Data Sheets\[Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-6 |
| Lab ID | 2010-652-13-02 | Visual Description | **GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* *SD* *Date* *7/8/2010* *Checked By* GM *Date* 7-9-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-01 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-7 |
| Lab ID | 2010-652-13-03 | Visual Description | **GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/8/2010 *Checked By* GM *Date* 7-9-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-02 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-8 |
| Lab ID | 2010-652-13-04 | Visual Description | **GRAYISH BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/8/2010 *Checked By* GBM *Date* 7-9-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-03 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-9 |
| Lab ID | 2010-652-13-05 | Visual Description | **GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/8/2010 *Checked By* GAM *Date* 7-9-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-04 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-10 |
| Lab ID | 2010-652-13-06 | Visual Description | **GRAY** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/8/2010 *Checked By* GEM *Date* 7-9-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-05 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-11 |
| Lab ID | 2010-652-13-07 | Visual Description | **GRAYISH BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/9/2010 *Checked By* GEM *Date* 7-9-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-06 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-12 |
| Lab ID | 2010-652-13-08 | Visual Description | **GRAYISH BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/9/2010 *Checked By* GEM *Date* 7-9-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-07 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-13 |
| Lab ID | 2010-652-13-09 | Visual Description | **GRAYISH BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/9/2010 *Checked By* GEM *Date* 7-9-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-08 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-14 |
| Lab ID | 2010-652-13-10 | Visual Description | **GRAYISH BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/9/2010 *Checked By* GEM *Date* 7-9-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-09 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-15 |
| Lab ID | 2010-652-13-11 | Visual Description | **GRAYISH BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/9/2010 *Checked By* GEM *Date* 7-9-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-10 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-16 |
| Lab ID | 2010-652-13-12 | Visual Description | **GRAYISH BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/9/2010 *Checked By* GZM *Date* 7-9-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-11 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-17 |
| Lab ID | 2010-652-13-13 | Visual Description | **GRAYISH BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/9/2010 *Checked By* GLM *Date* 7-12-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-11 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-18 |
| Lab ID | 2010-652-13-14 | Visual Description | **GRAYISH BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/9/2010 *Checked By* GEM *Date* 7-12-10



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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-19 |
| Lab ID | 2010-652-13-15 | Visual Description | **GRAYISH BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/9/2010 *Checked By* GBM *Date* 7-12-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-14 Limit-(NP).xls]Sheet1*

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# ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-20 |
| Lab ID | 2010-652-13-16 | Visual Description | **GRAYISH BROWN** |
| | | | ( MInus No. 40 sieve material, Wet Method) |

# NON - PLASTIC MATERIAL

*Tested By* SD *Date* 7/9/2010 *Checked By* GEM *Date* 7-12-10



DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-15 Limit-(NP).xls]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-5 |
| Lab ID | 2010-652-13-01 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10


DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-01 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-5 |
| Lab ID | 2010-652-13-01 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 820 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 687.29 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 623.20 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 208.05 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 64.09 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 415.15 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **15.4** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 415.15 |
| Dry Weight - 3/4" Sample (gm) | 361.7 | Weight of minus #200 material (gm) | 53.48 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 361.67 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 0.46 | 0.1 | 0.1 | 99.9 | **99.9** |
| #20 | 0.850 | 1.37 | 0.3 | 0.4 | 99.6 | **99.6** |
| #40 | 0.425 | 2.26 | 0.5 | 1.0 | 99.0 | **99.0** |
| #60 | 0.250 | 58.14 | 14.0 | 15.0 | 85.0 | **85.0** |
| #140 | 0.106 | 264.10 | 63.6 | 78.6 | 21.4 | **21.4** |
| #200 | 0.075 | 35.34 | 8.5 | 87.1 | 12.9 | **12.9** |
| Pan | - | 53.48 | 12.9 | 100.0 | - | - |

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10





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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-6 |
| Lab ID | 2010-652-13-02 | Soil Color | **GRAY** |

| USCS | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| | gravel | sand | silt and clay |

***USCS Symbol*** ***SP-SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***POORLY GRADED SAND WITH SILT***

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10


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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-6 |
| Lab ID | 2010-652-13-02 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 210 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 645.56 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 578.31 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 172.85 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 67.25 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 405.46 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **16.6** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 405.46 |
| Dry Weight - 3/4" Sample (gm) | 361.8 | Weight of minus #200 material (gm) | 43.69 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 361.77 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 0.82 | 0.2 | 0.2 | 99.8 | **99.8** |
| #20 | 0.850 | 1.61 | 0.4 | 0.6 | 99.4 | **99.4** |
| #40 | 0.425 | 2.79 | 0.7 | 1.3 | 98.7 | **98.7** |
| #60 | 0.250 | 64.39 | 15.9 | 17.2 | 82.8 | **82.8** |
| #140 | 0.106 | 258.96 | 63.9 | 81.0 | 19.0 | **19.0** |
| #200 | 0.075 | 33.20 | 8.2 | 89.2 | 10.8 | **10.8** |
| Pan | - | 43.69 | 10.8 | 100.0 | - | - |

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10



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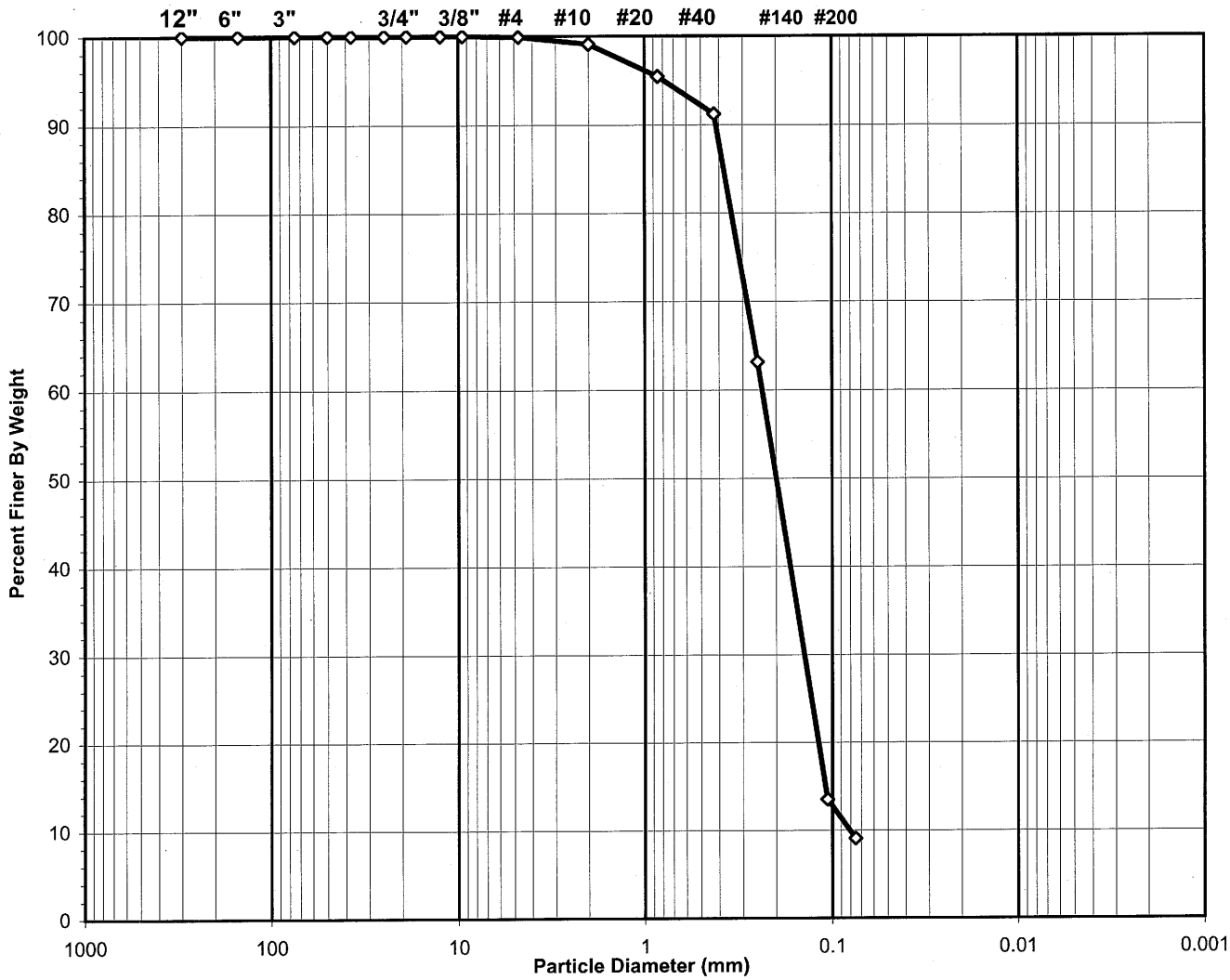
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-7 |
| Lab ID | 2010-652-13-03 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |




| | | | | | |
|---|---|---|---|---|---|
| ***USCS Symbol*** | ***SP-SM, TESTED (NON PLASTIC FINES)*** | **D60 =** | **0.2** | **CC =** | **1.0** |
| ***USCS Classification*** | ***POORLY GRADED SAND WITH SILT*** | **D30 =** | **0.1** | **CU =** | **2.9** |
| | | **D10 =** | **0.1** | | |

Tested By SD Date 7/8/2010 Checked By GM Date 7-9-10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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-7 |
| Lab ID | 2010-652-13-03 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 216 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 693.84 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 632.00 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 170.72 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 61.84 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 461.28 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **13.4** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 461.28 |
| Dry Weight - 3/4" Sample (gm) | 419.6 | Weight of minus #200 material (gm) | 41.67 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 419.61 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.53 | 0.1 | 0.1 | 99.9 | **99.9** |
| #10 | 2.00 | 3.72 | 0.8 | 0.9 | 99.1 | **99.1** |
| #20 | 0.850 | 16.67 | 3.6 | 4.5 | 95.5 | **95.5** |
| #40 | 0.425 | 19.55 | 4.2 | 8.8 | 91.2 | **91.2** |
| #60 | 0.250 | 129.43 | 28.1 | 36.8 | 63.2 | **63.2** |
| #140 | 0.106 | 228.98 | 49.6 | 86.5 | 13.5 | **13.5** |
| #200 | 0.075 | 20.73 | 4.5 | 91.0 | 9.0 | **9.0** |
| Pan | - | 41.67 | 9.0 | 100.0 | - | **-** |

Tested By SD Date 7/8/2010 Checked By GM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *S:\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-03 SIEVON REV 4.XLS]Sheet1*

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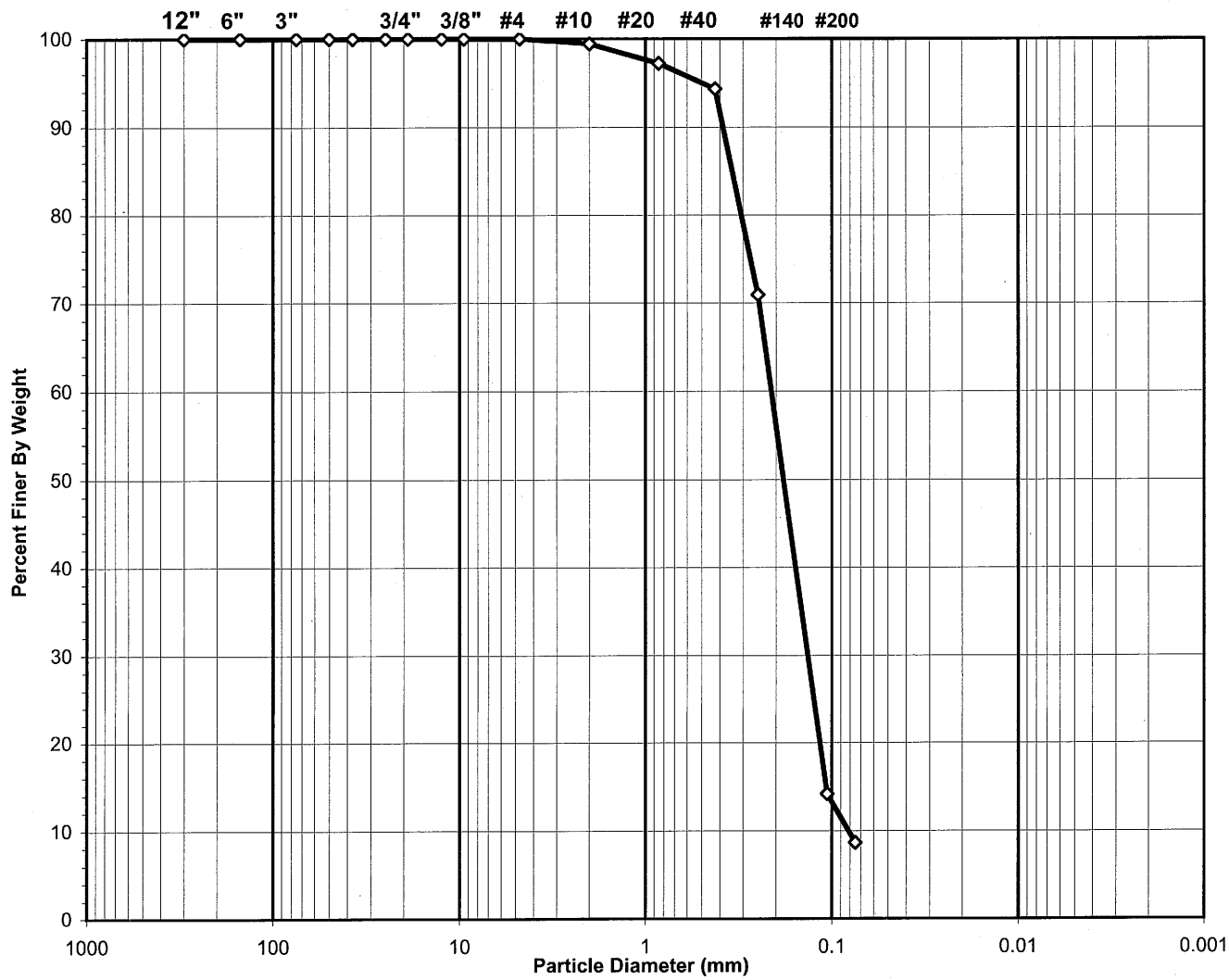
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-8 |
| Lab ID | 2010-652-13-04 | Soil Color | **GRAYISH BROWN** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |




| | | | | | |
|---|---|---|---|---|---|
| ***USCS Symbol*** | ***SP-SM, TESTED (NON PLASTIC FINES)*** | **D60 =** | **0.2** | **CC =** | **1.0** |
| ***USCS Classification*** | ***POORLY GRADED SAND WITH SILT*** | **D30 =** | **0.1** | **CU =** | **2.6** |
| | | **D10 =** | **0.1** | | |

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10



**DCN: CT-S3C DATE 6-25-98 REVISION 2** *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-04 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-8 |
| Lab ID | 2010-652-13-04 | Soil Color | **GRAYISH BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 833 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 711.22 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 664.61 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 259.20 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 46.61 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 405.41 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **11.5** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 405.41 |
| Dry Weight - 3/4" Sample (gm) | 370.4 | Weight of minus #200 material (gm) | 35.05 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 370.36 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 2.26 | 0.6 | 0.6 | 99.4 | **99.4** |
| #20 | 0.850 | 9.09 | 2.2 | 2.8 | 97.2 | **97.2** |
| #40 | 0.425 | 11.65 | 2.9 | 5.7 | 94.3 | **94.3** |
| #60 | 0.250 | 94.91 | 23.4 | 29.1 | 70.9 | **70.9** |
| #140 | 0.106 | 230.13 | 56.8 | 85.8 | 14.2 | **14.2** |
| #200 | 0.075 | 22.32 | 5.5 | 91.4 | 8.6 | **8.6** |
| Pan | - | 35.05 | 8.6 | 100.0 | - | **-** |

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-04 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-9 |
| Lab ID | 2010-652-13-05 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

| | | | | | |
|---|---|---|---|---|---|
| ***USCS Symbol*** | ***SP-SM, TESTED (NON PLASTIC FINES)*** | **D60 =** | **0.2** | **CC =** | **1.0** |
| ***USCS Classification*** | ***POORLY GRADED SAND WITH SILT*** | **D30 =** | **0.1** | **CU =** | **2.6** |
| | | **D10 =** | **0.1** | | |

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10




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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-9 |
| Lab ID | 2010-652-13-05 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 839 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 817.40 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 745.33 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 258.10 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 72.07 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 487.23 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **14.8** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 487.23 |
| Dry Weight - 3/4" Sample (gm) | 449.7 | Weight of minus #200 material (gm) | 37.53 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 449.70 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 3.09 | 0.6 | 0.6 | 99.4 | **99.4** |
| #20 | 0.850 | 12.72 | 2.6 | 3.2 | 96.8 | **96.8** |
| #40 | 0.425 | 18.33 | 3.8 | 7.0 | 93.0 | **93.0** |
| #60 | 0.250 | 144.04 | 29.6 | 36.6 | 63.4 | **63.4** |
| #140 | 0.106 | 250.06 | 51.3 | 87.9 | 12.1 | **12.1** |
| #200 | 0.075 | 21.46 | 4.4 | 92.3 | 7.7 | **7.7** |
| Pan | - | 37.53 | 7.7 | 100.0 | - | **-** |

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-05 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-10 |
| Lab ID | 2010-652-13-06 | Soil Color | **GRAY** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| **USCS** | **gravel** | **sand** | **silt and clay** |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 7/8/2010 Checked By Gem Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-06 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-10 |
| Lab ID | 2010-652-13-06 | Soil Color | **GRAY** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 841 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 799.18 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 720.20 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 258.92 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 78.98 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 461.28 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **17.1** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 461.28 |
| Dry Weight - 3/4" Sample (gm) | 401.6 | Weight of minus #200 material (gm) | 59.72 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 401.56 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 1.80 | 0.4 | 0.4 | 99.6 | **99.6** |
| #20 | 0.850 | 3.43 | 0.7 | 1.1 | 98.9 | **98.9** |
| #40 | 0.425 | 4.52 | 1.0 | 2.1 | 97.9 | **97.9** |
| #60 | 0.250 | 92.47 | 20.0 | 22.2 | 77.8 | **77.8** |
| #140 | 0.106 | 263.54 | 57.1 | 79.3 | 20.7 | **20.7** |
| #200 | 0.075 | 35.80 | 7.8 | 87.1 | 12.9 | **12.9** |
| Pan | - | 59.72 | 12.9 | 100.0 | - | **-** |

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-06 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-11 |
| Lab ID | 2010-652-13-07 | Soil Color | **GRAYISH BROWN** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10

 DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-07 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-11 |
| Lab ID | 2010-652-13-07 | Soil Color | **GRAYISH BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 212 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 768.93 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 677.09 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 171.51 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 91.84 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 505.58 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **18.2** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 505.58 |
| Dry Weight - 3/4" Sample (gm) | 413.1 | Weight of minus #200 material (gm) | 92.53 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 413.05 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 2.65 | 0.5 | 0.5 | 99.5 | **99.5** |
| #20 | 0.850 | 6.48 | 1.3 | 1.8 | 98.2 | **98.2** |
| #40 | 0.425 | 6.03 | 1.2 | 3.0 | 97.0 | **97.0** |
| #60 | 0.250 | 72.28 | 14.3 | 17.3 | 82.7 | **82.7** |
| #140 | 0.106 | 284.81 | 56.3 | 73.6 | 26.4 | **26.4** |
| #200 | 0.075 | 40.80 | 8.1 | 81.7 | 18.3 | **18.3** |
| Pan | - | 92.53 | 18.3 | 100.0 | - | - |

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *\\server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-07 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-12 |
| Lab ID | 2010-652-13-08 | Soil Color | **GRAYISH BROWN** |

| | *SIEVE ANALYSIS* | | *HYDROMETER* |
|---|---|---|---|
| ***USCS*** | **gravel** | **sand** | **silt and clay** |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10


DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-08 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-12 |
| Lab ID | 2010-652-13-08 | Soil Color | **GRAYISH BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | P-12 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 743.04 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 661.91 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 196.46 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 81.13 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 465.45 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **17.4** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 465.45 |
| Dry Weight - 3/4" Sample (gm) | 390.9 | Weight of minus #200 material (gm) | 74.55 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 390.90 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 2.33 | 0.5 | 0.5 | 99.5 | **99.5** |
| #20 | 0.850 | 5.41 | 1.2 | 1.7 | 98.3 | **98.3** |
| #40 | 0.425 | 5.37 | 1.2 | 2.8 | 97.2 | **97.2** |
| #60 | 0.250 | 69.24 | 14.9 | 17.7 | 82.3 | **82.3** |
| #140 | 0.106 | 270.60 | 58.1 | 75.8 | 24.2 | **24.2** |
| #200 | 0.075 | 37.95 | 8.2 | 84.0 | 16.0 | **16.0** |
| Pan | - | 74.55 | 16.0 | 100.0 | - | **-** |

Tested By SD Date 7/8/2010 Checked By GDM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *S:\Larry\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-08 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-13 |
| Lab ID | 2010-652-13-09 | Soil Color | **GRAYISH BROWN** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-09 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-13 |
| Lab ID | 2010-652-13-09 | Soil Color | **GRAYISH BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 214 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 648.03 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 578.67 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 171.31 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 69.36 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 407.36 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **17.0** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 407.36 |
| Dry Weight - 3/4" Sample (gm) | 341.6 | Weight of minus #200 material (gm) | 65.80 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 341.56 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 2.84 | 0.7 | 0.7 | 99.3 | **99.3** |
| #20 | 0.850 | 5.43 | 1.3 | 2.0 | 98.0 | **98.0** |
| #40 | 0.425 | 5.58 | 1.4 | 3.4 | 96.6 | **96.6** |
| #60 | 0.250 | 56.09 | 13.8 | 17.2 | 82.8 | **82.8** |
| #140 | 0.106 | 236.94 | 58.2 | 75.3 | 24.7 | **24.7** |
| #200 | 0.075 | 34.68 | 8.5 | 83.8 | 16.2 | **16.2** |
| Pan | - | 65.80 | 16.2 | 100.0 | - | - |

Tested By SD Date 7/8/2010 Checked By GZM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-09 SIEVON REV 4.XLS]Sheet1*

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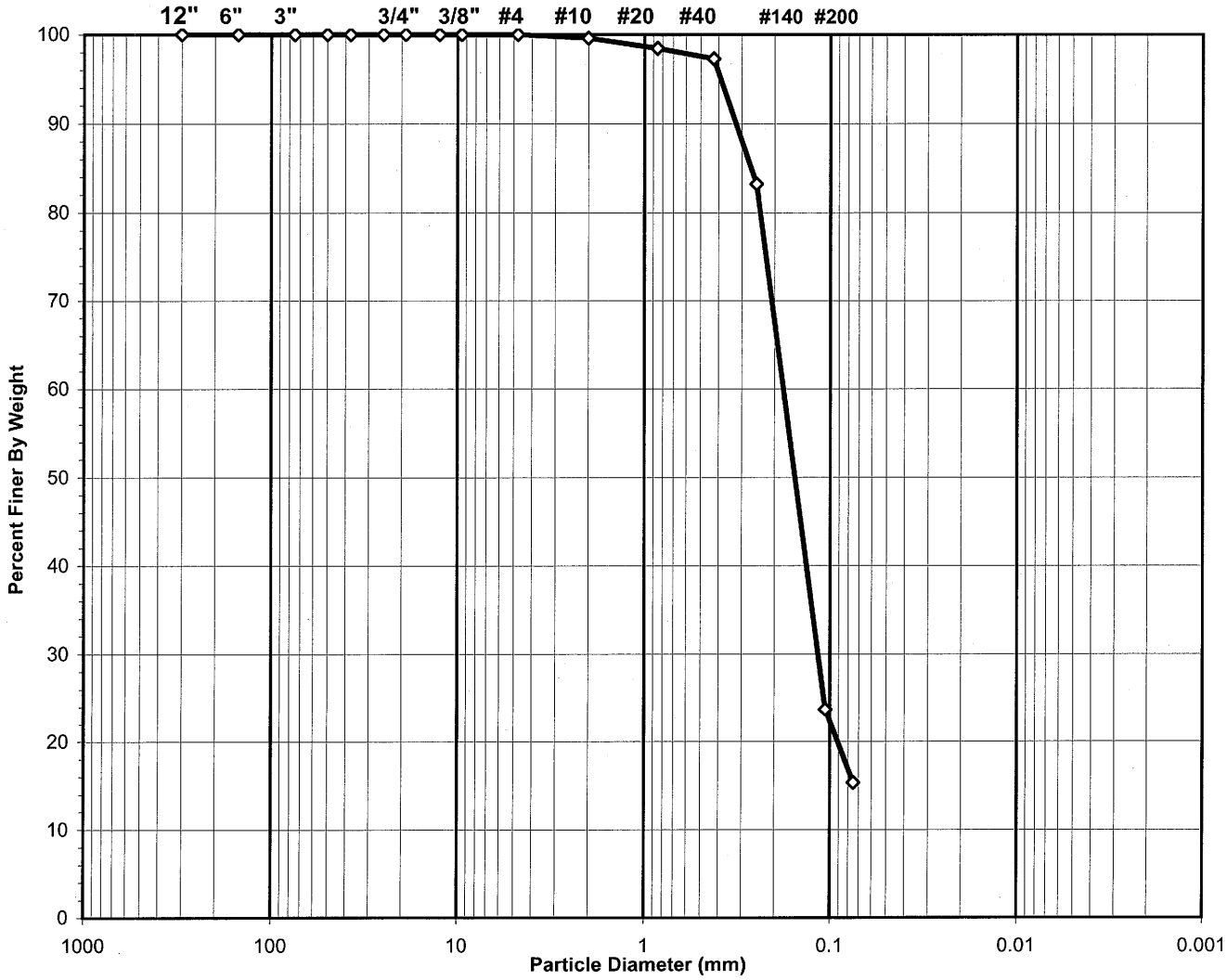
# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-14 |
| Lab ID | 2010-652-13-10 | Soil Color | **GRAYISH BROWN** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |




***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10


DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-10 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-14 |
| Lab ID | 2010-652-13-10 | Soil Color | **GRAYISH BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 209 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 657.42 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 589.32 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 171.69 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 68.10 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 417.63 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **16.3** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 417.63 |
| Dry Weight - 3/4" Sample (gm) | 353.6 | Weight of minus #200 material (gm) | 64.04 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 353.59 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 1.73 | 0.4 | 0.4 | 99.6 | **99.6** |
| #20 | 0.850 | 4.67 | 1.1 | 1.5 | 98.5 | **98.5** |
| #40 | 0.425 | 4.97 | 1.2 | 2.7 | 97.3 | **97.3** |
| #60 | 0.250 | 58.64 | 14.0 | 16.8 | 83.2 | **83.2** |
| #140 | 0.106 | 248.60 | 59.5 | 76.3 | 23.7 | **23.7** |
| #200 | 0.075 | 34.98 | 8.4 | 84.7 | 15.3 | **15.3** |
| Pan | - | 64.04 | 15.3 | 100.0 | - | **-** |

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10





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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-15 |
| Lab ID | 2010-652-13-11 | Soil Color | **GRAYISH BROWN** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| ***USCS*** | **gravel** | **sand** | **silt and clay** |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 7/8/2010 Checked By GSM Date 7-9-10


DCN: CT-S3C DATE 6-25-98 REVISION 2 *S:\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-11 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-15 |
| Lab ID | 2010-652-13-11 | Soil Color | **GRAYISH BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 201 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 646.73 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 579.13 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 170.70 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 67.60 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 408.43 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **16.6** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 408.43 |
| Dry Weight - 3/4" Sample (gm) | 351.2 | Weight of minus #200 material (gm) | 57.27 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 351.16 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 2.13 | 0.5 | 0.5 | 99.5 | **99.5** |
| #20 | 0.850 | 5.42 | 1.3 | 1.8 | 98.2 | **98.2** |
| #40 | 0.425 | 5.71 | 1.4 | 3.2 | 96.8 | **96.8** |
| #60 | 0.250 | 59.89 | 14.7 | 17.9 | 82.1 | **82.1** |
| #140 | 0.106 | 243.59 | 59.6 | 77.6 | 22.4 | **22.4** |
| #200 | 0.075 | 34.42 | 8.4 | 86.0 | 14.0 | **14.0** |
| Pan | - | 57.27 | 14.0 | 100.0 | - | **-** |

Tested By SD Date 7/8/2010 Checked By GCM Date 7-9-10





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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-16 |
| Lab ID | 2010-652-13-12 | Soil Color | **GRAYISH BROWN** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| **USCS** | **gravel** | **sand** | **silt and clay** |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 7/8/2010 Checked By GOM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-12 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-16 |
| Lab ID | 2010-652-13-12 | Soil Color | **GRAYISH BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 215 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 723.95 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 642.24 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 172.42 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 81.71 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 469.82 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **17.4** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 469.82 |
| Dry Weight - 3/4" Sample (gm) | 387.8 | Weight of minus #200 material (gm) | 82.07 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 387.75 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 3.07 | 0.7 | 0.7 | 99.3 | **99.3** |
| #20 | 0.850 | 5.79 | 1.2 | 1.9 | 98.1 | **98.1** |
| #40 | 0.425 | 5.57 | 1.2 | 3.1 | 96.9 | **96.9** |
| #60 | 0.250 | 65.10 | 13.9 | 16.9 | 83.1 | **83.1** |
| #140 | 0.106 | 270.09 | 57.5 | 74.4 | 25.6 | **25.6** |
| #200 | 0.075 | 38.13 | 8.1 | 82.5 | 17.5 | **17.5** |
| Pan | - | 82.07 | 17.5 | 100.0 | - | - |

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-12 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-17 |
| Lab ID | 2010-652-13-13 | Soil Color | **GRAYISH BROWN** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| USCS | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 7/8/2010 Checked By GM Date 7-9-10


DCN: CT-S3C DATE 6-25-98 REVISION 2 *C:\Documents and Settings\Owner\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-01 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-17 |
| Lab ID | 2010-652-13-13 | Soil Color | **GRAYISH BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 217 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 694.41 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 614.56 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 171.08 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 79.85 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 443.48 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **18.0** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 443.48 |
| Dry Weight - 3/4" Sample (gm) | 357.8 | Weight of minus #200 material (gm) | 85.73 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 357.75 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 1.39 | 0.3 | 0.3 | 99.7 | **99.7** |
| #20 | 0.850 | 3.94 | 0.9 | 1.2 | 98.8 | **98.8** |
| #40 | 0.425 | 4.49 | 1.0 | 2.2 | 97.8 | **97.8** |
| #60 | 0.250 | 54.67 | 12.3 | 14.5 | 85.5 | **85.5** |
| #140 | 0.106 | 254.49 | 57.4 | 71.9 | 28.1 | **28.1** |
| #200 | 0.075 | 38.77 | 8.7 | 80.7 | 19.3 | **19.3** |
| Pan | - | 85.73 | 19.3 | 100.0 | - | - |

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-13 SIEVON REV 4.XLS]Sheet1*

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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-18 |
| Lab ID | 2010-652-13-14 | Soil Color | **GRAYISH BROWN** |

| USCS | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| | gravel | sand | silt and clay |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-14 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-18 |
| Lab ID | 2010-652-13-14 | Soil Color | **GRAYISH BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 213 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 673.53 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 603.59 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 173.17 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 69.94 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 430.42 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **16.2** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 430.42 |
| Dry Weight - 3/4" Sample (gm) | 359.4 | Weight of minus #200 material (gm) | 71.02 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 359.40 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 1.79 | 0.4 | 0.4 | 99.6 | **99.6** |
| #20 | 0.850 | 4.31 | 1.0 | 1.4 | 98.6 | **98.6** |
| #40 | 0.425 | 4.82 | 1.1 | 2.5 | 97.5 | **97.5** |
| #60 | 0.250 | 57.83 | 13.4 | 16.0 | 84.0 | **84.0** |
| #140 | 0.106 | 252.59 | 58.7 | 74.7 | 25.3 | **25.3** |
| #200 | 0.075 | 38.06 | 8.8 | 83.5 | 16.5 | **16.5** |
| Pan | - | 71.02 | 16.5 | 100.0 | - | **-** |

Tested By SD Date 7/8/2010 Checked By GBM Date 7-9-10



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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-19 |
| Lab ID | 2010-652-13-15 | Soil Color | **GRAYISH BROWN** |

| | *SIEVE ANALYSIS* | | *HYDROMETER* |
|---|---|---|---|
| ***USCS*** | **gravel** | **sand** | **silt and clay** |

***USCS Symbol*** ***SM, TESTED (NON PLATIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-15 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-19 |
| Lab ID | 2010-652-13-15 | Soil Color | **GRAYISH BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 202 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 753.80 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 671.61 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 197.33 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 82.19 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 474.28 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **17.3** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 474.28 |
| Dry Weight - 3/4" Sample (gm) | 394.7 | Weight of minus #200 material (gm) | 79.63 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 394.65 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 2.56 | 0.5 | 0.5 | 99.5 | **99.5** |
| #20 | 0.850 | 5.82 | 1.2 | 1.8 | 98.2 | **98.2** |
| #40 | 0.425 | 6.02 | 1.3 | 3.0 | 97.0 | **97.0** |
| #60 | 0.250 | 67.71 | 14.3 | 17.3 | 82.7 | **82.7** |
| #140 | 0.106 | 274.37 | 57.8 | 75.2 | 24.8 | **24.8** |
| #200 | 0.075 | 38.17 | 8.0 | 83.2 | 16.8 | **16.8** |
| Pan | - | 79.63 | 16.8 | 100.0 | - | **-** |

Tested By SD Date 7/8/2010 Checked By GEM Date 7-9-10





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# SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-20 |
| Lab ID | 2010-652-13-16 | Soil Color | **GRAYISH BROWN** |

| | SIEVE ANALYSIS | | HYDROMETER |
|---|---|---|---|
| ***USCS*** | **gravel** | **sand** | **silt and clay** |

***USCS Symbol*** ***SM, TESTED (NON PLASTIC FINES)***

***USCS Classification*** ***SILTY SAND***

Tested By SD Date 7/8/2010 Checked By GM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-16 SIEVON REV 4.XLS]Sheet1*

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# WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-20 |
| Lab ID | 2010-652-13-16 | Soil Color | **GRAYISH BROWN** |

| Moisture Content of Passing 3/4" Material | | Water Content of Retained 3/4" Material | |
|---|---|---|---|
| Tare No. | 203 | Tare No. | NA |
| Wgt.Tare + Wet Specimen (gm) | 737.03 | Wgt.Tare + Wet Specimen (gm) | NA |
| Wgt.Tare + Dry Specimen (gm) | 661.27 | Wgt.Tare + Dry Specimen (gm) | NA |
| Weight of Tare (gm) | 171.03 | Weight of Tare (gm) | NA |
| Weight of Water (gm) | 75.76 | Weight of Water (gm) | NA |
| Weight of Dry Soil (gm) | 490.24 | Weight of Dry Soil (gm) | NA |
| **Moisture Content (%)** | **15.5** | **Moisture Content (%)** | **NA** |

| | | | |
|---|---|---|---|
| Wet Weight -3/4" Sample (gm) | NA | Weight of the Dry Specimen (gm) | 490.24 |
| Dry Weight - 3/4" Sample (gm) | 424.4 | Weight of minus #200 material (gm) | 65.86 |
| Wet Weight +3/4" Sample (gm) | NA | Weight of plus #200 material (gm) | 424.38 |
| Dry Weight + 3/4" Sample (gm) | 0.00 | | |
| Total Dry Weight Sample (gm) | NA | | |

| Sieve Size | Sieve Opening (mm) | Wgt.of Soil Retained (gm) | Percent Retained (%) | Accumulated Percent Retained (%) | Percent Finer (%) | **Accumulated Percent Finer (%)** |
|---|---|---|---|---|---|---|
| 12" | 300 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 6" | 150 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3" | 75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 2" | 50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1 1/2" | 37.5 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1" | 25.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/4" | 19.0 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 1/2" | 12.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| 3/8" | 9.50 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #4 | 4.75 | 0.00 | 0.0 | 0.0 | 100.0 | **100.0** |
| #10 | 2.00 | 2.38 | 0.5 | 0.5 | 99.5 | **99.5** |
| #20 | 0.850 | 5.29 | 1.1 | 1.6 | 98.4 | **98.4** |
| #40 | 0.425 | 5.66 | 1.2 | 2.7 | 97.3 | **97.3** |
| #60 | 0.250 | 82.92 | 16.9 | 19.6 | 80.4 | **80.4** |
| #140 | 0.106 | 290.86 | 59.3 | 79.0 | 21.0 | **21.0** |
| #200 | 0.075 | 37.27 | 7.6 | 86.6 | 13.4 | **13.4** |
| Pan | - | 65.86 | 13.4 | 100.0 | - | - |

Tested By SD Date 7/8/2010 Checked By GAM Date 7-9-10



DCN: CT-S3C DATE 6-25-98 REVISION 2 *Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-16 SIEVON REV 4.XLS]Sheet1*

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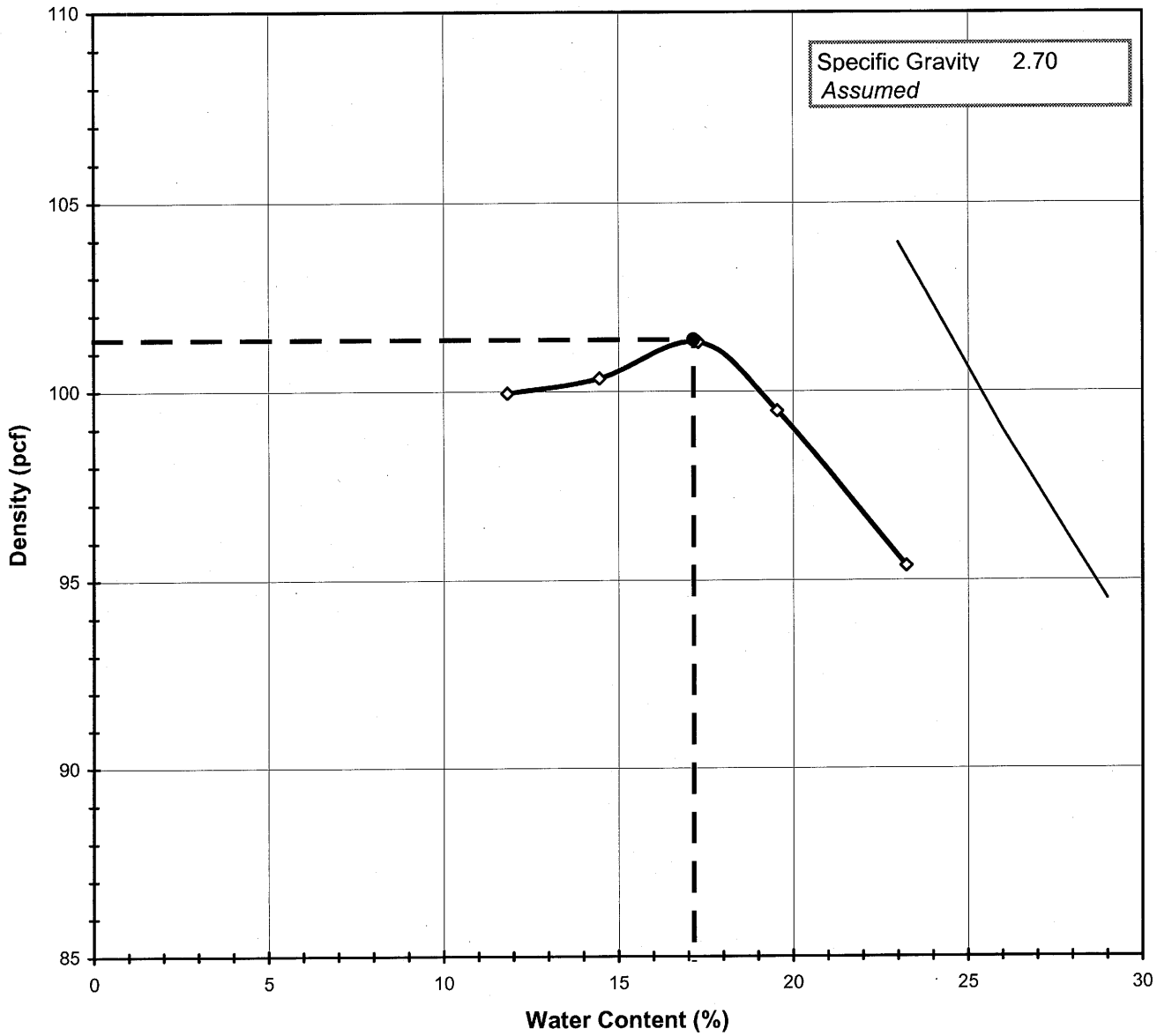
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-5 |
| Lab ID | 2010-652-13-01 | Test Method | **STANDARD** |

Visual Description GRAY SILTY SAND

**Optimum Water Content** **17.2**
**Maximum Dry Density** **101.4**




*Tested By* SD *Date* 7/12/2010 *Checked By* GEM *Date* 7-13-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-01 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-5 |
| Lab ID | 2010-652-13-01 | | |

Visual Description GRAY SILTY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 24500 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4307 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 5993 | 6040 | 6099 | 6101 | 6080 |
| Wt.of Mold (gm) | 4307 | 4307 | 4307 | 4307 | 4307 |
| Wt. of WS | 1686 | 1732 | 1792 | 1794 | 1773 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 812 | 807 | 814 | 803 | 802 |
| Wt. of Tare & WS (gm) | 355.20 | 392.50 | 450.60 | 398.50 | 455.30 |
| Wt. of Tare & DS (gm) | 328.92 | 356.13 | 400.67 | 350.29 | 388.95 |
| Wt. of Tare (gm) | 106.80 | 104.70 | 111.90 | 103.70 | 103.40 |
| Wt. of Water (gm) | 26.28 | 36.37 | 49.93 | 48.21 | 66.35 |
| Wt. of DS (gm) | 222.12 | 251.43 | 288.77 | 246.59 | 285.55 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.79 | 1.84 | 1.90 | 1.91 | 1.88 |
| Wet Density (pcf) | 111.8 | 114.9 | 118.8 | 118.9 | 117.5 |
| **Moisture Content (%)** | **11.8** | **14.5** | **17.3** | **19.6** | **23.2** |
| **Dry Density (pcf)** | **99.9** | **100.3** | **101.3** | **99.5** | **95.4** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 23.0 | 26.0 | 29.0 |
| **Dry Unit Weight (pcf)** | 103.9 | 99.0 | 94.5 |

*Tested By* SD *Date* 7/12/2010 *Checked By* GEM *Date* 7-13-10



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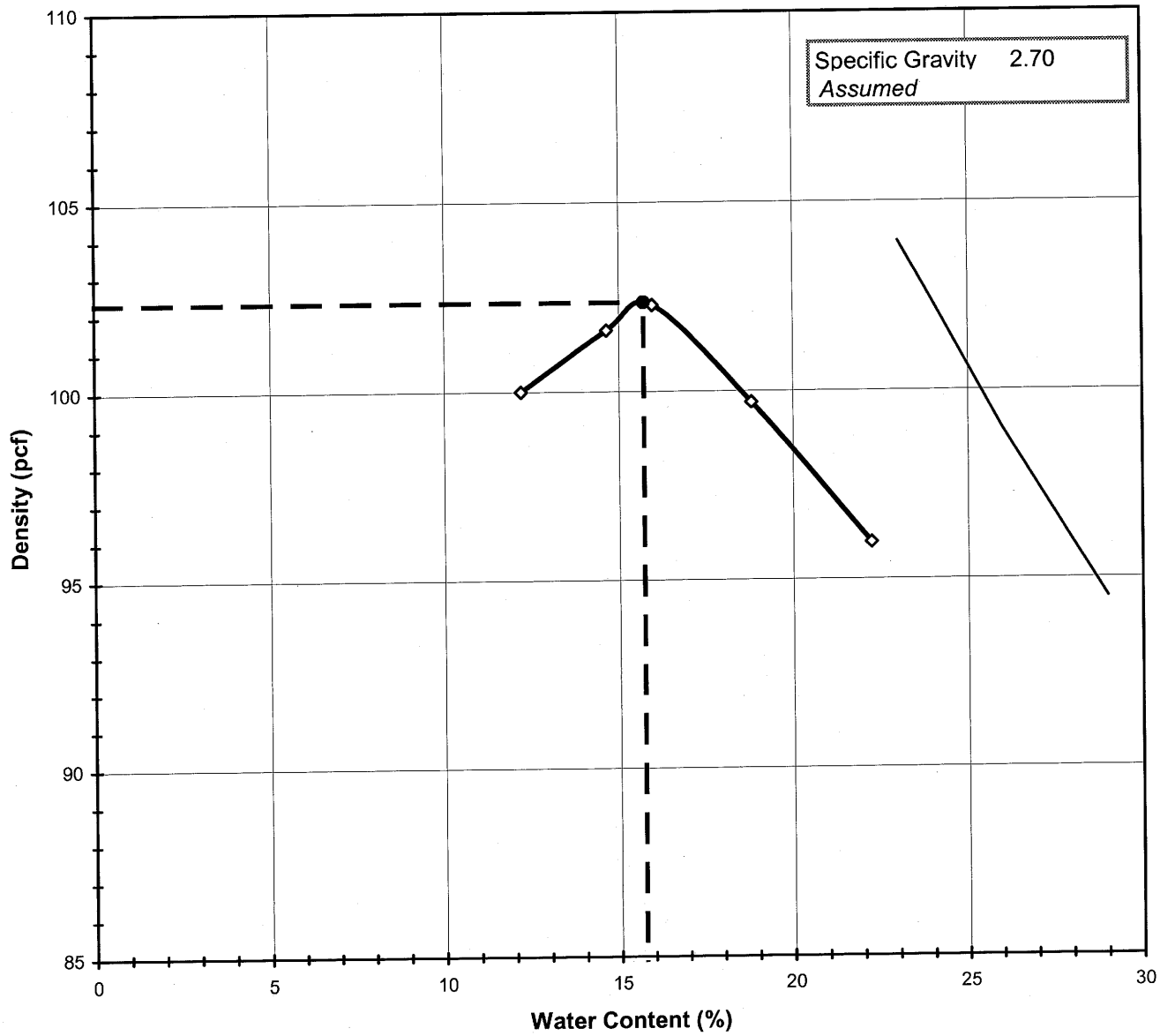
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-6 |
| Lab ID | 2010-652-13-02 | Test Method | **STANDARD** |

Visual Description GRAY POORLY GRADED SAND WITH SILT

**Optimum Water Content** **15.7**
**Maximum Dry Density** **102.3**

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-6 |
| Lab ID | 2010-652-13-02 | | |

Visual Description GRAY POORLY GRADED SAND WITH SILT

| | |
|---|---|
| Total Weight of the Sample (gm) | 23823 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4306 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 5999 | 6063 | 6095 | 6093 | 6076 |
| Wt.of Mold (gm) | 4306 | 4306 | 4306 | 4306 | 4306 |
| Wt. of WS | 1692 | 1757 | 1789 | 1787 | 1769 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 399 | 307 | 306 | 315 | Y-3 |
| Wt. of Tare & WS (gm) | 535.90 | 387.20 | 458.60 | 436.70 | 478.60 |
| Wt. of Tare & DS (gm) | 487.18 | 351.97 | 407.63 | 385.10 | 409.49 |
| Wt. of Tare (gm) | 87.50 | 111.30 | 88.50 | 111.00 | 98.50 |
| Wt. of Water (gm) | 48.72 | 35.23 | 50.97 | 51.60 | 69.11 |
| Wt. of DS (gm) | 399.68 | 240.67 | 319.13 | 274.10 | 310.99 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.80 | 1.87 | 1.90 | 1.90 | 1.88 |
| Wet Density (pcf) | 112.2 | 116.5 | 118.6 | 118.5 | 117.3 |
| **Moisture Content (%)** | **12.2** | **14.6** | **16.0** | **18.8** | **22.2** |
| **Dry Density (pcf)** | **100.0** | **101.6** | **102.3** | **99.7** | **96.0** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 23.0 | 26.0 | 29.0 |
| **Dry Unit Weight (pcf)** | 103.9 | 99.0 | 94.5 |

*Tested By* SD *Date* 7/12/2010 *Checked By* GAM *Date* 7-13-10



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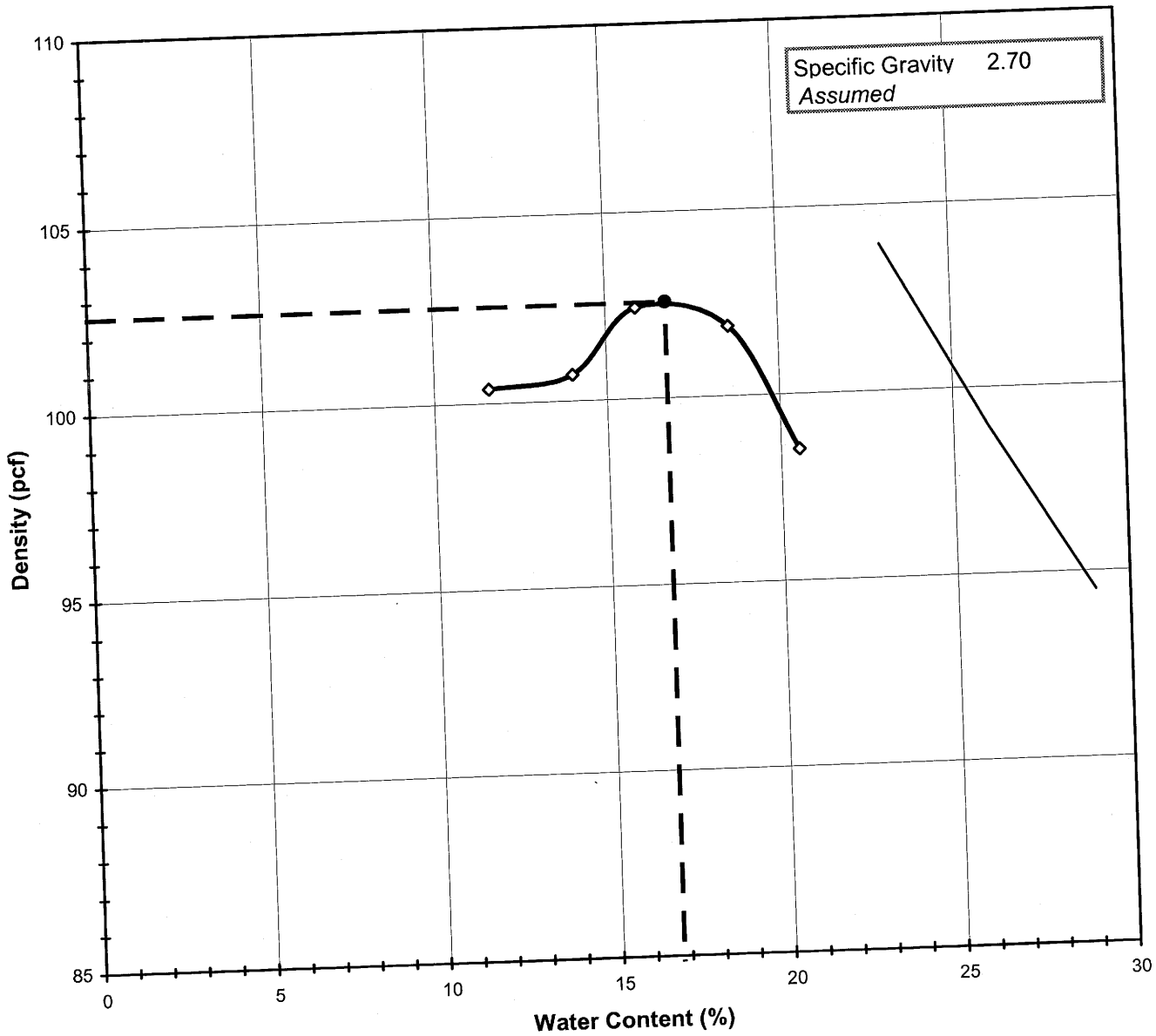
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-7 |
| Lab ID | 2010-652-13-03 | Test Method | **STANDARD** |

Visual Description GRAY POORLY GRADED SAND WITH SILT

**Optimum Water Content** **16.8**
**Maximum Dry Density** **102.6**




*Tested By* SD *Date* 7/14/2010 *Checked By* GEM *Date* 7-15-10



DCN:CT-S12 DATE:12/11/00 REVISION 5 \\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-03 Proctor.XLS]Sheet1

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-7 |
| Lab ID | 2010-652-13-03 | | |

Visual Description GRAY POORLY GRADED SAND WITH SILT

| | |
|---|---|
| Total Weight of the Sample (gm) | 26061 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4306 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 5996 | 6038 | 6097 | 6128 | 6097 |
| Wt.of Mold (gm) | 4306 | 4306 | 4306 | 4306 | 4306 |
| Wt. of WS | 1689 | 1732 | 1790 | 1822 | 1791 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 311 | 317 | 304 | 303 | 308 |
| Wt. of Tare & WS (gm) | 388.70 | 502.80 | 511.30 | 463.70 | 563.30 |
| Wt. of Tare & DS (gm) | 357.13 | 451.32 | 456.42 | 408.59 | 486.32 |
| Wt. of Tare (gm) | 84.70 | 84.20 | 110.70 | 111.60 | 111.40 |
| Wt. of Water (gm) | 31.57 | 51.48 | 54.88 | 55.11 | 76.98 |
| Wt. of DS (gm) | 272.43 | 367.12 | 345.72 | 296.99 | 374.92 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.79 | 1.84 | 1.90 | 1.94 | 1.90 |
| Wet Density (pcf) | 112.0 | 114.8 | 118.7 | 120.8 | 118.7 |
| **Moisture Content (%)** | **11.6** | **14.0** | **15.9** | **18.6** | **20.5** |
| **Dry Density (pcf)** | **100.4** | **100.7** | **102.4** | **101.9** | **98.5** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 23.0 | 26.0 | 29.0 |
| **Dry Unit Weight (pcf)** | 103.9 | 99.0 | 94.5 |

*Tested By* SD *Date* 7/14/2010 *Checked By* GM *Date* 7-15-10



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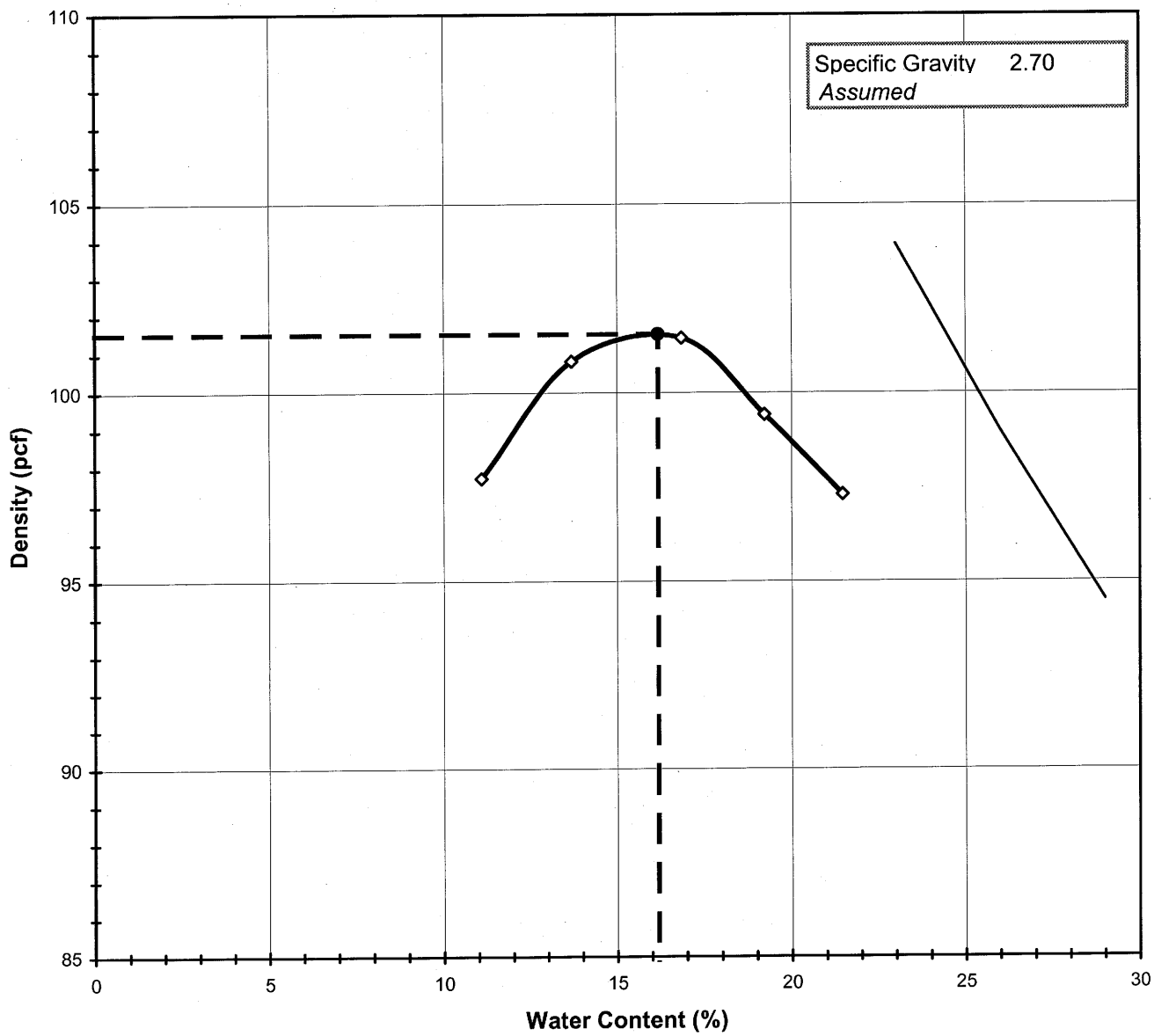
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-8 |
| Lab ID | 2010-652-13-04 | Test Method | **STANDARD** |

Visual Description GRAYISH BROWN POORLY GRADED SAND WITH SILT

**Optimum Water Content** **16.2**
**Maximum Dry Density** **101.5**




*Tested By* SD *Date* 7/12/2010 *Checked By* GM *Date* 7-13-10

 *DCN:CT-S12 DATE:12/11/00 REVISION 5* *\\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-04 Proctor.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-8 |
| Lab ID | 2010-652-13-04 | | |

Visual Description GRAYISH BROWN POORLY GRADED SAND WITH SILT

| | |
|---|---|
| Total Weight of the Sample (gm) | 23599 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4306 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 5944 | 6035 | 6094 | 6094 | 6089 |
| Wt.of Mold (gm) | 4306 | 4306 | 4306 | 4306 | 4306 |
| Wt. of WS | 1638 | 1729 | 1788 | 1788 | 1783 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 398 | 303 | 304 | 311 | 305 |
| Wt. of Tare & WS (gm) | 432.90 | 394.90 | 460.60 | 497.10 | 540.80 |
| Wt. of Tare & DS (gm) | 398.12 | 360.72 | 410.15 | 430.60 | 460.21 |
| Wt. of Tare (gm) | 84.40 | 111.20 | 110.80 | 84.70 | 84.90 |
| Wt. of Water (gm) | 34.78 | 34.18 | 50.45 | 66.50 | 80.59 |
| Wt. of DS (gm) | 313.72 | 249.52 | 299.35 | 345.90 | 375.31 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.74 | 1.84 | 1.90 | 1.90 | 1.89 |
| Wet Density (pcf) | 108.6 | 114.6 | 118.5 | 118.5 | 118.2 |
| **Moisture Content (%)** | **11.1** | **13.7** | **16.9** | **19.2** | **21.5** |
| **Dry Density (pcf)** | **97.7** | **100.8** | **101.4** | **99.4** | **97.3** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 23.0 | 26.0 | 29.0 |
| **Dry Unit Weight (pcf)** | 103.9 | 99.0 | 94.5 |

*Tested By* SD *Date* 7/12/2010 *Checked By* GEM *Date* 7-13-10



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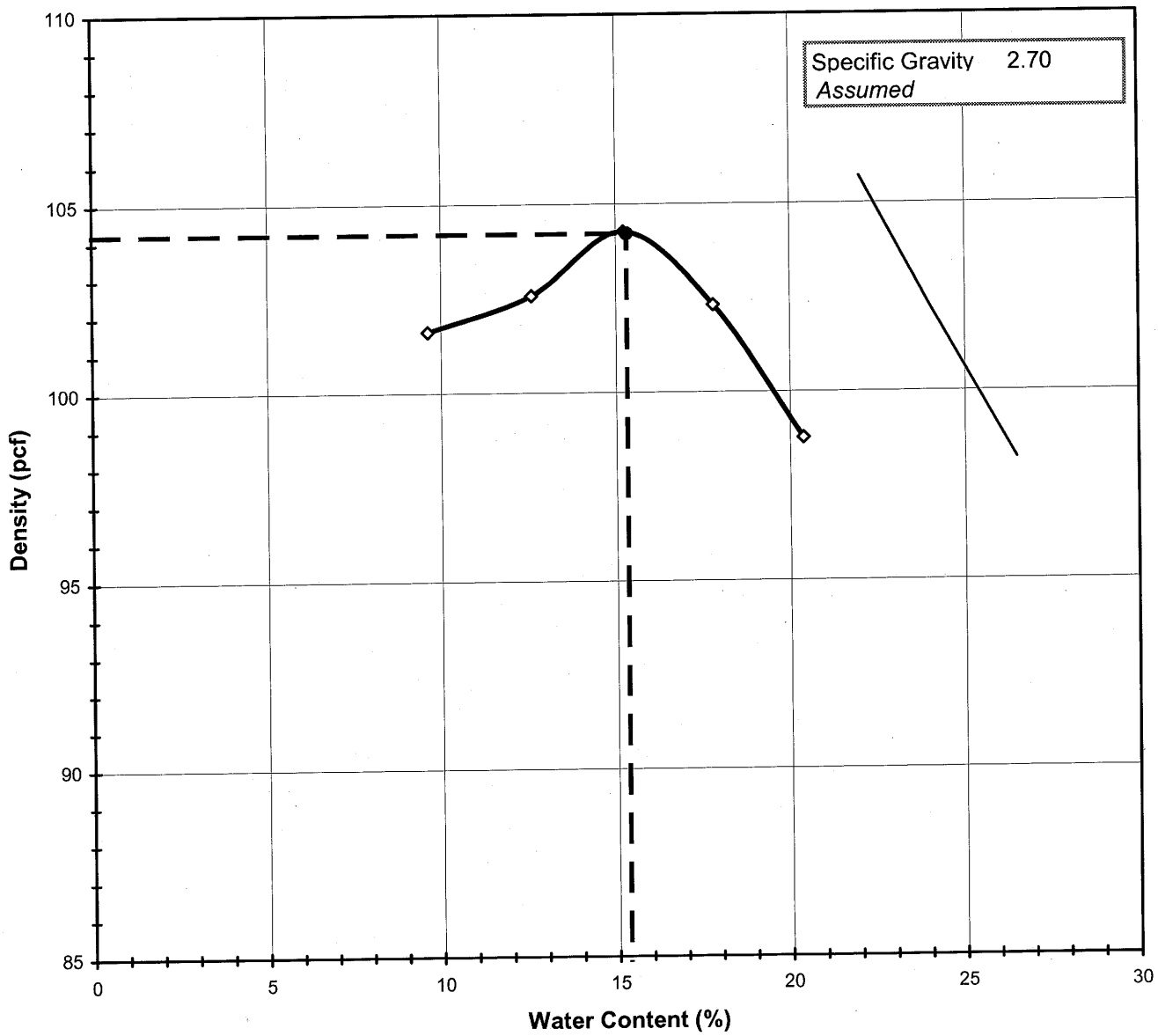
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-9 |
| Lab ID | 2010-652-13-05 | Test Method | **STANDARD** |

Visual Description GRAY POORLY GRADED SAND WITH SILT

**Optimum Water Content** **15.3**
**Maximum Dry Density** **104.2**




*Tested By* SD *Date* 7/12/2010 *Checked By* GEM *Date* 7-13-10

 DCN:CT-S12 DATE:12/11/00 REVISION 5 \\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-05 Proctor.XLS]Sheet1

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-9 |
| Lab ID | 2010-652-13-05 | | |

Visual Description GRAY POORLY GRADED SAND WITH SILT

| | |
|---|---|
| Total Weight of the Sample (gm) | 25692 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4306 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 5987 | 6048 | 6118 | 6124 | 6100 |
| Wt.of Mold (gm) | 4306 | 4306 | 4306 | 4306 | 4306 |
| Wt. of WS | 1680 | 1742 | 1812 | 1818 | 1794 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 310 | 318 | 309 | 300 | 312 |
| Wt. of Tare & WS (gm) | 487.50 | 407.00 | 482.60 | 358.40 | 508.90 |
| Wt. of Tare & DS (gm) | 454.37 | 371.19 | 433.35 | 321.00 | 436.99 |
| Wt. of Tare (gm) | 110.00 | 86.70 | 109.90 | 110.90 | 84.20 |
| Wt. of Water (gm) | 33.13 | 35.81 | 49.25 | 37.40 | 71.91 |
| Wt. of DS (gm) | 344.37 | 284.49 | 323.45 | 210.10 | 352.79 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.79 | 1.85 | 1.93 | 1.93 | 1.91 |
| Wet Density (pcf) | 111.4 | 115.5 | 120.1 | 120.5 | 118.9 |
| **Moisture Content (%)** | **9.6** | **12.6** | **15.2** | **17.8** | **20.4** |
| **Dry Density (pcf)** | **101.6** | **102.6** | **104.3** | **102.3** | **98.8** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 22.0 | 24.0 | 26.5 |
| **Dry Unit Weight (pcf)** | 105.7 | 102.2 | 98.2 |

*Tested By* SD *Date* 7/12/2010 *Checked By* GEM *Date* 7-13-10



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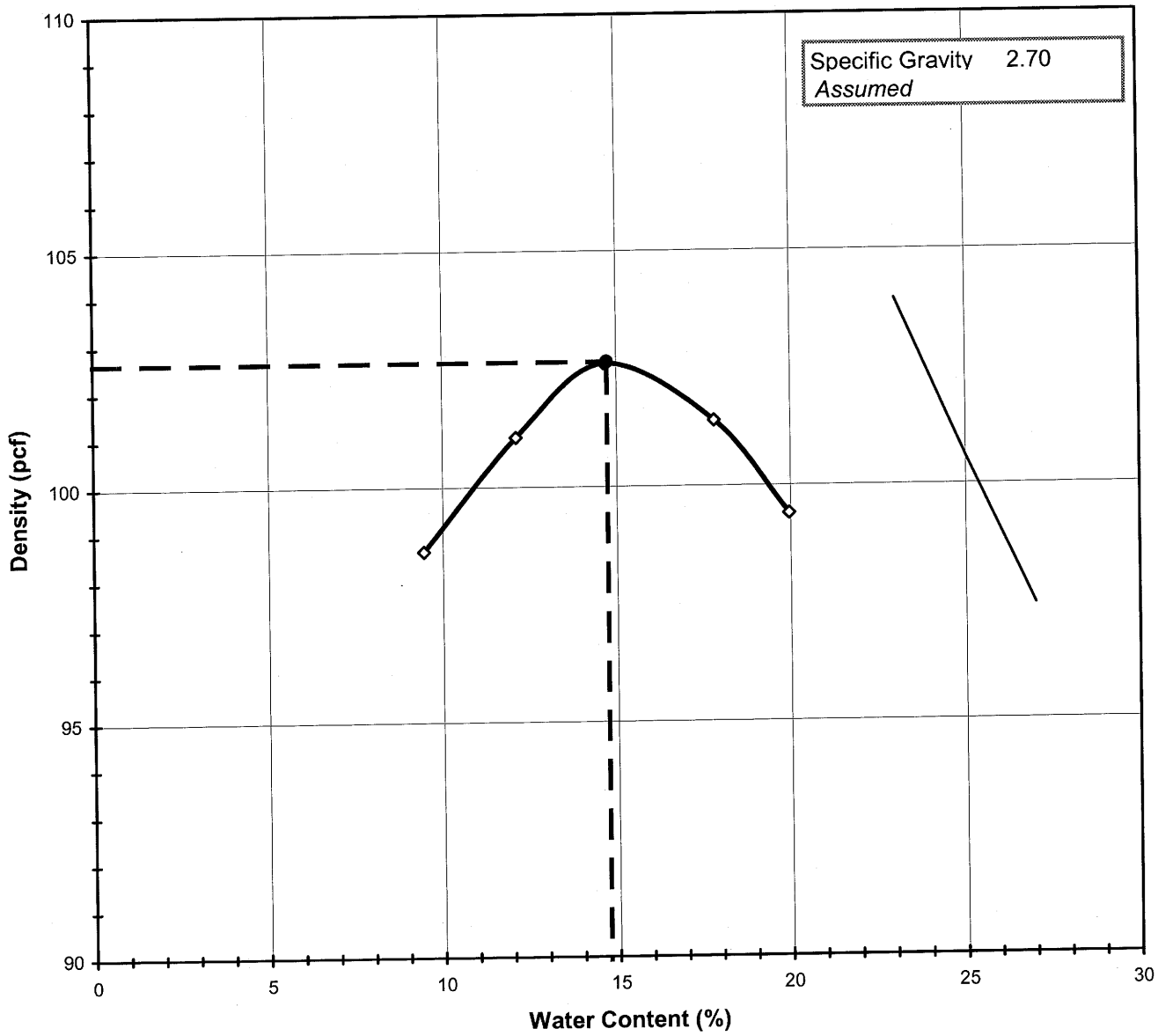
# MOISTURE DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-10 |
| Lab ID | 2010-652-13-06 | Test Method | **STANDARD** |

Visual Description GRAY SILTY SAND

**Optimum Water Content** **14.7**
**Maximum Dry Density** **102.6**




*Tested By* SD *Date* 7/9/2010 *Checked By* GEM *Date* 7-12-10



*DCN:CT-S12 DATE:12/11/00 REVISION 5 \\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-06 SIEVON REV 4.XLS]Sheet1*

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# MOISTURE - DENSITY RELATIONSHIP

*ASTM D698-91 SOP-S12*

| | | | |
|---|---|---|---|
| Client | GLOVER CONSTRUCTION | Boring No. | BORROW PIT |
| Client Reference | DARE CO. C&D LF | Depth (ft) | NA |
| Project No. | 2010-652-13 | Sample No. | S-10 |
| Lab ID | 2010-652-13-06 | | |

Visual Description GRAY SILTY SAND

| | |
|---|---|
| Total Weight of the Sample (gm) | 25502 |
| As Received Water Content(%) | NA |
| *Assumed* Specific Gravity | 2.70 |
| Percent Retained on 3/4" | NA |
| Percent Retained on 3/8" | NA |
| Percent Retained on #4 | NA |
| Oversize Material | Not included |
| Procedure Used | A |

| | | |
|---|---|---|
| TestType | | **STANDARD** |
| Rammer Weight (lbs) | | 5.5 |
| Rammer Drop (in) | | 12 |
| Rammer Type | | MECHANICAL |
| Machine ID | R | 174 |
| Mold ID | R | 172 |
| Mold diameter | | 4" |
| Weight of the Mold | | 4306 |
| Volume of the Mold(cc) | | 941 |

## Mold / Specimen

| **Point No.** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Wt. of Mold & WS (gm) | 5935 | 6015 | 6081 | 6108 | 6105 |
| Wt.of Mold (gm) | 4306 | 4306 | 4306 | 4306 | 4306 |
| Wt. of WS | 1628 | 1709 | 1774 | 1802 | 1799 |
| Mold Volume (cc) | 941 | 941 | 941 | 941 | 941 |

## Moisture Content / Density

| | | | | | |
|---|---|---|---|---|---|
| Tare Number | 308 | 318 | 314 | K-7 | 309 |
| Wt. of Tare & WS (gm) | 493.00 | 469.10 | 420.00 | 484.70 | 478.80 |
| Wt. of Tare & DS (gm) | 460.04 | 427.77 | 377.15 | 428.09 | 417.38 |
| Wt. of Tare (gm) | 111.30 | 86.90 | 84.60 | 110.30 | 109.60 |
| Wt. of Water (gm) | 32.96 | 41.33 | 42.85 | 56.61 | 61.42 |
| Wt. of DS (gm) | 348.74 | 340.87 | 292.55 | 317.79 | 307.78 |

| | | | | | |
|---|---|---|---|---|---|
| Wet Density (gm/cc) | 1.73 | 1.82 | 1.89 | 1.91 | 1.91 |
| Wet Density (pcf) | 108.0 | 113.3 | 117.6 | 119.4 | 119.2 |
| **Moisture Content (%)** | **9.5** | **12.1** | **14.6** | **17.8** | **20.0** |
| **Dry Density (pcf)** | **98.6** | **101.1** | **102.6** | **101.4** | **99.4** |

## Zero Air Voids

| | | | |
|---|---|---|---|
| **Moisture Content (%)** | 23.0 | 25.0 | 27.0 |
| **Dry Unit Weight (pcf)** | 103.9 | 100.6 | 97.4 |

*Tested By* SD *Date* 7/9/2010 *Checked By* GEM *Date* 7-12-10



*DCN:CT-S12 DATE:12/11/00 REVISION 5 \\Server\data drive\2010 PROJECTS\2010-652 GLOVER DARE CO\[2010-652-13-06 SIEVON REV 4.XLS]Sheet1*

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# *Appendix A-7*

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase No. 4
**Project Number :** 2010-652

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# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-01** | Geotechnics Representative : Jacob R. Buda | Page : 1 of 10 |
| Date (s) : **4.5. - 4.16.10** | Reviewed By : MMB | Date : 4-23-10 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Stockpile |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 01 | ACRE 1 | BRIDGE LIFT | 8" | 652-01-03 | 101.7 | 16.2 | **111.0** | **10.9** | **100.1** | **98.4%** | **95.0%** | |
| SC - 01 | ACRE 1 | BRIDGE LIFT | NA | 652-01-03 | 101.7 | 16.2 | **109.1** | **11.2** | **98.1** | **96.5%** | **95.0%** | |
| ND - 02 | ACRE 1 | BRIDGE LIFT | 8" | 652-01-03 | 101.7 | 16.2 | **112.5** | **11.2** | **101.2** | **99.5%** | **95.0%** | |
| ND - 03 | ACRE 1 | BRIDGE LIFT | 8" | 652-01-03 | 101.7 | 16.2 | **111.4** | **9.9** | **101.4** | **99.7%** | **95.0%** | |
| ND - 04 | ACRE 1 | BRIDGE LIFT | 8" | 652-01-03 | 101.7 | 16.2 | **113.3** | **14.9** | **98.6** | **97.0%** | **95.0%** | |
| ND - 05 | ACRE 2 | BRIDGE LIFT | 8" | 652-01-03 | 101.7 | 16.2 | **113.9** | **11.1** | **102.5** | **100.8%** | **95.0%** | |
| ND - 06 | ACRE 2 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **122.7** | **14.2** | **107.4** | **97.6%** | **95.0%** | |
| SC - 02 | ACRE 2 | BRIDGE LIFT | NA | 1pt.-02 | 110.1 | 14.2 | **119.9** | **12.4** | **106.7** | **96.9%** | **95.0%** | |
| ND - 07 | ACRE 2 | BRIDGE LIFT | 8" | 652-01-03 | 101.7 | 16.2 | **112.7** | **11.6** | **101.0** | **99.3%** | **95.0%** | |
| ND - 08 | ACRE 2 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **118.5** | **12.7** | **105.1** | **97.5%** | **95.0%** | |
| ND - 09 | ACRE 3 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **117.7** | **12.7** | **104.4** | **96.9%** | **95.0%** | |
| ND - 10 | ACRE 3 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **122.3** | **11.3** | **109.9** | **99.8%** | **95.0%** | |
| ND - 11 | ACRE 3 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **118.1** | **11.9** | **105.5** | **97.9%** | **95.0%** | |
| ND - 12 | ACRE 3 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **124.5** | **10.2** | **113.0** | **102.6%** | **95.0%** | |
| ND - 13 | ACRE 4 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **118.1** | **13.5** | **104.1** | **96.5%** | **95.0%** | |
| ND - 14 | ACRE 4 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **119.9** | **10.0** | **109.0** | **99.0%** | **95.0%** | |
| ND - 15 | ACRE 4 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **116.2** | **11.6** | **104.1** | **96.6%** | **95.0%** | |
| ND - 16 | ACRE 4 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **118.3** | **12.8** | **104.9** | **97.3%** | **95.0%** | |
| ND - 17 | ACRE 1 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **121.0** | **11.3** | **108.7** | **100.8%** | **95.0%** | |
| ND - 18 | ACRE 1 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **117.1** | **11.0** | **105.5** | **97.9%** | **95.0%** | |
| ND - 19 | ACRE 1 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.8** | **11.1** | **106.9** | **99.2%** | **95.0%** | |
| ND - 20 | ACRE 1 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **117.0** | **11.1** | **105.3** | **97.7%** | **95.0%** | |
| ND - 21 | ACRE 2 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.6** | **11.5** | **106.4** | **98.7%** | **95.0%** | |
| ND - 22 | ACRE 2 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **115.5** | **10.5** | **104.5** | **97.0%** | **95.0%** | |
| ND - 23 | ACRE 2 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.4** | **12.8** | **105.0** | **97.4%** | **95.0%** | |
| ND - 24 | ACRE 2 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **121.3** | **12.9** | **107.4** | **99.7%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase No. 4
**Project Number :** 2010-652

geotechnics
INTEGRITY IN TESTING

# Field Density Report

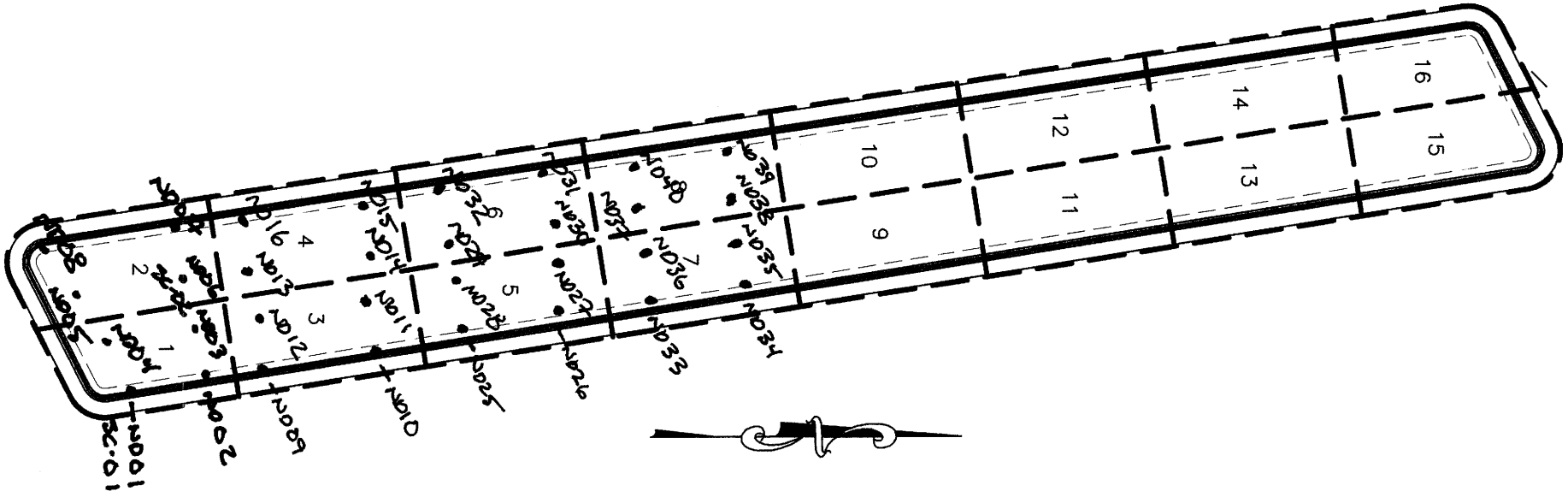
| | | |
|---|---|---|
| Report Number : **CFFDR-01** | Geotechnics Representative : Jacob R. Buda | Page : 2 of 10 |
| Date (s) : **4.5. - 4.16.10** | Reviewed By : MPS | Date : 4-23-10 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Stockpile |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller

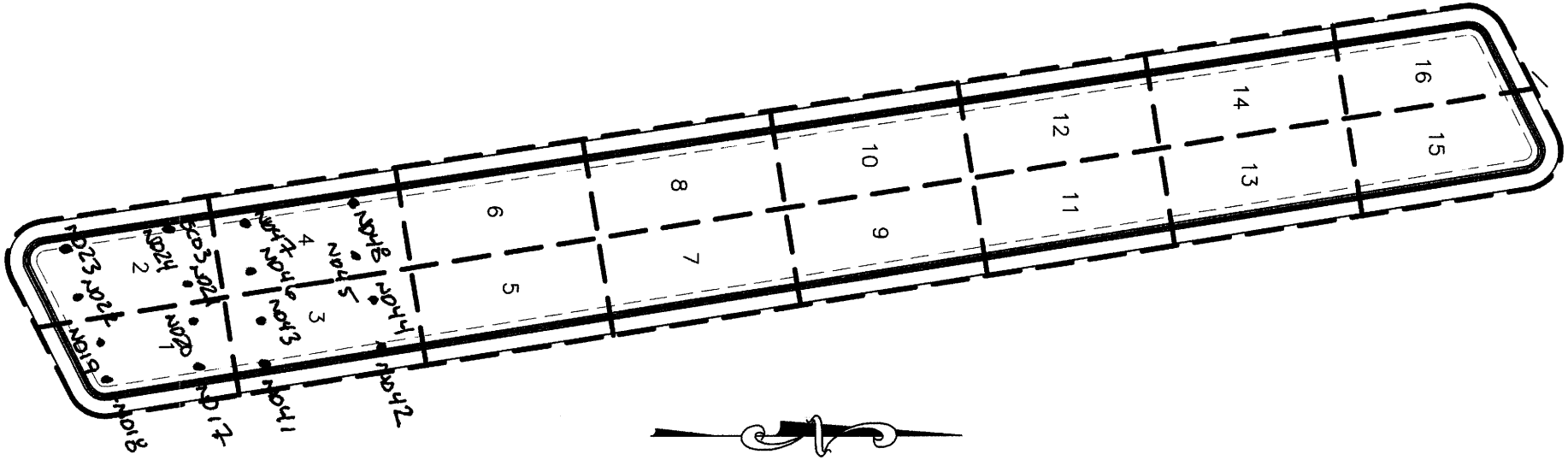
| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| SC - 03 | ACRE 2 | LIFT 1 | NA | 652-02-02 | 107.8 | 13.5 | **121.9** | **14.2** | **106.7** | **99.0%** | **95.0%** | |
| ND - 25 | ACRE 5 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **123.7** | **13.3** | **109.2** | **99.2%** | **95.0%** | |
| ND - 26 | ACRE 5 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **115.9** | **11.8** | **103.7** | **96.2%** | **95.0%** | |
| ND - 27 | ACRE 5 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **114.3** | **9.6** | **104.3** | **96.7%** | **95.0%** | |
| ND - 28 | ACRE 5 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **117.4** | **7.6** | **109.1** | **99.1%** | **95.0%** | |
| ND - 29 | ACRE 6 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **113.2** | **9.0** | **103.9** | **96.3%** | **95.0%** | |
| ND - 30 | ACRE 6 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **115.7** | **8.1** | **107.0** | **99.3%** | **95.0%** | |
| ND - 31 | ACRE 6 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **116.1** | **8.9** | **106.6** | **98.9%** | **95.0%** | |
| ND - 32 | ACRE 6 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **117.7** | **13.4** | **103.8** | **96.3%** | **95.0%** | |
| ND - 33 | ACRE 7 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **119.6** | **14.4** | **104.5** | **97.0%** | **95.0%** | |
| ND - 34 | ACRE 7 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **117.7** | **12.7** | **104.4** | **96.9%** | **95.0%** | |
| ND - 35 | ACRE 7 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **119.2** | **12.9** | **105.6** | **97.9%** | **95.0%** | |
| ND - 36 | ACRE 7 | BRIDGE LIFT | 8" | 1pt.-02 | 110.1 | 14.2 | **121.6** | **11.1** | **109.5** | **99.4%** | **95.0%** | |
| ND - 37 | ACRE 8 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **118.7** | **12.9** | **105.1** | **97.5%** | **95.0%** | |
| ND - 38 | ACRE 8 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **116.5** | **11.4** | **104.6** | **97.0%** | **95.0%** | |
| ND - 39 | ACRE 8 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **120.2** | **15.6** | **104.0** | **96.5%** | **95.0%** | |
| ND - 40 | ACRE 8 | BRIDGE LIFT | 8" | 652-02-02 | 107.8 | 13.5 | **119.0** | **13.2** | **105.1** | **97.5%** | **95.0%** | |
| ND - 41 | ACRE 3 | LIFT 1 | 8" | 1pt.-02 | 110.1 | 14.2 | **122.4** | **10.9** | **110.4** | **100.2%** | **95.0%** | |
| ND - 42 | ACRE 3 | LIFT 1 | 8" | 1pt.-02 | 110.1 | 14.2 | **118.8** | **9.2** | **108.8** | **98.8%** | **95.0%** | |
| ND - 43 | ACRE 3 | LIFT 1 | 8" | 1pt.-02 | 110.1 | 14.2 | **121.4** | **9.7** | **110.7** | **100.5%** | **95.0%** | |
| ND - 44 | ACRE 3 | LIFT 1 | 8" | 652-01-01 | 105.2 | 17.1 | **116.4** | **10.4** | **105.4** | **100.2%** | **95.0%** | |
| ND - 45 | ACRE 4 | LIFT 1 | 8" | 652-01-01 | 105.2 | 17.1 | **115.8** | **11.6** | **103.8** | **98.6%** | **95.0%** | |
| ND - 46 | ACRE 4 | LIFT 1 | 8" | 652-01-01 | 105.2 | 17.1 | **115.9** | **11.1** | **104.3** | **99.2%** | **95.0%** | |
| ND - 47 | ACRE 4 | LIFT 1 | 8" | 652-01-01 | 105.2 | 17.1 | **116.4** | **10.5** | **105.3** | **100.1%** | **95.0%** | |
| ND - 48 | ACRE 4 | LIFT 1 | 8" | 652-01-01 | 105.2 | 17.1 | **112.8** | **11.1** | **101.5** | **96.5%** | **95.0%** | |
| | | | | | | | | | | | | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |




APPROX. CQC DENSITY TEST LOCATIONS

CFFDR-01




APPROX. CQC DENSITY TEST LOCATION

CFFDK-01

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase No. 4
**Project Number :** 2010-652

Report Number : **CFFDR-01**
Date (s) : 4.5. - 4.16.10

## Sand Cone - ASTM D 1556

### Test Information

| | | | |
|---|---|---|---|
| Test Number : | SC-01 | SC-02 | SC-03 |
| Nuclear Test Number : | ND-01 | ND-06 | ND-24 |
| Location: | ACRE 1 | ACRE 2 | ACRE 2 |
| Depth (ft): | BRIDGE LIFT | BRIDGE LIFT | LIFT 1 |
| Date : | 4.6.10 | 4.7.10 | 4.8.10 |

### Volume Of Cone and Hole

| | | | |
|---|---|---|---|
| Cone ID | A-2 | A-2 | A-2 |
| Density Sand Lot # | JB-10-01 | JB-10-01 | JB-10-01 |
| Wt. of Sand & Cone Before (lbs.) | 15.91 | 15.14 | 15.08 |
| Wt. of Sand & Cone After (lbs.) | 7.36 | 6.73 | 6.93 |
| Wt. of Sand In Hole & Cone (lbs.) | 8.55 | 8.41 | 8.15 |
| Bulk Density of Sand (pcf) | 95.20 | 95.20 | 95.20 |
| Volume of Hole & Cone ($ft.^3$) | 0.090 | 0.088 | 0.086 |
| Volume of Cone($ft.^3$) | 0.037 | 0.037 | 0.037 |
| Volume of Hole ($ft.^3$) | **0.053** | **0.051** | **0.049** |

### WEIGHT OF SOIL

| | | | |
|---|---|---|---|
| Container ID | B-3 | B-3 | B-3 |
| Wt. of Wet Soil & Tare (lbs.) | 6.38 | 6.88 | 6.48 |
| Wt. of Tare (lbs.) | 0.62 | 0.62 | 0.65 |
| Wt. of Wet Soil (lbs.) | **5.76** | **6.26** | **5.83** |

### MOISTURE / DENSITY

| | | | |
|---|---|---|---|
| Tare Number | JB-01 | JB-04 | JB-01 |
| Wt. of Tare & WS (gm) | 291.30 | 305.80 | 317.20 |
| Wt. of Tare & DS (gm) | 270.80 | 278.60 | 291.90 |
| Wt. of Tare (gm) | 87.10 | 86.70 | 87.20 |
| Wt. of Water (gm) | 20.50 | 27.20 | 25.30 |
| Wt. of DS (gm) | 183.70 | 191.90 | 204.70 |
| Wet Density (pcf) | 109.1 | 121.9 | 119.9 |
| **Moisture Content %** | **11.2** | **14.2** | **12.4** |
| **Dry Density (pcf)** | **98.1** | **106.8** | **106.7** |

Geotechnics Representative : Jacob R. Buda MPS

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| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

Geotechnics
INTEGRITY IN TESTING

| | |
|---|---|
| Report Number : | **CFFDR-01** |
| Date (s) : | 4.5. - 4.16.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Description : LIGHT BROWN / GRAY SILTY SAND

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-01 |
| Location: | ACRE 1 / ND-01 |
| Depth (ft): | BRIDGE LIFT |
| Date : | 4.6.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.32 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.13 |
| Weight of Mold (lbs) | 9.32 |
| Weight of WS (lbs) | 3.81 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-04 |
| Wt. of Tare & WS (gm) | 319.20 |
| Wt. of Tare & DS (gm) | 290.60 |
| Wt. of Tare (gm) | 86.90 |
| Wt. of Water (gm) | 28.60 |
| Wt. of DS (gm) | 203.70 |
| Wet Density (pcf) | 115.5 |
| **Moisture Content %** | **14.0** |
| **Dry Density (pcf)** | **101.2** |

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**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase No. 4
**Project Number :** 2010-652

Report Number : **CFFDR-01**
Date (s) : 4.5. - 4.16.10

## ONE POINT PROCTOR - Method for Soil Identification

Visual Description : DARK GRAY SILTY SAND

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-02 |
| Location: | ACRE 2 / ND-06 |
| Depth (ft): | BRIDGE LIFT |
| Date : | 4.7.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.32 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.47 |
| Weight of Mold (lbs) | 9.32 |
| Weight of WS (lbs) | 4.15 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-04 |
| Wt. of Tare & WS (gm) | 305.80 |
| Wt. of Tare & DS (gm) | 278.60 |
| Wt. of Tare (gm) | 86.90 |
| Wt. of Water (gm) | 27.20 |
| Wt. of DS (gm) | 191.70 |
| Wet Density (pcf) | 125.8 |
| **Moisture Content %** | **14.2** |
| **Dry Density (pcf)** | **110.1** |

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| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

geotechnics
INTEGRITY IN TESTING

| | |
|---|---|
| Report Number : | **CFFDR-01** |
| Date (s) : | 4.5. - 4.16.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Description : DARK GRAY SILTY SAND

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-03 |
| Location: | ACRE 2 / ND-24 |
| Depth (ft): | LIFT 1 |
| Date : | 2.22.08 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.32 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.29 |
| Weight of Mold (lbs) | 9.32 |
| Weight of WS (lbs) | 3.97 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-01 |
| Wt. of Tare & WS (gm) | 317.20 |
| Wt. of Tare & DS (gm) | 291.90 |
| Wt. of Tare (gm) | 87.20 |
| Wt. of Water (gm) | 25.30 |
| Wt. of DS (gm) | 204.70 |
| Wet Density (pcf) | 120.3 |
| **Moisture Content %** | **12.4** |
| **Dry Density (pcf)** | **107.1** |

Geotechnics Representative : Jacob R. Buda

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| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

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INTEGRITY IN TESTING

| | |
|---|---|
| Report Number : | **CFFDR-01** |
| Date (s) : | 4.5. - 4.16.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Description : LIGHT BROWN / GRAY SILTY SAND

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-04 |
| Location: | ACRE 4 / ND-48 |
| Depth (ft): | LIFT 1 |
| Date : | 4.14.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.32 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.26 |
| Weight of Mold (lbs) | 9.32 |
| Weight of WS (lbs) | 3.94 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-01 |
| Wt. of Tare & WS (gm) | 284.40 |
| Wt. of Tare & DS (gm) | 259.20 |
| Wt. of Tare (gm) | 87.10 |
| Wt. of Water (gm) | 25.20 |
| Wt. of DS (gm) | 172.10 |
| Wet Density (pcf) | 119.4 |
| **Moisture Content %** | **14.6** |
| **Dry Density (pcf)** | **104.1** |

Geotechnics Representative : Jacob R. Buda

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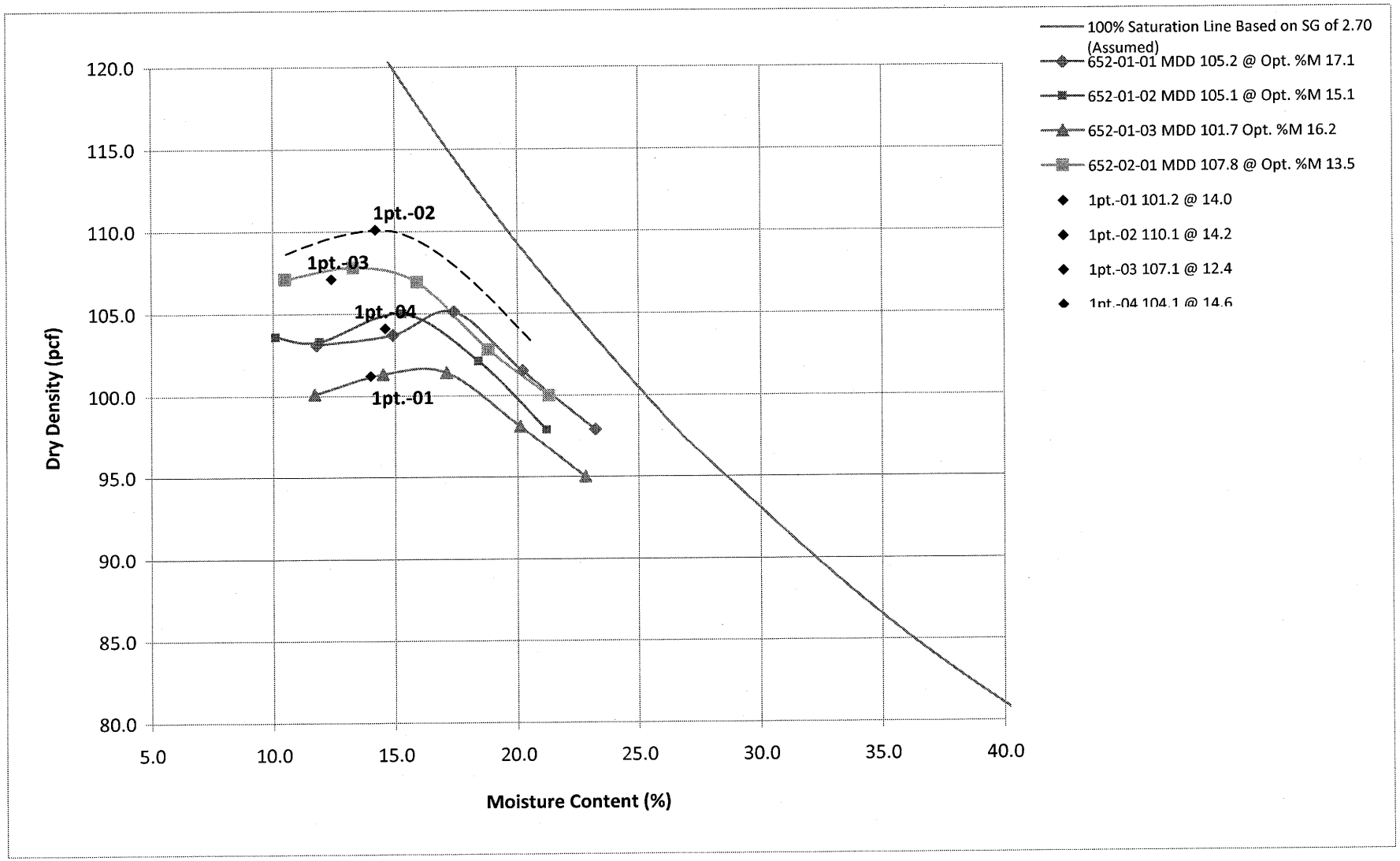
INTEGRITY IN TESTING

## Onsite Stockpile Moisture / Density Relationships

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

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**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

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# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-02** | Geotechnics Representative : Jacob R. Buda | Page : 1 of 8 |
| Date (s) : **4.19. - 4.23.10** | Reviewed By : MB | Date : 5-6-10 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Stockpile |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 49 | ACRE 10 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **120.9** | **16.1** | **104.1** | **96.6%** | **95.0%** | |
| ND - 50 | ACRE 10 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **116.6** | **12.7** | **103.5** | **96.0%** | **95.0%** | |
| ND - 51 | ACRE 10 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **119.7** | **12.6** | **106.3** | **98.6%** | **95.0%** | |
| ND - 52 | ACRE 10 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **116.8** | **12.7** | **103.6** | **96.1%** | **95.0%** | |
| ND - 53 | ACRE 12 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **115.6** | **9.6** | **105.5** | **97.8%** | **95.0%** | |
| ND - 54 | ACRE 12 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **123.5** | **15.2** | **107.2** | **99.4%** | **95.0%** | |
| ND - 55 | ACRE 12 | Bridge Lift | 8" | 1pt.-02 | 110.1 | 14.2 | **121.8** | **10.8** | **109.9** | **99.8%** | **95.0%** | |
| ND - 56 | ACRE 12 | Bridge Lift | 8" | 1pt.-02 | 110.1 | 14.2 | **124.1** | **13.5** | **109.3** | **99.3%** | **95.0%** | |
| ND - 57 | ACRE 9 | Bridge Lift | 8" | 1pt.-02 | 110.1 | 14.2 | **126.7** | **13.1** | **112.0** | **101.7%** | **95.0%** | |
| ND - 58 | ACRE 9 | Bridge Lift | 8" | 1pt.-02 | 110.1 | 14.2 | **122.7** | **8.4** | **113.2** | **102.8%** | **95.0%** | |
| ND - 59 | ACRE 9 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **113.8** | **7.3** | **106.1** | **98.4%** | **95.0%** | |
| ND - 60 | ACRE 9 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **111.8** | **9.0** | **102.6** | **95.1%** | **95.0%** | |
| ND - 61 | ACRE 11 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **115.6** | **12.3** | **102.9** | **95.5%** | **95.0%** | |
| ND - 62 | ACRE 11 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **116.3** | **10.2** | **105.5** | **97.9%** | **95.0%** | |
| ND - 63 | ACRE 11 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **121.1** | **12.7** | **107.5** | **99.7%** | **95.0%** | |
| ND - 64 | ACRE 11 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **119.4** | **13.7** | **105.0** | **97.4%** | **95.0%** | |
| ND - 65 | ACRE 13 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **118.6** | **9.4** | **108.4** | **100.6%** | **95.0%** | |
| ND - 66 | ACRE 13 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **119.1** | **12.4** | **106.0** | **98.3%** | **95.0%** | |
| ND - 67 | ACRE 13 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **121.0** | **12.1** | **107.9** | **100.1%** | **95.0%** | |
| ND - 68 | ACRE 13 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **121.3** | **11.2** | **109.1** | **101.2%** | **95.0%** | |
| ND - 69 | ACRE 14 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **118.3** | **11.0** | **106.6** | **98.9%** | **95.0%** | |
| ND - 70 | ACRE 14 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **118.3** | **11.9** | **105.7** | **98.1%** | **95.0%** | |
| ND - 71 | ACRE 14 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **120.3** | **12.7** | **106.7** | **99.0%** | **95.0%** | |
| ND - 72 | ACRE 14 | Bridge Lift | 8" | 652-02-02 | 107.8 | 13.5 | **117.6** | **13.2** | **103.9** | **96.4%** | **95.0%** | |
| ND - 73 | ACRE 6 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **115.1** | **10.7** | **104.0** | **96.5%** | **95.0%** | |
| ND - 74 | ACRE 6 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **120.1** | **15.1** | **104.3** | **96.8%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

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**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

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# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-02** | Geotechnics Representative : Jacob R. Buda | Page : 2 of 8 |
| Date (s) : **4.19. - 4.23.10** | Reviewed By : | Date : 5-6-10 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Stockpile |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 75 | ACRE 8 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **122.7** | **17.0** | **104.9** | **97.3%** | **95.0%** | |
| ND - 76 | ACRE 8 | LIFT 1 | 6" | 652-01-03 | 101.7 | 16.2 | **116.4** | **14.9** | **101.3** | **99.6%** | **95.0%** | |
| ND - 77 | ACRE 10 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **120.3** | **14.4** | **105.2** | **97.5%** | **95.0%** | |
| ND - 78 | ACRE 10 | LIFT 1 | 6" | 652-01-03 | 101.7 | 16.2 | **111.8** | **12.7** | **99.2** | **97.5%** | **95.0%** | |
| ND - 79 | ACRE 10 | LIFT 1 | 6" | 652-01-03 | 101.7 | 16.2 | **120.6** | **17.7** | **102.5** | **100.8%** | **95.0%** | |
| ND - 80 | ACRE 10 | LIFT 1 | 6" | 652-01-03 | 101.7 | 16.2 | **118.9** | **17.0** | **101.6** | **99.9%** | **95.0%** | |
| ND - 81 | ACRE 8 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **122.2** | **13.7** | **107.5** | **99.7%** | **95.0%** | |
| ND - 82 | ACRE 8 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **120.4** | **11.7** | **107.8** | **100.0%** | **95.0%** | |
| ND - 83 | ACRE 6 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **122.5** | **17.1** | **104.6** | **97.0%** | **95.0%** | |
| ND - 84 | ACRE 6 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **123.0** | **14.9** | **107.0** | **99.3%** | **95.0%** | |
| ND - 85 | ACRE 5 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.5** | **14.5** | **103.5** | **96.0%** | **95.0%** | |
| ND - 86 | ACRE 5 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **116.4** | **10.7** | **105.1** | **97.5%** | **95.0%** | |
| ND - 87 | ACRE 7 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.8** | **12.6** | **105.5** | **97.9%** | **95.0%** | |
| ND - 88 | ACRE 7 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **117.2** | **12.5** | **104.2** | **96.6%** | **95.0%** | |
| ND - 89 | ACRE 9 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **115.6** | **11.8** | **103.4** | **95.9%** | **95.0%** | |
| ND - 90 | ACRE 9 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.5** | **9.9** | **107.8** | **100.0%** | **95.0%** | |
| ND - 91 | ACRE 9 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **122.3** | **14.6** | **106.7** | **99.0%** | **95.0%** | |
| ND - 92 | ACRE 9 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **120.3** | **11.7** | **107.7** | **99.9%** | **95.0%** | |
| ND - 93 | ACRE 7 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **121.2** | **15.7** | **104.8** | **97.2%** | **95.0%** | |
| ND - 94 | ACRE 7 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **117.0** | **9.5** | **106.8** | **99.1%** | **95.0%** | |
| ND - 95 | ACRE 5 | LIFT 1 | 6" | 1pt.-02 | 110.1 | 14.2 | **120.9** | **9.8** | **110.1** | **100.0%** | **95.0%** | |
| ND - 96 | ACRE 5 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **121.3** | **13.7** | **106.7** | **99.0%** | **95.0%** | |
| ND - 97 | ACRE 11 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **119.9** | **14.8** | **104.4** | **96.9%** | **95.0%** | |
| ND - 98 | ACRE 11 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **119.9** | **15.1** | **104.2** | **96.6%** | **95.0%** | |
| ND - 99 | ACRE 13 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **117.7** | **13.2** | **104.0** | **96.5%** | **95.0%** | |
| ND - 100 | ACRE 13 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.8** | **11.9** | **106.2** | **98.5%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

geotechnics
INTEGRITY IN TESTING

# Field Density Report

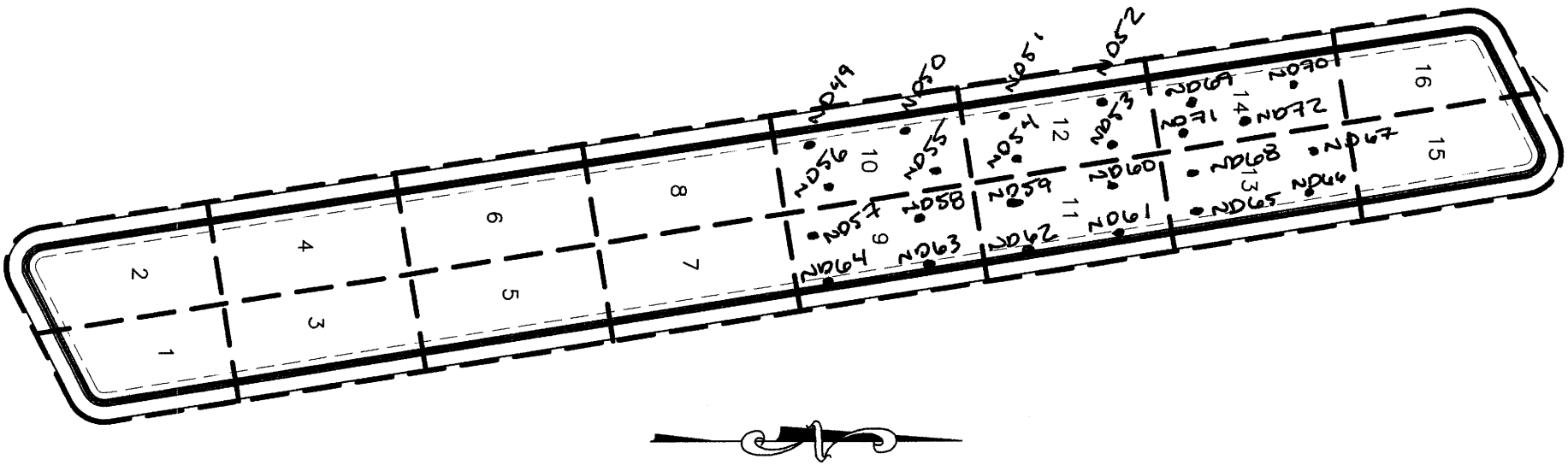
| | | |
|---|---|---|
| Report Number : **CFFDR-02** | Geotechnics Representative : Jacob R. Buda | Page : 3 of 8 |
| Date (s) : **4.19. - 4.23.10** | Reviewed By : MMS | Date : 5-6-10 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Stockpile |

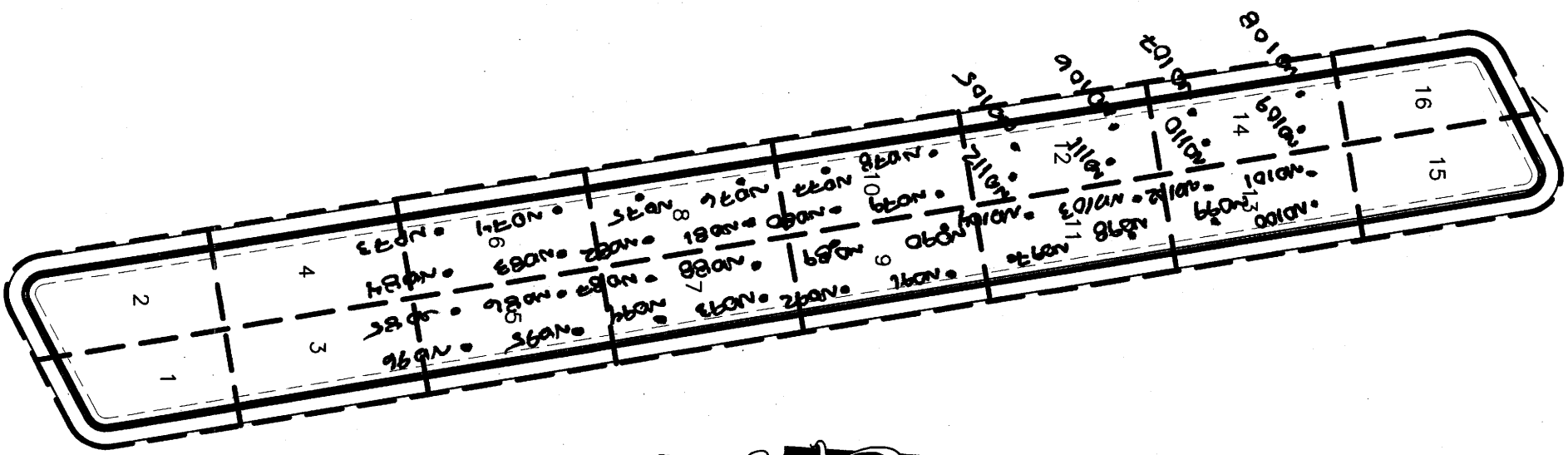
Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 101 | ACRE 13 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **120.2** | **13.7** | **105.7** | **98.1%** | **95.0%** | |
| ND - 102 | ACRE 13 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **117.3** | **10.4** | **106.3** | **98.6%** | **95.0%** | |
| ND - 103 | ACRE 11 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.0** | **12.9** | **104.5** | **97.0%** | **95.0%** | |
| ND - 104 | ACRE 11 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **120.5** | **14.5** | **105.2** | **97.6%** | **95.0%** | |
| ND - 105 | ACRE 12 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.8** | **13.2** | **104.9** | **97.4%** | **95.0%** | |
| ND - 106 | ACRE 12 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **121.3** | **16.0** | **104.6** | **97.0%** | **95.0%** | |
| ND - 107 | ACRE 14 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.1** | **11.9** | **105.5** | **97.9%** | **95.0%** | |
| ND - 108 | ACRE 14 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **122.6** | **14.5** | **107.1** | **99.3%** | **95.0%** | |
| ND - 109 | ACRE 14 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **120.5** | **16.0** | **103.9** | **96.4%** | **95.0%** | |
| ND - 110 | ACRE 14 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **118.2** | **10.8** | **106.7** | **99.0%** | **95.0%** | |
| ND - 111 | ACRE 12 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **121.2** | **16.7** | **103.9** | **96.3%** | **95.0%** | |
| ND - 112 | ACRE 12 | LIFT 1 | 6" | 652-02-02 | 107.8 | 13.5 | **122.3** | **17.8** | **103.8** | **96.3%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |




CFFDL-02 APPROX. DENSITY TEST LOCATIONS




CFFDR-02 APPROX. DENSITY TEST LOCATIONS

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase No. 4
**Project Number :** 2010-652

Report Number : **CFFDR-02**
Date (s) : 4.16. - 4.23.10

## ONE POINT PROCTOR - Method for Soil Identification

Visual Descrpiton : Light Grey Sandy Silt

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-05 |
| Location: | ACRE 1 |
| Depth (ft): | LIFT 1 |
| Date : | 4.20.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.32 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.37 |
| Weight of Mold (lbs) | 9.32 |
| Weight of WS (lbs) | 4.05 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-04 |
| Wt. of Tare & WS (gm) | 297.90 |
| Wt. of Tare & DS (gm) | 274.50 |
| Wt. of Tare (gm) | 86.50 |
| Wt. of Water (gm) | 23.40 |
| Wt. of DS (gm) | 188.00 |
| Wet Density (pcf) | 122.7 |
| **Moisture Content %** | **12.4** |
| **Dry Density (pcf)** | **109.1** |

Geotechnics Represenative : Jacob R. Buda

2200 Westinghouse Boulevard • Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460

| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

Geotechnics
INTEGRITY IN TESTING

| | |
|---|---|
| Report Number : | **CFFDR-02** |
| Date (s) : | 4.16. - 4.23.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Descrpiton : Brown / Grey Sandy Silt

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-06 |
| Location: | ACRE 10 |
| Depth (ft): | LIFT 1 |
| Date : | 4.20.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.32 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.12 |
| Weight of Mold (lbs) | 9.32 |
| Weight of WS (lbs) | 3.8 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-01 |
| Wt. of Tare & WS (gm) | 314.90 |
| Wt. of Tare & DS (gm) | 288.70 |
| Wt. of Tare (gm) | 87.10 |
| Wt. of Water (gm) | 26.20 |
| Wt. of DS (gm) | 201.60 |
| Wet Density (pcf) | 115.2 |
| **Moisture Content %** | **13.0** |
| **Dry Density (pcf)** | **101.9** |

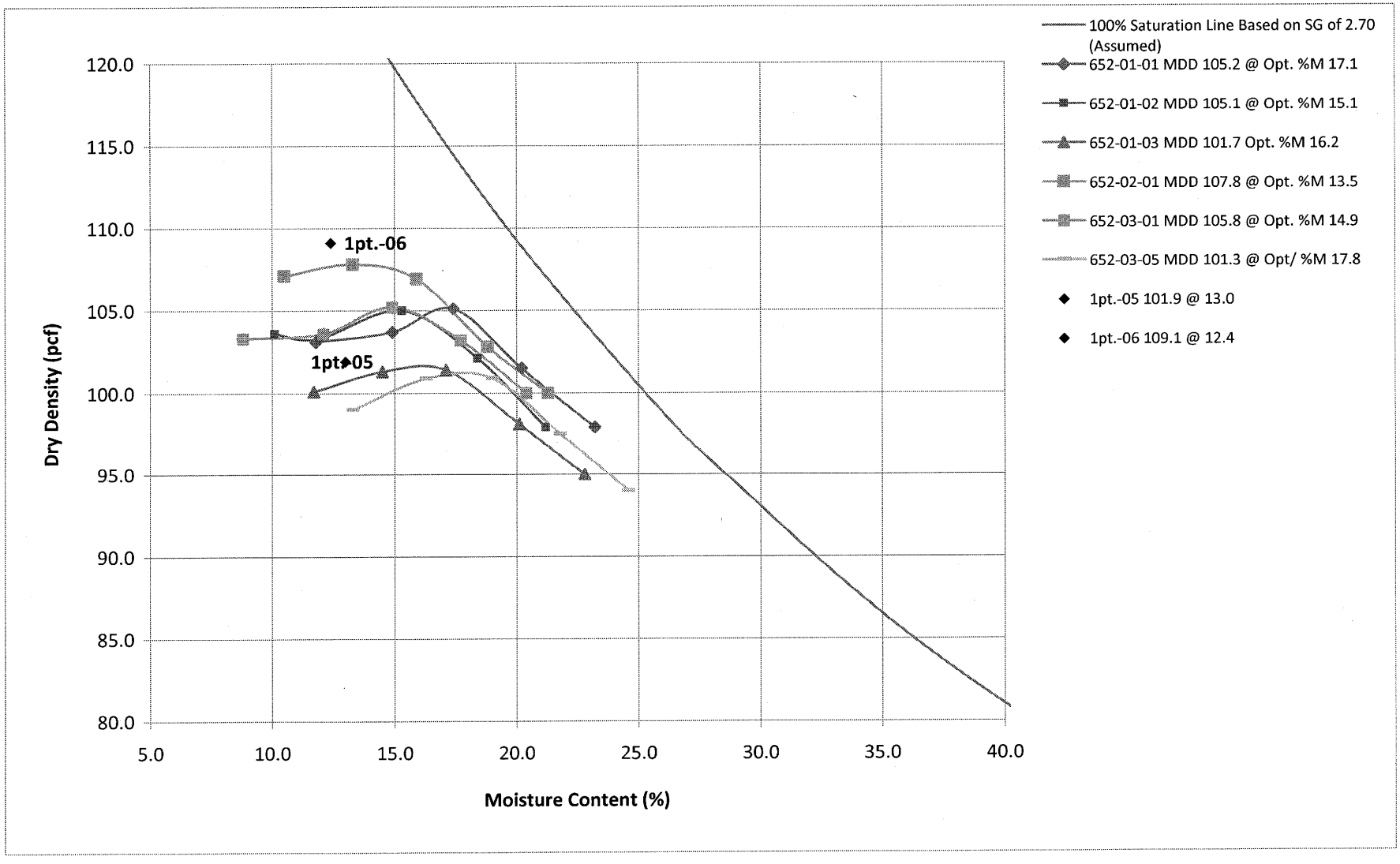
Geotechnics Represenative : Jacob R. Buda

2200 Westinghouse Boulevard • Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460

geotechnics
INTEGRITY IN TESTING

## Onsite Common Fill Moisture / Density Relationships

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652




2200 Westinghouse Blvd. - Suite 103 - Raleigh, NC 27604 - Phone (919) 876-0405 - Fax (919) 876-0460 MPS

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-03** | Geotechnics Representative : Jacob R. Buda | Page : 1 of 7 |
| Date (s) : **4.26. - 4.30.10** | Reviewed By : [illegible] | Date : 5-14-2010 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 113 | ACRE 1 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **121.0** | **10.4** | **109.6** | **101.7%** | **95.0%** | |
| ND - 114 | ACRE 1 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **116.5** | **11.9** | **104.1** | **96.6%** | **95.0%** | |
| ND - 115 | ACRE 3 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **112.9** | **6.9** | **105.6** | **98.0%** | **95.0%** | |
| ND - 116 | ACRE 3 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **118.1** | **8.7** | **108.6** | **100.8%** | **95.0%** | |
| ND - 117 | ACRE 5 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **117.9** | **14.1** | **103.3** | **95.9%** | **95.0%** | |
| ND - 118 | ACRE 5 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **119.5** | **13.1** | **105.7** | **98.0%** | **95.0%** | |
| ND - 119 | ACRE 5 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **121.8** | **16.9** | **104.2** | **96.7%** | **95.0%** | |
| ND - 120 | ACRE 5 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **112.7** | **10.1** | **102.4** | **95.0%** | **95.0%** | |
| ND - 121 | ACRE 3 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **117.2** | **9.9** | **106.6** | **98.9%** | **95.0%** | |
| ND - 122 | ACRE 3 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **117.9** | **10.3** | **106.9** | **99.2%** | **95.0%** | |
| ND - 123 | ACRE 1 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **121.0** | **10.4** | **109.6** | **101.7%** | **95.0%** | |
| ND - 124 | ACRE 1 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **122.7** | **9.3** | **112.3** | **104.1%** | **95.0%** | |
| ND - 125 | ACRE 2 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **118.4** | **10.7** | **107.0** | **99.2%** | **95.0%** | |
| ND - 126 | ACRE 2 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **117.6** | **11.2** | **105.8** | **98.1%** | **95.0%** | |
| ND - 127 | ACRE 4 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **115.8** | **9.9** | **105.4** | **97.7%** | **95.0%** | |
| ND - 128 | ACRE 4 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **120.6** | **12.8** | **106.9** | **99.2%** | **95.0%** | |
| ND - 129 | ACRE 6 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **122.5** | **17.1** | **104.6** | **97.0%** | **95.0%** | |
| ND - 130 | ACRE 6 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **122.9** | **18.0** | **104.2** | **96.6%** | **95.0%** | |
| ND - 131 | ACRE 6 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **118.1** | **8.1** | **109.3** | **101.3%** | **95.0%** | |
| ND - 132 | ACRE 6 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **121.6** | **15.2** | **105.6** | **97.9%** | **95.0%** | |
| ND - 133 | ACRE 4 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **121.6** | **12.3** | **108.3** | **100.4%** | **95.0%** | |
| ND - 134 | ACRE 4 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **119.1** | **15.9** | **102.8** | **95.3%** | **95.0%** | |
| ND - 135 | ACRE 2 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **116.2** | **10.2** | **105.4** | **97.8%** | **95.0%** | |
| ND - 136 | ACRE 2 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **117.8** | **12.4** | **104.8** | **97.2%** | **95.0%** | |
| ND - 137 | ACRE 8 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **115.6** | **9.5** | **105.6** | **97.9%** | **95.0%** | |
| ND - 138 | ACRE 8 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **116.7** | **11.4** | **104.8** | **97.2%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

Geotechnics
INTEGRITY IN TESTING

# Field Density Report

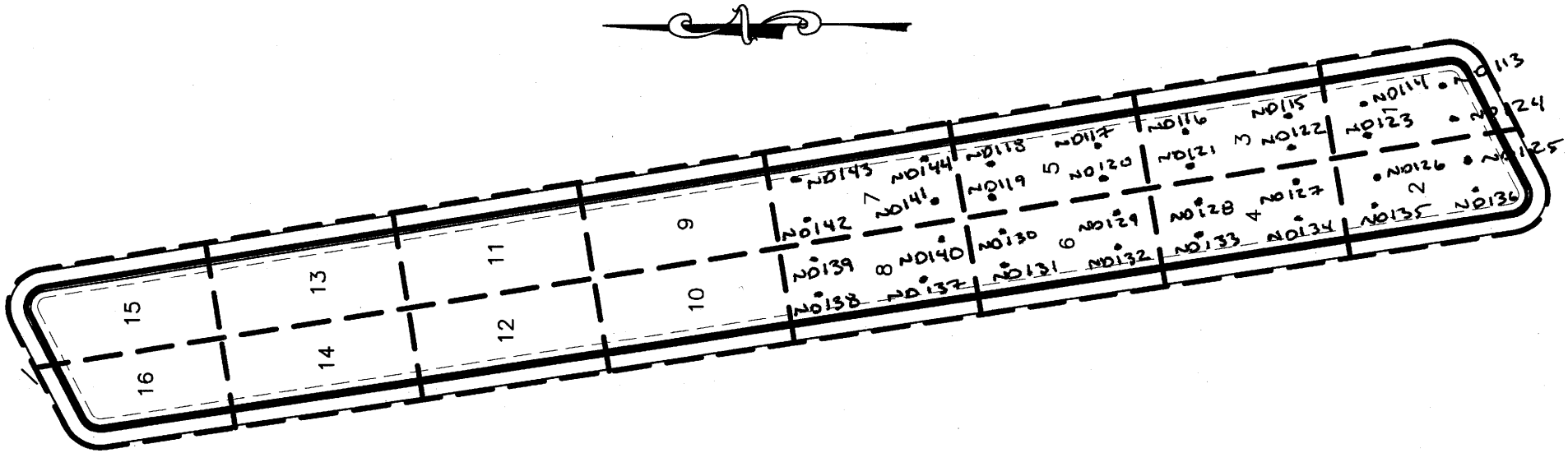
| | | |
|---|---|---|
| Report Number : **CFFDR-03** | Geotechnics Representative : Jacob R. Buda | Page : 2 of 7 |
| Date (s) : **4.26. - 4.30.10** | Reviewed By : MMS | Date : 5-14-2010 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

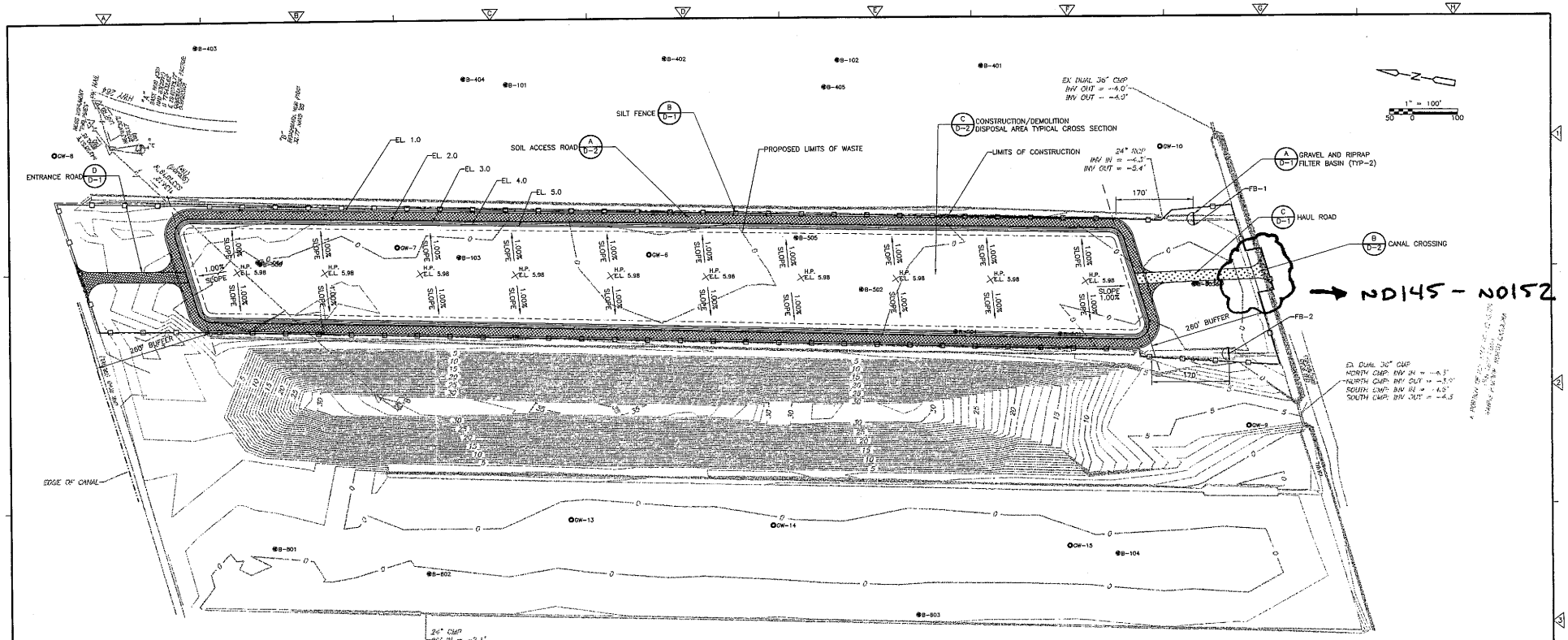
Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 139 | ACRE 8 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **117.4** | **12.4** | **104.4** | **96.9%** | **95.0%** | |
| ND - 140 | ACRE 8 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **116.9** | **13.2** | **103.3** | **95.8%** | **95.0%** | |
| ND - 141 | ACRE 7 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **118.4** | **12.4** | **105.3** | **97.7%** | **95.0%** | |
| ND - 142 | ACRE 7 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **117.2** | **14.1** | **102.7** | **95.3%** | **95.0%** | |
| ND - 143 | ACRE 7 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **116.9** | **13.7** | **102.8** | **95.4%** | **95.0%** | |
| ND - 144 | ACRE 7 | LIFT 2 | 6" | 652-02-02 | 107.8 | 13.5 | **117.4** | **11.9** | **104.9** | **97.3%** | **95.0%** | |
| ND - 145 | Canal Crossing | LIFT 1 | 6" | 652-04-02 | 101.1 | 16.4 | **116.1** | **18.1** | **98.3** | **97.2%** | **95.0%** | |
| ND - 146 | Canal Crossing | LIFT 2 | 6" | 652-04-02 | 101.1 | 16.4 | **117.5** | **20.8** | **97.3** | **96.2%** | **95.0%** | |
| ND - 147 | Canal Crossing | LIFT 3 | 6" | 652-04-02 | 101.1 | 16.4 | **116.4** | **20.5** | **96.6** | **95.5%** | **95.0%** | |
| ND - 148 | Canal Crossing | LIFT 4 | 6" | 652-04-02 | 101.1 | 16.4 | **114.1** | **17.9** | **96.8** | **95.7%** | **95.0%** | |
| ND - 149 | Canal Crossing | LIFT 5 | 6" | 652-04-02 | 101.1 | 16.4 | **116.6** | **14.0** | **102.3** | **101.2%** | **95.0%** | |
| ND - 150 | Canal Crossing | LIFT 6 | 6" | 652-04-02 | 101.1 | 16.4 | **111.4** | **13.2** | **98.4** | **97.3%** | **95.0%** | |
| ND - 151 | Canal Crossing | LIFT 7 | 6" | 652-04-02 | 101.1 | 16.4 | **110.9** | **11.8** | **99.2** | **98.1%** | **95.0%** | |
| ND - 152 | Canal Crossing | LIFT 8 | 6" | 652-04-02 | 101.1 | 16.4 | **113.6** | **15.9** | **98.0** | **96.9%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |




CFFDR-03 APPROX. CQC DENSITY TEST LOCATIONS




LEGEND

- EXISTING MONITORING WELL
- EXISTING PIEZOMETER
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- HIGH POINT
- FILTER BASIN
- SILT FENCE
- HAUL ROAD
- PROPOSED SOIL ACCESS ROAD
- ENTRANCE ROAD
- LIMITS OF CONSTRUCTION

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR SHALL LOCATE AND/OR RELOCATE ALL EXISTING UTILITIES, DRAINAGE STRUCTURES, MONITORING WELLS, ETC. IN COORDINATION WITH THE APPROPRIATE UTILITIES, AGENCY, OR COMPANY WITHIN 72 HOURS PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR LOCATING, PROTECTING, MAINTAINING, AND RESTORING ALL SITE UTILITIES AND BUILDING SERVICES.
2. NO HAUL ROUTE SHALL BE USED FOR MATERIAL TRANSPORT UNTIL NO THE ROUTE HAS BEEN COORDINATED WITH THE OWNER.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING, AT NO ADDITIONAL COST TO THE OWNER, ANY EXISTING MONITORING WELLS, DRAINAGE STRUCTURES, ETC. DAMAGED DURING CONSTRUCTION.
4. CONTRACTOR'S TRAILER SHALL BE LOCATED WITHIN STAGING AREAS AS DESIGNATED BY THE OWNER ON THIS SHEET. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY UTILITY CONNECTIONS, A POTABLE WATER SUPPLY, AND TEMPORARY SANITARY SERVICE FOR TRAILER.
5. LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF THESE PLANS BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY AND AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES, STRUCTURES, OR PRESERVATION AREAS AND OTHER FEATURES AFFECTING HIS WORK.
6. THE CONTRACTOR SHALL REPLACE ALL PAVING (ASPHALT, STONE, OR CONCRETE), STABILIZED EARTH, CURBS, DRIVEWAYS, SIDEWALKS, MAILBOXES, DRAINAGE CULVERTS, FENCES, ETC. WITH THE SAME TYPE OF MATERIAL THAT WAS REMOVED OR DAMAGED DURING CONSTRUCTION.
7. STORM DRAINAGE PIPE LENGTHS SHOWN ARE APPROXIMATE AND MAY BE ADJUSTED AS REQUIRED IN THE FIELD, UPON APPROVAL BY ENGINEER.
8. EXISTING DRAINAGE DITCHES SHALL HAVE SEDIMENT AND DEBRIS REMOVED AND SHALL BE REPAIRED AND ALL NEW EROSION CONTROL AND SEDIMENTATION CONTROL DEVICES SHALL BE IN PLACE PRIOR TO ANY CLEARING AND GRUBBING. THEY SHALL BE INSTALLED TO THE LIMITS OF CONSTRUCTION SHOWN ON THE DRAWINGS, REQUIRED IN THE SPECIFICATIONS AND IN ACCORDANCE WITH ALL REGULATORY AGENCY REQUIREMENTS.
9. THE LIMITS OF DISTURBANCE SHOWN ON THE PLANS SHALL BE STRICTLY OBSERVED BY THE CONTRACTOR. ALL INGRESS AND EGRESS AND TRAFFIC PATTERNS ON THE SITE SHALL BE WITHIN THE LIMITS OF DISTURBANCE.
10. CONTRACTOR SHALL VERIFY THE EXISTANCE AND ACCURACY OF BENCHMARK AND CONTROL DATA PRIOR TO INITIATING CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER IF DISCREPANCES ARE FOUND.
11. CONTRACTOR SHALL STAKE OUT LIMITS OF WORK (INCLUDING CUT/FILL SLOPES) PRIOR TO INITIATING EXCAVATION AND BACKFILL ACTIVITIES. SURVEY DATA SHALL BE SUBMITTED TO ENGINEER FOR REVIEW. CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED AREAS PER SPECIFICATIONS EXCEPT FOR ROAD SURFACES AND AREA WITHIN PROPOSED EDGE OF WASTE.
12. CONTROL POINTS PROVIDED ARE BASED ON A LOCAL COORDINATE SYSTEM. COORDINATE WITH QUIBLE & ASSOC., PC (PHONE NO. 252-261-3300) PRIOR TO LAYING OUT WORK.

SURVEY NOTES:

1. TOPOGRAPHIC SURVEY DATE 04/12-05/11-09 BY MCKIM AND CREED, PA.
2. REFERENCE DB 530, PG 733 & PL C, SL 32B.
3. DRAWING VERTICAL DATUM BASED ON GPS RAPID STATIC SESSIONS, OPUS REPORT NUMBERS 000023442, 000023441, 000023439 & 000031628 DATUM NAVD '88, FEET.
4. HORIZONTAL DATUM NAD 83(2007) AND VERTICAL DATUM VERIFICATION BASED UPON RAPID STATIC GPS SESSIONS 000381637, 000381747, 000180456, 000177169, 000147860, 000242228 AND 000237065.
5. CONDITIONS WITHIN SURVEY AREA MAY HAVE CHANGE SINCE DATE OF SURVEY.

NORTH CAROLINA PROFESSIONAL SEAL 028426 12/14/09 W. MICHAEL BRINCHEK, P.E.

| REV. NO. | DATE | DRWN | CHKD | REMARKS |
|---|---|---|---|---|

DESIGNED BY: P. STOUT
DRAWN BY: P. STOUT
SHEET CHK'D BY: K. YANG
CROSS CHK'D BY: M. BRINCHEK
APPROVED BY: [illegible]
DATE: DECEMBER 2009

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consulting • engineering • construction • operations

DARE COUNTY
NORTH CAROLINA
CONSTRUCTION & DEMOLITION DEBRIS LANDFILL
PHASE IV CONSTRUCTION DRAWINGS

GRADING PLAN

PROJECT NO. 17952 56960
FILE NAME: C003LFPL.DWG
SHEET NO.
C-3

BID SET

12/03/09 11:15:17 PM L:\17952-56960\CONSTRUCTION_DRAWINGS\1CDR\C003LFPL.DWG

| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

Geotechnics
INTEGRITY IN TESTING

| | |
|---|---|
| Report Number : | **CFFDR-02** |
| Date (s) : | 4.16. - 4.23.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Descrpiton : Grey Clayey Sand

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-07 |
| Location: | ACRE 2 |
| Depth (ft): | LIFT 2 |
| Date : | 4.27.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.32 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.25 |
| Weight of Mold (lbs) | 9.32 |
| Weight of WS (lbs) | 3.93 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-04 |
| Wt. of Tare & WS (gm) | 288.30 |
| Wt. of Tare & DS (gm) | 268.50 |
| Wt. of Tare (gm) | 86.50 |
| Wt. of Water (gm) | 19.80 |
| Wt. of DS (gm) | 182.00 |
| Wet Density (pcf) | 119.1 |
| **Moisture Content %** | **10.9** |
| **Dry Density (pcf)** | **107.4** |

Geotechnics Represenative : Jacob R. Buda

2200 Westinghouse Boulevard • Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460

| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

| | |
|---|---|
| Report Number : | **CFFDR-02** |
| Date (s) : | 4.16. - 4.23.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Descrpiton : Light Grey Sandy Silt

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-08 |
| Location: | Canal Crossing |
| Depth (ft): | LIFT 1 |
| Date : | 4.28.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.32 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.19 |
| Weight of Mold (lbs) | 9.32 |
| Weight of WS (lbs) | 3.87 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-04 |
| Wt. of Tare & WS (gm) | 260.10 |
| Wt. of Tare & DS (gm) | 236.20 |
| Wt. of Tare (gm) | 86.50 |
| Wt. of Water (gm) | 23.90 |
| Wt. of DS (gm) | 149.70 |
| Wet Density (pcf) | 117.3 |
| **Moisture Content %** | **16.0** |
| **Dry Density (pcf)** | **101.1** |

Geotechnics Represenative : Jacob R. Buda

2200 Westinghouse Boulevard • Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460

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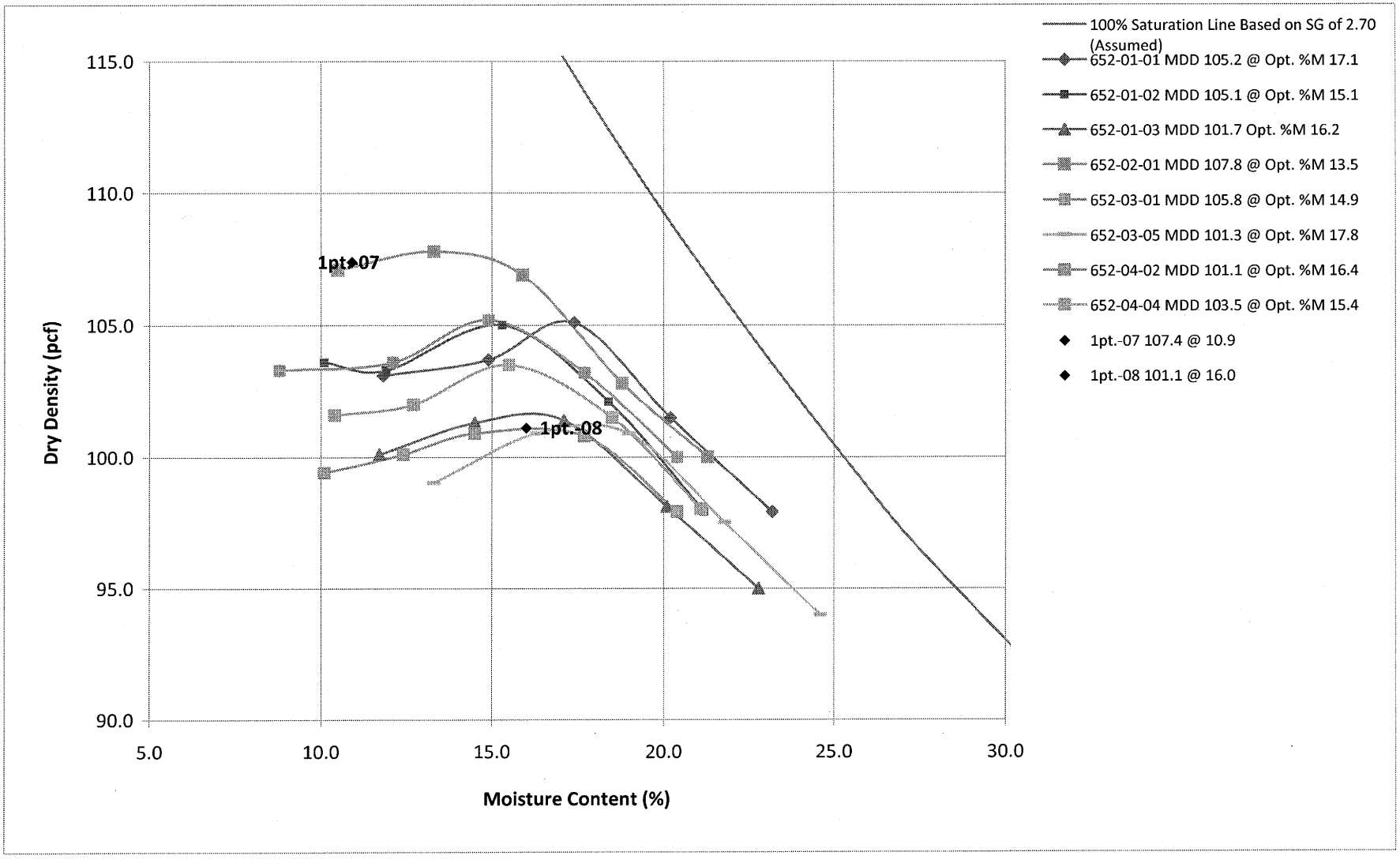
INTEGRITY IN TESTING

## Onsite Common Fill Moisture / Density Relationships

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652




2200 Westinghouse Blvd. - Suite 103 - Raleigh, NC 27604 - Phone (919) 876-0405 - Fax (919) 876-0460 MPS

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

Geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-04** | Geotechnics Representative : Jacob R. Buda | Page : 1 of 15 |
| Date (s) : **5.19. - 5.22.10** | Reviewed By : MDS | Date : 6-7-2010 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 153 | ACRE 9 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **116.2** | **16.0** | **100.2** | **96.8%** | **95.0%** | |
| ND - 154 | ACRE 9 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **115.7** | **14.2** | **101.3** | **97.9%** | **95.0%** | |
| ND - 155 | ACRE 11 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **117.4** | **15.7** | **101.5** | **98.0%** | **95.0%** | |
| ND - 156 | ACRE 11 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **114.7** | **13.7** | **100.9** | **97.5%** | **95.0%** | |
| ND - 157 | ACRE 13 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **115.2** | **14.3** | **100.8** | **97.4%** | **95.0%** | |
| ND - 158 | ACRE 13 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **116.9** | **12.7** | **103.7** | **100.2%** | **95.0%** | |
| ND - 159 | ACRE 13 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **112.7** | **14.1** | **98.8** | **95.4%** | **95.0%** | |
| ND - 160 | ACRE 13 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **114.8** | **16.3** | **98.7** | **95.4%** | **95.0%** | |
| ND - 161 | ACRE 11 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **118.0** | **17.4** | **100.5** | **97.1%** | **95.0%** | |
| ND - 162 | ACRE 11 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **117.0** | **16.2** | **100.7** | **97.3%** | **95.0%** | |
| ND - 163 | ACRE 9 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **116.8** | **13.0** | **103.4** | **99.9%** | **95.0%** | |
| ND - 164 | ACRE 9 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **116.2** | **13.7** | **102.2** | **98.7%** | **95.0%** | |
| ND - 165 | ACRE 14 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **114.2** | **14.1** | **100.1** | **96.7%** | **95.0%** | |
| ND - 166 | ACRE 14 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **116.9** | **15.9** | **100.9** | **97.5%** | **95.0%** | |
| ND - 167 | ACRE 12 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **119.3** | **18.6** | **100.6** | **97.2%** | **95.0%** | |
| ND - 168 | ACRE 12 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **117.4** | **18.7** | **98.9** | **95.6%** | **95.0%** | |
| ND - 169 | ACRE 10 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **109.9** | **11.7** | **98.4** | **95.1%** | **95.0%** | |
| ND - 170 | ACRE 10 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **117.9** | **13.6** | **103.8** | **100.3%** | **95.0%** | |
| ND - 171 | ACRE 10 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **112.7** | **12.2** | **100.4** | **97.0%** | **95.0%** | |
| ND - 172 | ACRE 10 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **116.4** | **14.9** | **101.3** | **97.9%** | **95.0%** | |
| ND - 173 | ACRE 12 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **115.9** | **15.9** | **100.0** | **96.6%** | **95.0%** | |
| ND - 174 | ACRE 12 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **115.0** | **16.4** | **98.8** | **95.5%** | **95.0%** | |
| ND - 175 | ACRE 14 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **116.3** | **14.3** | **101.7** | **98.3%** | **95.0%** | |
| ND - 176 | ACRE 14 | LIFT 2 | 6" | 652-04-02 | 103.5 | 15.4 | **117.4** | **16.2** | **101.0** | **97.6%** | **95.0%** | |
| ND - 177 | S. Access Rd. | ~ Grade | 6" | 652-03-05 | 101.3 | 17.8 | **108.4** | **8.0** | **100.4** | **99.1%** | **95.0%** | |
| ND - 178 | S. Access Rd. | ~ Grade | 6" | 652-03-05 | 101.3 | 17.8 | **107.2** | **5.9** | **101.2** | **99.9%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

Geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-04** | Geotechnics Representative : Jacob R. Buda | Page : 2 of 15 |
| Date (s) : **5.19. - 5.22.10** | Reviewed By : [illegible] | Date : 6-7-2010 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 179 | S. Access Rd. | ~ Grade | 6" | 652-03-05 | 101.3 | 17.8 | **109.6** | **5.6** | **103.8** | **102.5%** | **95.0%** | |
| ND - 180 | S. Access Rd. | ~ Grade | 6" | 652-03-05 | 101.3 | 17.8 | **104.9** | **5.3** | **99.6** | **98.3%** | **95.0%** | |
| ND - 181 | ACRE 2 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **120.2** | **12.5** | **106.8** | **100.0%** | **95.0%** | |
| ND - 182 | ACRE 2 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **120.2** | **17.5** | **102.3** | **95.8%** | **95.0%** | |
| ND - 183 | ACRE 4 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **120.3** | **15.2** | **104.4** | **97.8%** | **95.0%** | |
| ND - 184 | ACRE 4 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **122.9** | **18.6** | **103.6** | **97.0%** | **95.0%** | |
| ND - 185 | ACRE 6 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **121.1** | **18.9** | **101.9** | **95.4%** | **95.0%** | |
| ND - 186 | ACRE 6 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **121.0** | **18.4** | **102.2** | **95.7%** | **95.0%** | |
| ND - 187 | ACRE 6 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **120.5** | **18.8** | **101.4** | **95.0%** | **95.0%** | |
| ND - 188 | ACRE 6 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **119.6** | **17.9** | **101.4** | **95.0%** | **95.0%** | |
| ND - 189 | ACRE 4 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **118.8** | **16.9** | **101.6** | **95.2%** | **95.0%** | |
| ND - 190 | ACRE 4 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **118.1** | **14.6** | **103.1** | **96.5%** | **95.0%** | |
| ND - 191 | ACRE 2 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **122.9** | **20.4** | **102.1** | **95.6%** | **95.0%** | |
| ND - 192 | ACRE 2 | LIFT 3 | 6" | 652-07-01 | 106.8 | 17.5 | **122.5** | **14.3** | **107.2** | **100.4%** | **95.0%** | |
| ND - 193 | ACRE 8 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **120.1** | **18.2** | **101.6** | **97.0%** | **95.0%** | |
| ND - 194 | ACRE 8 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **120.9** | **20.7** | **100.2** | **95.6%** | **95.0%** | |
| ND - 195 | ACRE 10 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **121.3** | **21.5** | **99.8** | **95.3%** | **95.0%** | |
| ND - 196 | ACRE 10 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **119.2** | **17.0** | **101.9** | **97.2%** | **95.0%** | |
| ND - 197 | ACRE 12 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **119.5** | **20.0** | **99.6** | **95.0%** | **95.0%** | |
| ND - 198 | ACRE 12 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **121.8** | **21.5** | **100.2** | **95.7%** | **95.0%** | |
| ND - 199 | ACRE 14 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **119.3** | **19.1** | **100.2** | **95.6%** | **95.0%** | |
| ND - 200 | ACRE 14 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **120.0** | **19.5** | **100.4** | **95.8%** | **95.0%** | |
| ND - 201 | ACRE 14 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **119.8** | **19.4** | **100.3** | **95.7%** | **95.0%** | |
| ND - 202 | ACRE 14 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **118.7** | **19.2** | **99.6** | **95.0%** | **95.0%** | |
| ND - 203 | ACRE 12 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **120.2** | **20.3** | **99.9** | **95.3%** | **95.0%** | |
| ND - 204 | ACRE 12 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **120.4** | **19.3** | **100.9** | **96.3%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

Geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-04** | Geotechnics Representative : Jacob R. Buda | Page : 3 of 15 |
| Date (s) : **5.19. - 5.22.10** | Reviewed By : MMS | Date : 6-7-2010 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 205 | ACRE 10 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **121.9** | **20.6** | **101.1** | **96.4%** | **95.0%** | |
| ND - 206 | ACRE 10 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **120.2** | **19.7** | **100.4** | **95.8%** | **95.0%** | |
| ND - 207 | ACRE 8 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **121.9** | **20.4** | **101.2** | **96.6%** | **95.0%** | |
| ND - 208 | ACRE 8 | LIFT 3 | 6" | 652-07-02 | 104.8 | 17.7 | **121.6** | **19.5** | **101.8** | **97.1%** | **95.0%** | |
| ND - 209 | ACRE 13 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **119.4** | **20.7** | **98.9** | **100.8%** | **95.0%** | |
| ND - 210 | ACRE 13 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **116.3** | **22.7** | **94.8** | **96.6%** | **95.0%** | |
| ND - 211 | ACRE 11 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **119.0** | **20.8** | **98.5** | **100.4%** | **95.0%** | |
| ND - 212 | ACRE 11 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **116.0** | **20.3** | **96.4** | **98.3%** | **95.0%** | |
| ND - 213 | ACRE 9 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.6** | **19.2** | **98.7** | **100.6%** | **95.0%** | |
| ND - 214 | ACRE 9 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **120.2** | **20.1** | **100.1** | **102.0%** | **95.0%** | |
| ND - 215 | ACRE 9 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **121.7** | **21.2** | **100.4** | **102.4%** | **95.0%** | |
| ND - 216 | ACRE 9 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.3** | **17.7** | **99.7** | **101.6%** | **95.0%** | |
| ND - 217 | ACRE 11 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **113.1** | **19.4** | **94.7** | **96.6%** | **95.0%** | |
| ND - 218 | ACRE 11 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **111.4** | **19.5** | **93.2** | **95.0%** | **95.0%** | |
| ND - 219 | ACRE 13 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.2** | **21.7** | **96.3** | **98.2%** | **95.0%** | |
| ND - 220 | ACRE 13 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **115.6** | **22.1** | **94.7** | **96.5%** | **95.0%** | |
| ND - 221 | ACRE 7 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **118.9** | **18.6** | **100.3** | **102.2%** | **95.0%** | |
| ND - 222 | ACRE 7 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **118.0** | **23.5** | **95.5** | **97.4%** | **95.0%** | |
| ND - 223 | ACRE 5 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.0** | **24.6** | **93.9** | **95.7%** | **95.0%** | |
| ND - 224 | ACRE 5 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **119.3** | **23.0** | **97.0** | **98.9%** | **95.0%** | |
| ND - 225 | ACRE 3 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.7** | **24.9** | **94.2** | **96.1%** | **95.0%** | |
| ND - 226 | ACRE 3 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.9** | **22.3** | **96.4** | **98.3%** | **95.0%** | |
| ND - 227 | ACRE 3 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **115.5** | **23.3** | **93.7** | **95.5%** | **95.0%** | |
| ND - 228 | ACRE 3 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **115.6** | **22.1** | **94.7** | **96.5%** | **95.0%** | |
| ND - 229 | ACRE 5 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **115.6** | **21.7** | **95.0** | **96.8%** | **95.0%** | |
| ND - 230 | ACRE 5 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **115.7** | **22.3** | **94.6** | **96.4%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

geotechnics INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-04** | Geotechnics Representative : Jacob R. Buda | Page : 4 of 15 |
| Date (s) : **5.19. - 5.22.10** | Reviewed By : MAS | Date : 6-7-2010 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 231 | ACRE 7 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **116.7** | **23.9** | **94.2** | **96.0%** | **95.0%** | |
| ND - 232 | ACRE 7 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.2** | **22.5** | **95.7** | **97.5%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

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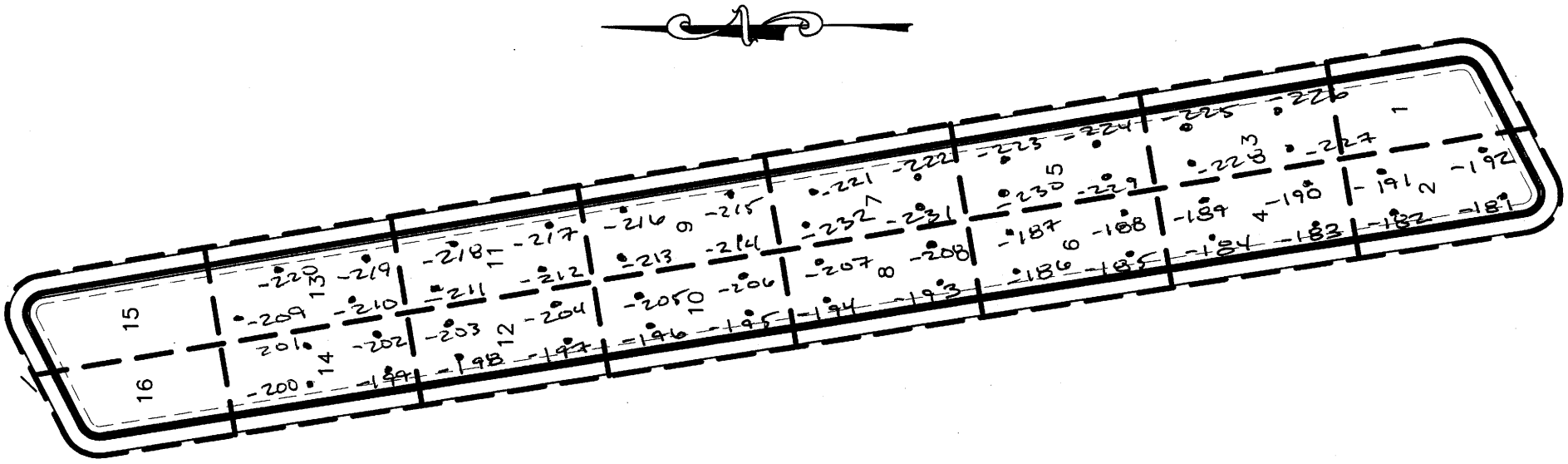
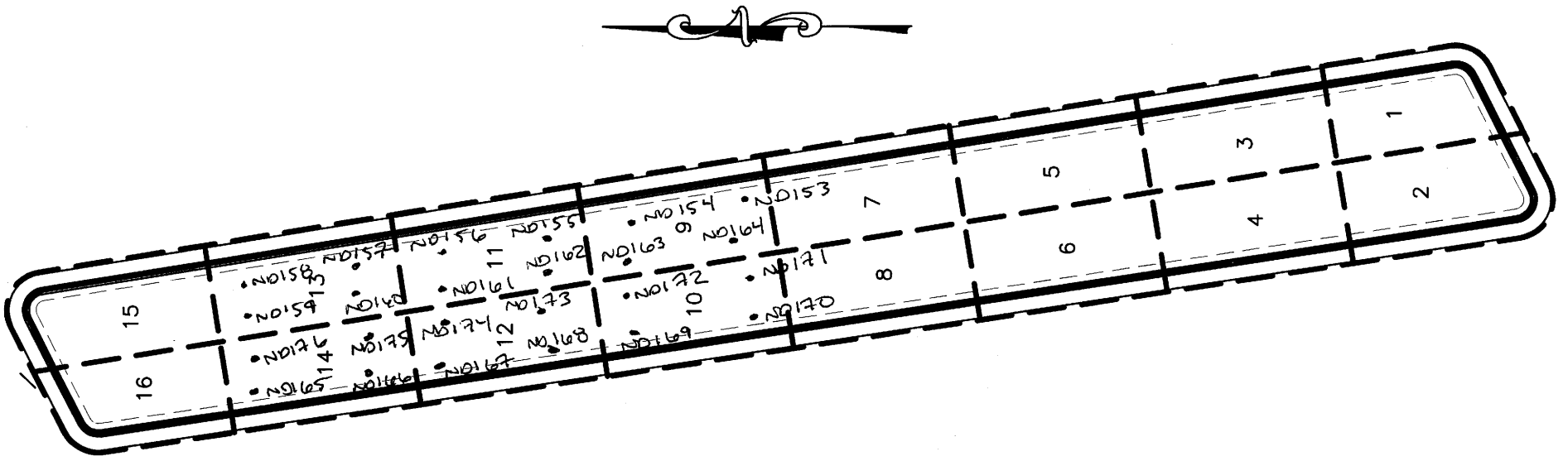



APPROX DENSITY TEST LOCATIONS

CFFDR-04




APPROX. DENSITY TEST LOCATION

CFFDR-04

| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

| | |
|---|---|
| Report Number : | **CFFDR-04** |
| Date (s) : | 5.19. - 5.22.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Descrpiton : Brown / Grey Silty Sand

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-09 |
| Location: | South Access Rd. |
| Depth (ft): | ~ Grade |
| Date : | 5.19.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.5 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.17 |
| Weight of Mold (lbs) | 9.5 |
| Weight of WS (lbs) | 3.67 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | 317 |
| Wt. of Tare & WS (gm) | 396.66 |
| Wt. of Tare & DS (gm) | 359.21 |
| Wt. of Tare (gm) | 84.19 |
| Wt. of Water (gm) | 37.45 |
| Wt. of DS (gm) | 275.02 |
| Wet Density (pcf) | 111.2 |
| **Moisture Content %** | **13.6** |
| **Dry Density (pcf)** | **97.9** |

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| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

Geotechnics
INTEGRITY IN TESTING

| | |
|---|---|
| Report Number : | **CFFDR-04** |
| Date (s) : | 5.19. - 5.22.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Descrpiton : Dark Gray Sandy Clay

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-10 |
| Location: | Acre 2 |
| Depth (ft): | Lift 3 |
| Date : | 5.21.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.31 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.41 |
| Weight of Mold (lbs) | 9.31 |
| Weight of WS (lbs) | 4.1 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-01 |
| Wt. of Tare & WS (gm) | 200.60 |
| Wt. of Tare & DS (gm) | 184.00 |
| Wt. of Tare (gm) | 87.10 |
| Wt. of Water (gm) | 16.60 |
| Wt. of DS (gm) | 96.90 |
| Wet Density (pcf) | 124.2 |
| **Moisture Content %** | **17.1** |
| **Dry Density (pcf)** | **106.1** |

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| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

Geotechnics
INTEGRITY IN TESTING

| | |
|---|---|
| Report Number : | **CFFDR-04** |
| Date (s) : | 5.19. - 5.22.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Descrpiton : Dark Gray Sandy Clay

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-11 |
| Location: | Acre 8 |
| Depth (ft): | Lift 3 |
| Date : | 5.21.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.31 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.4 |
| Weight of Mold (lbs) | 9.31 |
| Weight of WS (lbs) | 4.09 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-04 |
| Wt. of Tare & WS (gm) | 328.20 |
| Wt. of Tare & DS (gm) | 290.50 |
| Wt. of Tare (gm) | 86.50 |
| Wt. of Water (gm) | 37.70 |
| Wt. of DS (gm) | 204.00 |
| Wet Density (pcf) | 123.9 |
| **Moisture Content %** | **18.5** |
| **Dry Density (pcf)** | **104.6** |

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| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

Geotechnics
INTEGRITY IN TESTING

| | |
|---|---|
| Report Number : | **CFFDR-04** |
| Date (s) : | 5.19. - 5.22.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Descrpiton : Dark Gray Sandy Clay

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-12 |
| Location: | Acre 2 |
| Depth (ft): | Lift 3 |
| Date : | 5.21.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.31 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.41 |
| Weight of Mold (lbs) | 9.31 |
| Weight of WS (lbs) | 4.1 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-04 |
| Wt. of Tare & WS (gm) | 283.00 |
| Wt. of Tare & DS (gm) | 250.20 |
| Wt. of Tare (gm) | 86.40 |
| Wt. of Water (gm) | 32.80 |
| Wt. of DS (gm) | 163.80 |
| Wet Density (pcf) | 124.2 |
| **Moisture Content %** | **20.0** |
| **Dry Density (pcf)** | **103.5** |

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| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

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INTEGRITY IN TESTING

| | |
|---|---|
| Report Number : | **CFFDR-04** |
| Date (s) : | 5.19. - 5.22.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Descrpiton : Dark Gray Sandy Clay

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-13 |
| Location: | Acre 13 |
| Depth (ft): | Lift 3 |
| Date : | 5.21.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.31 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.02 |
| Weight of Mold (lbs) | 9.31 |
| Weight of WS (lbs) | 3.71 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-04 |
| Wt. of Tare & WS (gm) | 291.60 |
| Wt. of Tare & DS (gm) | 255.10 |
| Wt. of Tare (gm) | 86.40 |
| Wt. of Water (gm) | 36.50 |
| Wt. of DS (gm) | 168.70 |
| Wet Density (pcf) | 112.4 |
| **Moisture Content %** | **21.6** |
| **Dry Density (pcf)** | **92.4** |

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| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

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INTEGRITY IN TESTING

| | |
|---|---|
| Report Number : | **CFFDR-04** |
| Date (s) : | 5.19. - 5.22.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Descrpiton : Dark Gray Sandy Clay

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-14 |
| Location: | Acre 7 |
| Depth (ft): | Lift 3 |
| Date : | 5.22.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.31 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.01 |
| Weight of Mold (lbs) | 9.31 |
| Weight of WS (lbs) | 3.7 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-01 |
| Wt. of Tare & WS (gm) | 291.90 |
| Wt. of Tare & DS (gm) | 262.90 |
| Wt. of Tare (gm) | 87.10 |
| Wt. of Water (gm) | 29.00 |
| Wt. of DS (gm) | 175.80 |
| Wet Density (pcf) | 112.1 |
| **Moisture Content %** | **16.5** |
| **Dry Density (pcf)** | **96.2** |

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| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

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INTEGRITY IN TESTING

| | |
|---|---|
| Report Number : | **CFFDR-04** |
| Date (s) : | 5.19. - 5.22.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Descrpiton : Dark Gray Sandy Clay

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-14 |
| Location: | Acre 7 |
| Depth (ft): | Lift 3 |
| Date : | 5.22.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.31 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.14 |
| Weight of Mold (lbs) | 9.31 |
| Weight of WS (lbs) | 3.83 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | JB-01 |
| Wt. of Tare & WS (gm) | 311.70 |
| Wt. of Tare & DS (gm) | 277.00 |
| Wt. of Tare (gm) | 87.10 |
| Wt. of Water (gm) | 34.70 |
| Wt. of DS (gm) | 189.90 |
| Wet Density (pcf) | 116.1 |
| **Moisture Content %** | **18.3** |
| **Dry Density (pcf)** | **98.1** |

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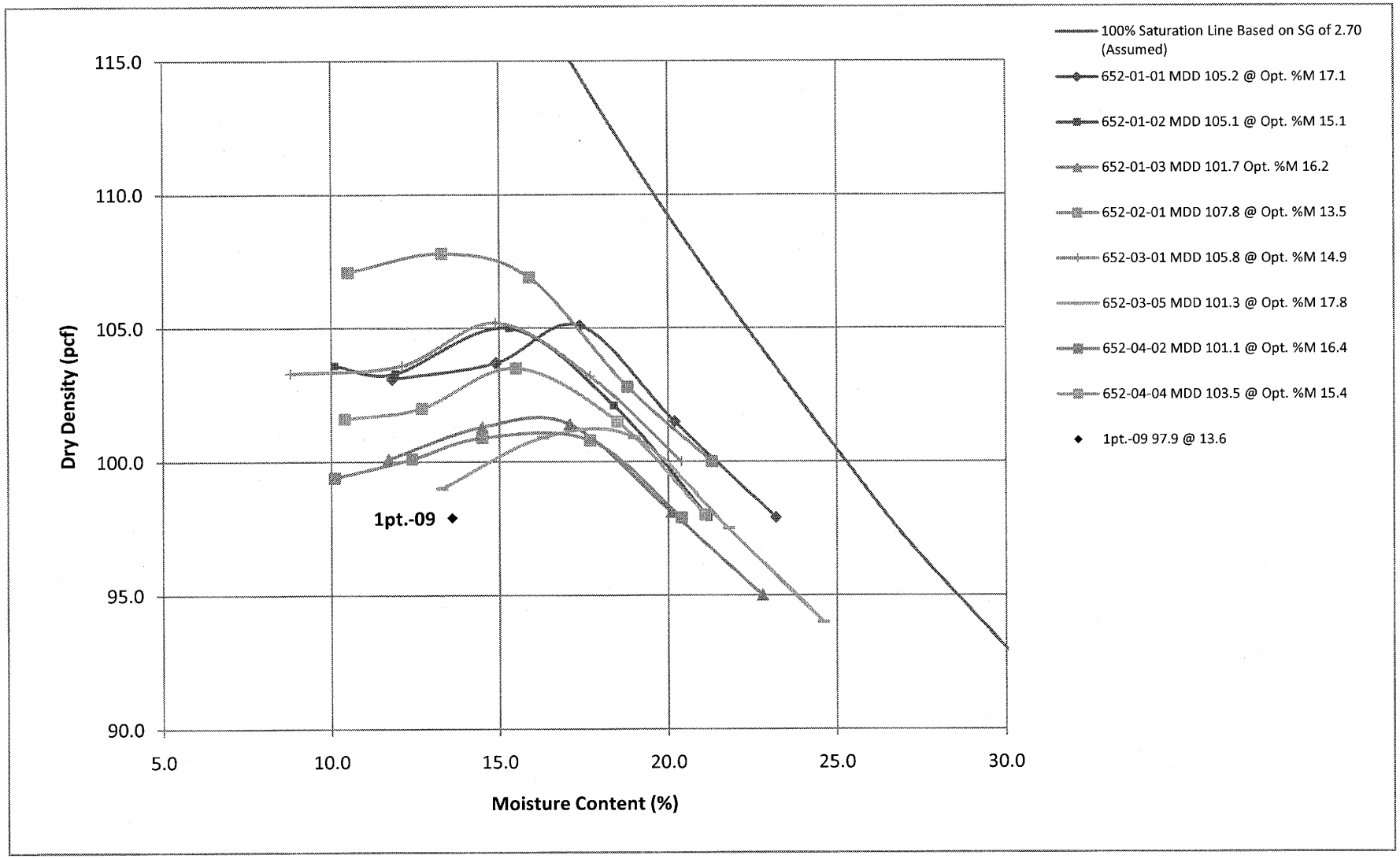
## Onsite Common Fill Moisture / Density Relationships

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

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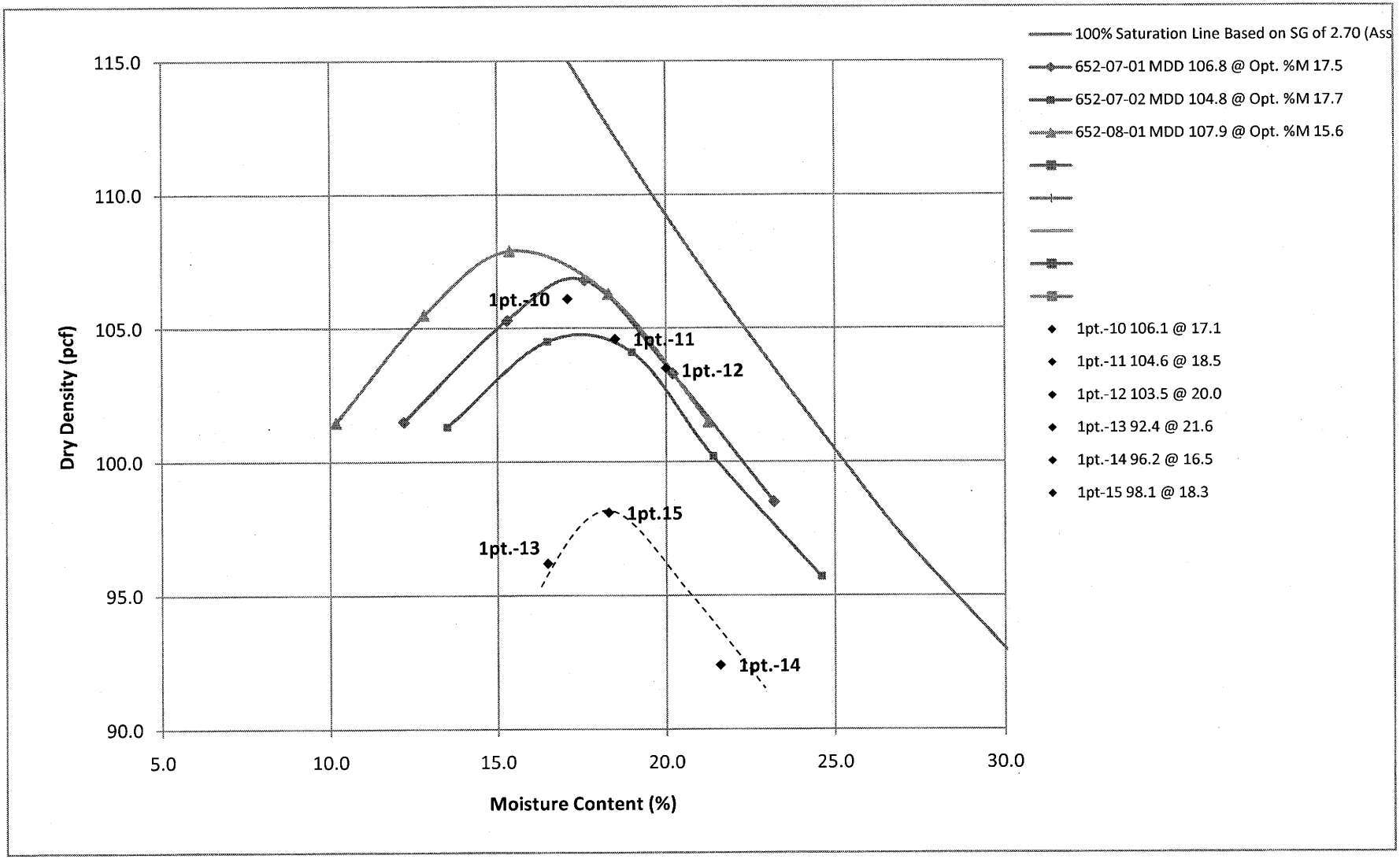
## Onsite Upper Common Fill Moisture / Density Relationships

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

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**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

Geotechnics
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# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-05** | Geotechnics Representative : Jacob R. Buda | Page : 1 of 8 |
| Date (s) : **5.24. - 5.28.10** | Reviewed By : MPS | Date : 6-9-2010 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 233 | ACRE 1 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.4** | **20.9** | **97.1** | **99.0%** | **95.0%** | |
| ND - 234 | ACRE 1 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **116.8** | **21.4** | **96.2** | **98.1%** | **95.0%** | |
| ND - 235 | ACRE 1 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **115.2** | **19.6** | **96.3** | **98.2%** | **95.0%** | |
| ND - 236 | ACRE 1 | LIFT 3 | 6" | 1pt.-15 | 98.1 | 18.3 | **117.0** | **20.1** | **97.4** | **99.3%** | **95.0%** | |
| ND - 237 | ACRE 2 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **118.5** | **18.5** | **100.0** | **95.4%** | **95.0%** | |
| ND - 238 | ACRE 2 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **118.7** | **17.8** | **100.8** | **96.1%** | **95.0%** | |
| ND - 239 | ACRE 4 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **119.3** | **19.2** | **100.1** | **95.5%** | **95.0%** | |
| ND - 240 | ACRE 4 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **118.1** | **17.9** | **100.2** | **95.6%** | **95.0%** | |
| ND - 241 | ACRE 6 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **116.8** | **17.3** | **99.6** | **95.0%** | **95.0%** | |
| ND - 242 | ACRE 6 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **119.1** | **17.4** | **101.4** | **96.8%** | **95.0%** | |
| ND - 243 | ACRE 8 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **117.9** | **16.8** | **100.9** | **96.3%** | **95.0%** | |
| ND - 244 | ACRE 8 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **118.0** | **17.3** | **100.6** | **96.0%** | **95.0%** | |
| ND - 245 | ACRE 8 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **118.1** | **17.9** | **100.2** | **95.6%** | **95.0%** | |
| ND - 246 | ACRE 8 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **120.1** | **17.8** | **102.0** | **97.3%** | **95.0%** | |
| ND - 247 | ACRE 6 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **118.1** | **18.4** | **99.7** | **95.2%** | **95.0%** | |
| ND - 248 | ACRE 6 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **117.2** | **17.1** | **100.1** | **95.5%** | **95.0%** | |
| ND - 249 | ACRE 4 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **118.3** | **18.0** | **100.3** | **95.7%** | **95.0%** | |
| ND - 250 | ACRE 4 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **123.5** | **20.1** | **102.8** | **98.1%** | **95.0%** | |
| ND - 251 | ACRE 2 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **118.1** | **17.8** | **100.3** | **95.7%** | **95.0%** | |
| ND - 252 | ACRE 2 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **123.3** | **17.0** | **105.4** | **100.6%** | **95.0%** | |
| ND - 253 | ACRE 10 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **119.6** | **19.1** | **100.4** | **95.8%** | **95.0%** | |
| ND - 254 | ACRE 10 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **120.6** | **17.4** | **102.7** | **98.0%** | **95.0%** | |
| ND - 255 | ACRE 12 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **118.2** | **18.0** | **100.2** | **95.6%** | **95.0%** | |
| ND - 256 | ACRE 12 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **119.1** | **17.8** | **101.1** | **96.5%** | **95.0%** | |
| ND - 257 | ACRE 14 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **117.8** | **17.4** | **100.3** | **95.7%** | **95.0%** | |
| ND - 258 | ACRE 14 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **122.5** | **17.5** | **104.3** | **99.5%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | | |
|---|---|---|---|
| Report Number : **CFFDR-05** | Geotechnics Representative : Jacob R. Buda | Page : 2 of 8 |
| Date (s) : **5.24. - 5.28.10** | Reviewed By : MMS | Date : 6-9-2010 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 259 | ACRE 14 | LIFT 4 | 6" | 652-07-02 | 104.8 | 18.3 | **117.8** | **18.2** | **99.7** | **95.1%** | **95.0%** | |
| ND - 260 | ACRE 14 | LIFT 4 | 6" | 652-07-02 | 104.8 | 18.3 | **117.7** | **16.9** | **100.7** | **96.1%** | **95.0%** | |
| ND - 261 | ACRE 12 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **117.8** | **17.9** | **99.9** | **95.3%** | **95.0%** | |
| ND - 262 | ACRE 12 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **122.6** | **20.3** | **101.9** | **97.2%** | **95.0%** | |
| ND - 263 | ACRE 10 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **117.2** | **17.5** | **99.7** | **95.2%** | **95.0%** | |
| ND - 264 | ACRE 10 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **119.6** | **18.3** | **101.1** | **96.5%** | **95.0%** | |
| ND - 265 | ACRE 1 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **122.5** | **17.2** | **104.5** | **99.7%** | **95.0%** | |
| ND - 266 | ACRE 1 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **123.1** | **17.7** | **104.6** | **99.8%** | **95.0%** | |
| ND - 267 | ACRE 3 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **120.1** | **15.7** | **103.8** | **99.0%** | **95.0%** | |
| ND - 268 | ACRE 3 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **118.9** | **17.7** | **101.0** | **96.4%** | **95.0%** | |
| ND - 269 | ACRE 5 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **120.1** | **16.1** | **103.4** | **98.7%** | **95.0%** | |
| ND - 270 | ACRE 5 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **121.7** | **18.4** | **102.8** | **98.1%** | **95.0%** | |
| ND - 271 | ACRE 7 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **119.0** | **17.7** | **101.1** | **96.5%** | **95.0%** | |
| ND - 272 | ACRE 7 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **118.2** | **16.5** | **101.5** | **96.8%** | **95.0%** | |
| ND - 273 | ACRE 7 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **117.6** | **16.4** | **101.0** | **96.4%** | **95.0%** | |
| ND - 274 | ACRE 7 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **121.3** | **16.9** | **103.8** | **99.0%** | **95.0%** | |
| ND - 275 | ACRE 5 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **119.3** | **15.6** | **103.2** | **98.5%** | **95.0%** | |
| ND - 276 | ACRE 5 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **120.0** | **16.9** | **102.7** | **98.0%** | **95.0%** | |
| ND - 277 | ACRE 3 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **117.1** | **16.5** | **100.5** | **95.9%** | **95.0%** | |
| ND - 278 | ACRE 3 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **120.4** | **19.2** | **101.0** | **96.4%** | **95.0%** | |
| ND - 279 | ACRE 1 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **124.0** | **16.6** | **106.3** | **101.5%** | **95.0%** | |
| ND - 280 | ACRE 1 | LIFT 4 | 6" | 652-07-02 | 104.8 | 17.7 | **122.6** | **20.0** | **102.2** | **97.5%** | **95.0%** | |
| ND - 281 | ACRE 9 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **122.7** | **16.2** | **105.6** | **97.9%** | **95.0%** | |
| ND - 282 | ACRE 9 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **123.5** | **16.0** | **106.5** | **98.7%** | **95.0%** | |
| ND - 283 | ACRE 11 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **121.0** | **17.1** | **103.3** | **95.8%** | **95.0%** | |
| ND - 284 | ACRE 11 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **124.7** | **16.6** | **106.9** | **99.1%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

geotechnics
INTEGRITY IN TESTING

# Field Density Report

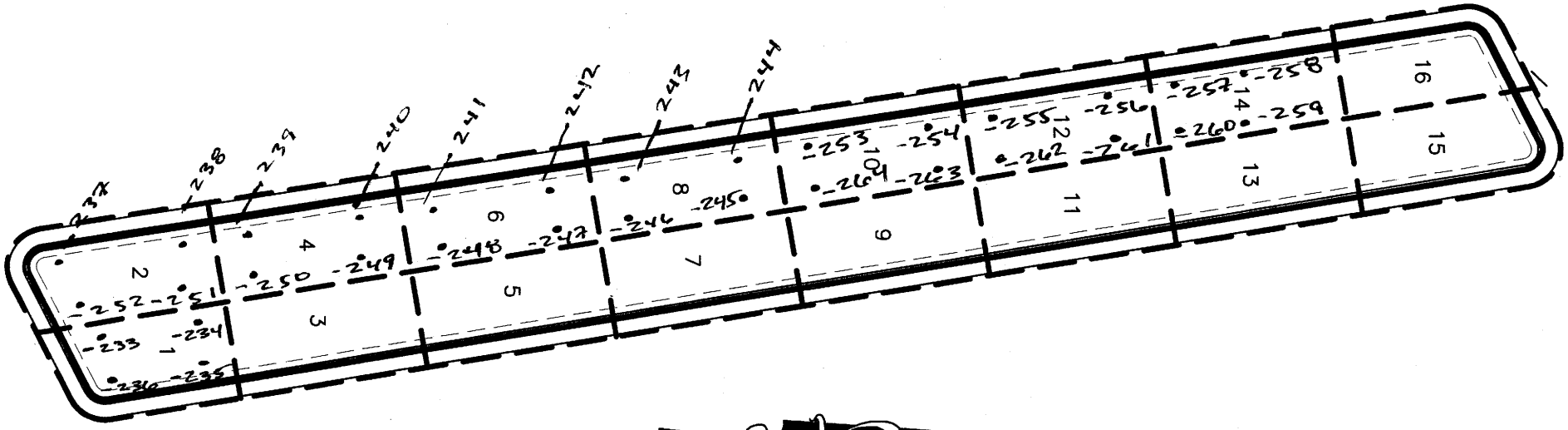
| | | | | | |
|---|---|---|---|---|---|
| Report Number : | **CFFDR-05** | Geotechnics Representative : | Jacob R. Buda | Page : | 3 of 8 |
| Date (s) : | **5.24. - 5.28.10** | Reviewed By : | MPS | Date : | 6-9-2010 |

| | | | |
|---|---|---|---|
| Contractor : | Glover Construction | Borrow Source : | On-Site Borrow Source |

| | |
|---|---|
| Compaction Equipment : | New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller |

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 285 | ACRE 13 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **120.8** | **16.8** | **103.4** | **95.9%** | **95.0%** | |
| ND - 286 | ACRE 13 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **119.6** | **15.2** | **103.8** | **96.2%** | **95.0%** | |
| ND - 287 | ACRE 11 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **118.7** | **12.6** | **105.4** | **97.7%** | **95.0%** | |
| ND - 288 | ACRE 11 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **120.3** | **16.5** | **103.3** | **95.7%** | **95.0%** | |
| ND - 289 | ACRE 9 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **118.2** | **14.6** | **103.1** | **95.6%** | **95.0%** | |
| ND - 290 | ACRE 9 | LIFT 4 | 6" | 652-08-01 | 107.9 | 15.6 | **119.7** | **15.4** | **103.7** | **96.1%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |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|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

geotechnics
INTEGRITY IN TESTING

| | |
|---|---|
| Report Number : | **CFFDR-05** |
| Date (s) : | 5.24. - 5.28.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Descrpiton : Grey Sandy Clay

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-14 |
| Location: | Acre 10 |
| Depth (ft): | Lift 4 |
| Date : | 5.25.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.5 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.52 |
| Weight of Mold (lbs) | 9.5 |
| Weight of WS (lbs) | 4.02 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | 304 |
| Wt. of Tare & WS (gm) | 327.98 |
| Wt. of Tare & DS (gm) | 295.11 |
| Wt. of Tare (gm) | 110.69 |
| Wt. of Water (gm) | 32.87 |
| Wt. of DS (gm) | 184.42 |
| Wet Density (pcf) | 121.8 |
| **Moisture Content %** | **17.8** |
| **Dry Density (pcf)** | **103.4** |

Geotechnics Represenative : Jacob R. Buda

2200 Westinghouse Boulevard • Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460

| | |
|---|---|
| **Client:** | Glover Construction |
| **Project Name :** | Dare Co. C&D LF - Phase No. 4 |
| **Project Number :** | 2010-652 |

Geotechnics
INTEGRITY IN TESTING

| | |
|---|---|
| Report Number : | **CFFDR-05** |
| Date (s) : | 5.24. - 5.28.10 |

## ONE POINT PROCTOR - Method for Soil Identification

Visual Descrpiton : Grey Sandy Clay

### Test Information

| | |
|---|---|
| Test Number : | 1pt.-15 |
| Location: | Acre 3 |
| Depth (ft): | Lift 4 |
| Date : | 5.25.10 |

### Mold

| | |
|---|---|
| Weight of Mold (lbs.) | 9.5 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Specimen

| | |
|---|---|
| Weight of Mold & WS (lbs) | 13.3 |
| Weight of Mold (lbs) | 9.5 |
| Weight of WS (lbs) | 3.8 |
| Volume OF Mold ($ft^3$) | 0.033 |

### Moisture / Density

| | |
|---|---|
| Tare Number | 304 |
| Wt. of Tare & WS (gm) | 316.89 |
| Wt. of Tare & DS (gm) | 290.60 |
| Wt. of Tare (gm) | 110.56 |
| Wt. of Water (gm) | 26.29 |
| Wt. of DS (gm) | 180.04 |
| Wet Density (pcf) | 115.2 |
| **Moisture Content %** | **14.6** |
| **Dry Density (pcf)** | **100.5** |

Geotechnics Represenative : Jacob R. Buda

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geotechnics
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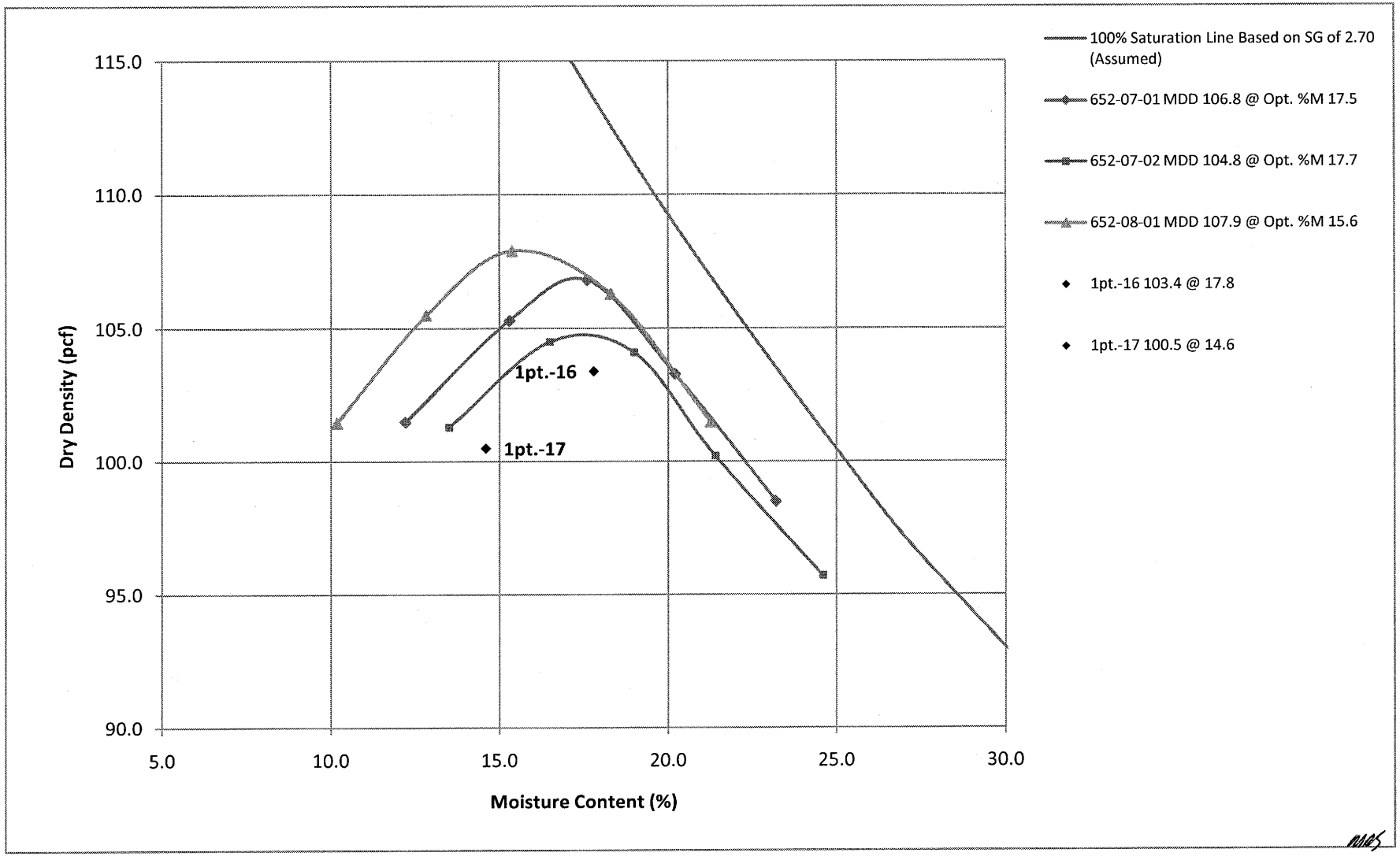
## Onsite Upper Common Fill Moisture / Density Relationships

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652




2200 Westinghouse Blvd. - Suite 103 - Raleigh, NC 27604 - Phone (919) 876-0405 - Fax (919) 876-0460

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

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# Field Density Report

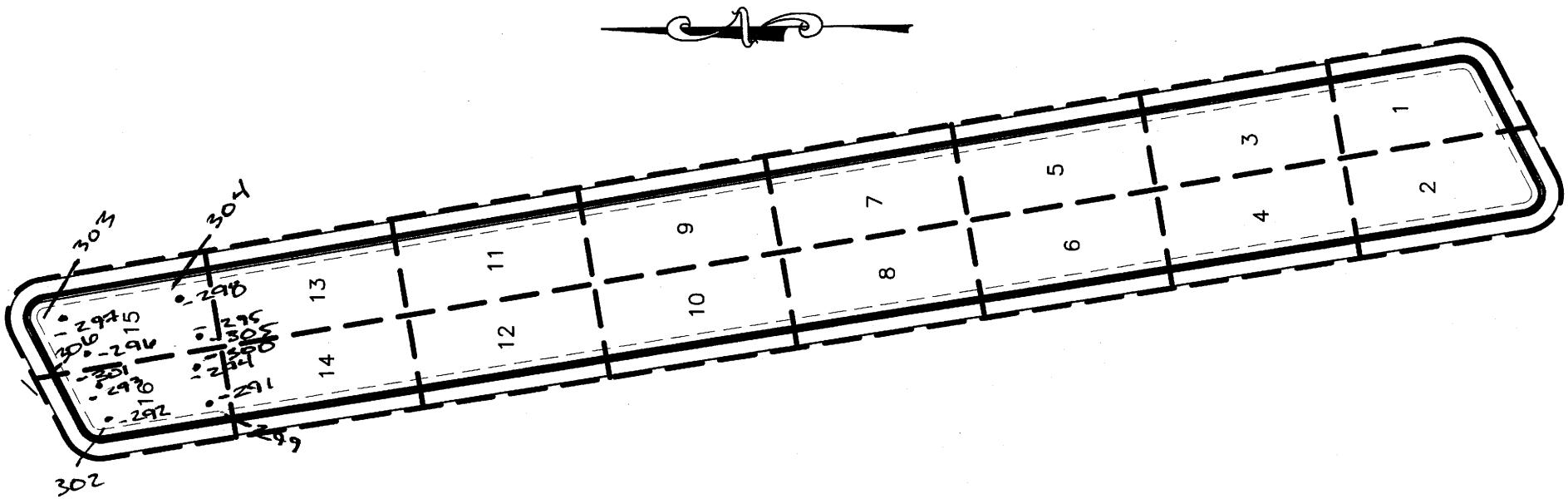
| | | |
|---|---|---|
| Report Number : **CFFDR-06** | Geotechnics Representative : Jacob R. Buda | Page : 1 of 3 |
| Date (s) : **6.1. - 6.5.10** | Reviewed By : [illegible] | Date : 6-29-10 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

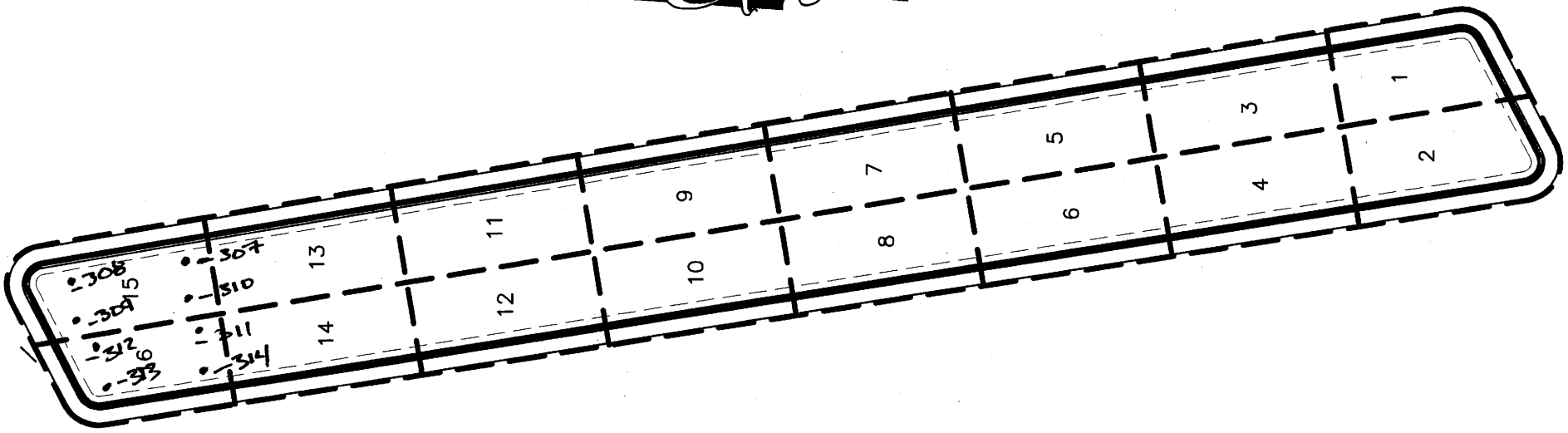
Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 291 | ACRE 16 | LIFT 1 | 6" | 652-02-01 | 107.8 | 13.5 | **120.9** | **13.7** | **106.3** | **98.6%** | **95.0%** | |
| ND - 292 | ACRE 16 | LIFT 1 | 6" | 652-02-01 | 107.8 | 13.5 | **119.8** | **15.6** | **103.6** | **96.1%** | **95.0%** | |
| ND - 293 | ACRE 16 | LIFT 1 | 6" | 652-02-01 | 107.8 | 13.5 | **118.8** | **11.3** | **106.7** | **99.0%** | **95.0%** | |
| ND - 294 | ACRE 16 | LIFT 1 | 6" | 652-02-01 | 107.8 | 13.5 | **116.1** | **6.7** | **108.8** | **100.9%** | **95.0%** | |
| ND - 295 | ACRE 15 | LIFT 1 | 6" | 652-02-01 | 107.8 | 13.5 | **118.0** | **8.3** | **109.0** | **101.1%** | **95.0%** | |
| ND - 296 | ACRE 15 | LIFT 1 | 6" | 652-02-01 | 107.8 | 13.5 | **119.9** | **9.7** | **109.3** | **101.4%** | **95.0%** | |
| ND - 297 | ACRE 15 | LIFT 1 | 6" | 652-02-01 | 107.8 | 13.5 | **116.8** | **10.3** | **105.9** | **98.2%** | **95.0%** | |
| ND - 298 | ACRE 15 | LIFT 1 | 6" | 652-02-01 | 107.8 | 13.5 | **114.7** | **9.6** | **104.7** | **97.1%** | **95.0%** | |
| ND - 299 | ACRE 16 | LIFT 2 | 6" | 652-02-01 | 107.8 | 13.5 | **119.7** | **10.0** | **108.8** | **100.9%** | **95.0%** | |
| ND - 300 | ACRE 16 | LIFT 2 | 6" | 652-02-01 | 107.8 | 13.5 | **117.4** | **12.4** | **104.4** | **96.9%** | **95.0%** | |
| ND - 301 | ACRE 16 | LIFT 2 | 6" | 652-02-01 | 107.8 | 13.5 | **115.0** | **10.2** | **104.4** | **96.8%** | **95.0%** | |
| ND - 302 | ACRE 16 | LIFT 2 | 6" | 652-02-01 | 107.8 | 13.5 | **112.6** | **7.5** | **104.7** | **97.2%** | **95.0%** | |
| ND - 303 | ACRE 15 | LIFT 2 | 6" | 652-02-01 | 107.8 | 13.5 | **113.8** | **7.8** | **105.6** | **97.9%** | **95.0%** | |
| ND - 304 | ACRE 15 | LIFT 2 | 6" | 652-02-01 | 107.8 | 13.5 | **113.0** | **10.3** | **102.4** | **95.0%** | **95.0%** | |
| ND - 305 | ACRE 15 | LIFT 2 | 6" | 652-02-01 | 107.8 | 13.5 | **116.6** | **11.4** | **104.7** | **97.1%** | **95.0%** | |
| ND - 306 | ACRE 15 | LIFT 2 | 6" | 652-02-01 | 107.8 | 13.5 | **114.7** | **9.8** | **104.5** | **96.9%** | **95.0%** | |
| ND - 307 | ACRE 15 | LIFT 3 | 6" | 652-09-02 | 107.3 | 15.7 | **122.8** | **15.9** | **106.0** | **98.7%** | **95.0%** | |
| ND - 308 | ACRE 15 | LIFT 3 | 6" | 652-09-02 | 107.3 | 15.7 | **121.3** | **17.5** | **103.2** | **96.2%** | **95.0%** | |
| ND - 309 | ACRE 15 | LIFT 3 | 6" | 652-09-02 | 107.3 | 15.7 | **122.2** | **17.8** | **103.7** | **96.7%** | **95.0%** | |
| ND - 310 | ACRE 15 | LIFT 3 | 6" | 652-09-02 | 107.3 | 15.7 | **120.5** | **16.6** | **103.3** | **96.3%** | **95.0%** | |
| ND - 311 | ACRE 16 | LIFT 3 | 6" | 652-09-02 | 107.3 | 15.7 | **122.1** | **17.4** | **104.0** | **96.9%** | **95.0%** | |
| ND - 312 | ACRE 16 | LIFT 3 | 6" | 652-09-02 | 107.3 | 15.7 | **121.8** | **17.6** | **103.6** | **96.5%** | **95.0%** | |
| ND - 313 | ACRE 16 | LIFT 3 | 6" | 652-09-02 | 107.3 | 15.7 | **120.3** | **17.4** | **102.5** | **95.5%** | **95.0%** | |
| ND - 314 | ACRE 16 | LIFT 3 | 6" | 652-09-02 | 107.3 | 15.7 | **119.7** | **16.7** | **102.6** | **95.6%** | **95.0%** | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |




CEFDL-06 APPROX. DENSITY TEST LOC.




CFFDR-06 APPROX. DENSITY TEST LOC.

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-07** | Geotechnics Representative : Jacob R. Buda | Page : 1 of 5 |
| Date (s) : **6.7. - 6.12.10** | Reviewed By : MMS | Date : 6-29-10 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 315 | ACRE 2 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **120.7** | **11.7** | **108.1** | **98.8%** | **95.0%** | |
| ND - 316 | ACRE 2 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.4** | **11.8** | **108.6** | **99.3%** | **95.0%** | |
| ND - 317 | ACRE 4 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **125.8** | **14.9** | **109.5** | **100.1%** | **95.0%** | |
| ND - 318 | ACRE 4 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **124.3** | **13.7** | **109.3** | **99.9%** | **95.0%** | |
| ND - 319 | ACRE 6 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **122.9** | **14.1** | **107.7** | **98.5%** | **95.0%** | |
| ND - 320 | ACRE 6 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **120.3** | **13.5** | **106.0** | **96.9%** | **95.0%** | |
| ND - 321 | ACRE 8 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **116.2** | **10.2** | **105.4** | **96.4%** | **95.0%** | |
| ND - 322 | ACRE 8 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.0** | **12.0** | **108.0** | **98.8%** | **95.0%** | |
| ND - 323 | ACRE 10 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.9** | **12.1** | **108.7** | **99.4%** | **95.0%** | |
| ND - 324 | ACRE 10 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **122.8** | **14.7** | **107.1** | **97.9%** | **95.0%** | |
| ND - 325 | ACRE 12 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.8** | **14.8** | **106.1** | **97.0%** | **95.0%** | |
| ND - 326 | ACRE 12 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.4** | **13.0** | **107.4** | **98.2%** | **95.0%** | |
| ND - 327 | ACRE 14 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **118.3** | **11.8** | **105.8** | **96.7%** | **95.0%** | |
| ND - 328 | ACRE 14 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **122.9** | **16.0** | **105.9** | **96.8%** | **95.0%** | |
| ND - 329 | ACRE 14 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **123.4** | **12.6** | **109.6** | **100.2%** | **95.0%** | |
| ND - 330 | ACRE 14 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.0** | **15.2** | **105.0** | **96.0%** | **95.0%** | |
| ND - 331 | ACRE 12 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **119.6** | **14.5** | **104.5** | **95.5%** | **95.0%** | |
| ND - 332 | ACRE 12 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **123.1** | **13.5** | **108.5** | **99.1%** | **95.0%** | |
| ND - 333 | ACRE 10 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **123.9** | **14.7** | **108.0** | **98.7%** | **95.0%** | |
| ND - 334 | ACRE 10 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **124.6** | **17.5** | **106.0** | **96.9%** | **95.0%** | |
| ND - 335 | ACRE 8 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **120.7** | **14.4** | **105.5** | **96.4%** | **95.0%** | |
| ND - 336 | ACRE 8 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **123.7** | **14.7** | **107.8** | **98.6%** | **95.0%** | |
| ND - 337 | ACRE 6 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **122.3** | **12.2** | **109.0** | **99.6%** | **95.0%** | |
| ND - 338 | ACRE 6 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **117.1** | **11.1** | **105.4** | **96.3%** | **95.0%** | |
| ND - 339 | ACRE 4 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.6** | **12.6** | **108.0** | **98.7%** | **95.0%** | |
| ND - 340 | ACRE 4 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **118.8** | **11.8** | **106.3** | **97.1%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-07** | Geotechnics Representative : Jacob R. Buda | Page : 2 of 5 |
| Date (s) : **6.7. - 6.12.10** | Reviewed By : MMS | Date : 6-29-10 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 341 | ACRE 2 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **117.1** | **11.0** | **105.5** | **96.4%** | **95.0%** | |
| ND - 342 | ACRE 2 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **115.1** | **9.8** | **104.8** | **95.8%** | **95.0%** | |
| ND - 343 | ACRE 16 | LIFT 4 | 6" | 652-10-01 | 112.9 | 14.5 | **130.3** | **14.9** | **113.4** | **100.4%** | **95.0%** | |
| ND - 344 | ACRE 16 | LIFT 4 | 6" | 652-10-01 | 112.9 | 14.5 | **124.4** | **15.5** | **107.7** | **95.4%** | **95.0%** | |
| ND - 345 | ACRE 16 | LIFT 4 | 6" | 652-10-01 | 112.9 | 14.5 | **124.4** | **15.4** | **107.8** | **95.5%** | **95.0%** | |
| ND - 346 | ACRE 16 | LIFT 4 | 6" | 652-10-01 | 112.9 | 14.5 | **127.9** | **15.1** | **111.1** | **98.4%** | **95.0%** | |
| ND - 347 | ACRE 1 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **120.1** | **15.3** | **104.2** | **95.2%** | **95.0%** | |
| ND - 348 | ACRE 1 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.3** | **14.5** | **105.9** | **96.8%** | **95.0%** | |
| ND - 349 | ACRE 3 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **122.0** | **15.9** | **105.3** | **96.2%** | **95.0%** | |
| ND - 350 | ACRE 3 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **117.6** | **12.2** | **104.8** | **95.8%** | **95.0%** | |
| ND - 351 | ACRE 5 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **122.1** | **14.7** | **106.5** | **97.3%** | **95.0%** | |
| ND - 352 | ACRE 5 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.3** | **15.5** | **105.0** | **96.0%** | **95.0%** | |
| ND - 353 | ACRE 7 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.3** | **15.4** | **105.1** | **96.1%** | **95.0%** | |
| ND - 354 | ACRE 7 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.7** | **15.4** | **105.5** | **96.4%** | **95.0%** | |
| ND - 355 | ACRE 9 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **120.4** | **14.4** | **105.2** | **96.2%** | **95.0%** | |
| ND - 356 | ACRE 9 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **120.3** | **14.8** | **104.8** | **95.8%** | **95.0%** | |
| ND - 357 | ACRE 11 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.1** | **12.9** | **107.3** | **98.0%** | **95.0%** | |
| ND - 358 | ACRE 11 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **119.1** | **14.0** | **104.5** | **95.5%** | **95.0%** | |
| ND - 359 | ACRE 13 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **119.8** | **14.4** | **104.7** | **95.7%** | **95.0%** | |
| ND - 360 | ACRE 13 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **123.7** | **14.8** | **107.8** | **98.5%** | **95.0%** | |
| ND - 361 | ACRE 11 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **119.3** | **13.1** | **105.5** | **96.4%** | **95.0%** | |
| ND - 362 | ACRE 11 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **122.9** | **17.2** | **104.9** | **95.9%** | **95.0%** | |
| ND - 363 | ACRE 9 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **120.7** | **15.7** | **104.3** | **95.4%** | **95.0%** | |
| ND - 364 | ACRE 9 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **120.7** | **15.9** | **104.1** | **95.2%** | **95.0%** | |
| ND - 365 | ACRE 7 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **120.6** | **15.3** | **104.6** | **95.6%** | **95.0%** | |
| ND - 366 | ACRE 7 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **122.2** | **15.8** | **105.5** | **96.5%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

geotechnics INTEGRITY IN TESTING

# Field Density Report

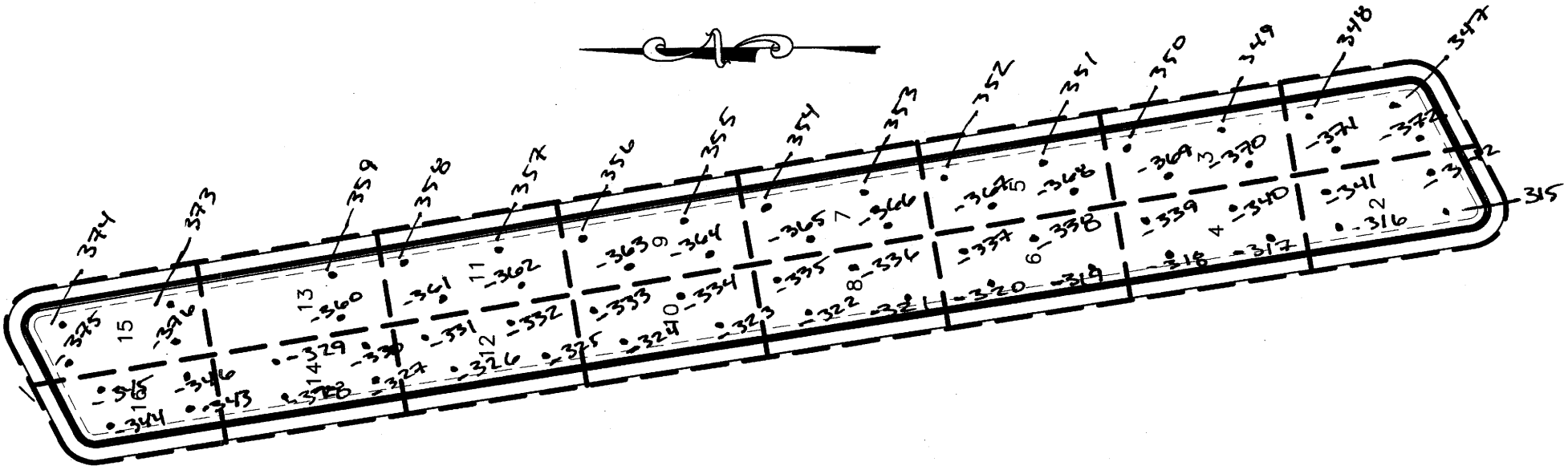
| | | |
|---|---|---|
| Report Number : **CFFDR-07** | Geotechnics Representative : Jacob R. Buda | Page : 3 of 5 |
| Date (s) : **6.7. - 6.12.10** | Reviewed By : MRS | Date : 6-24-10 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

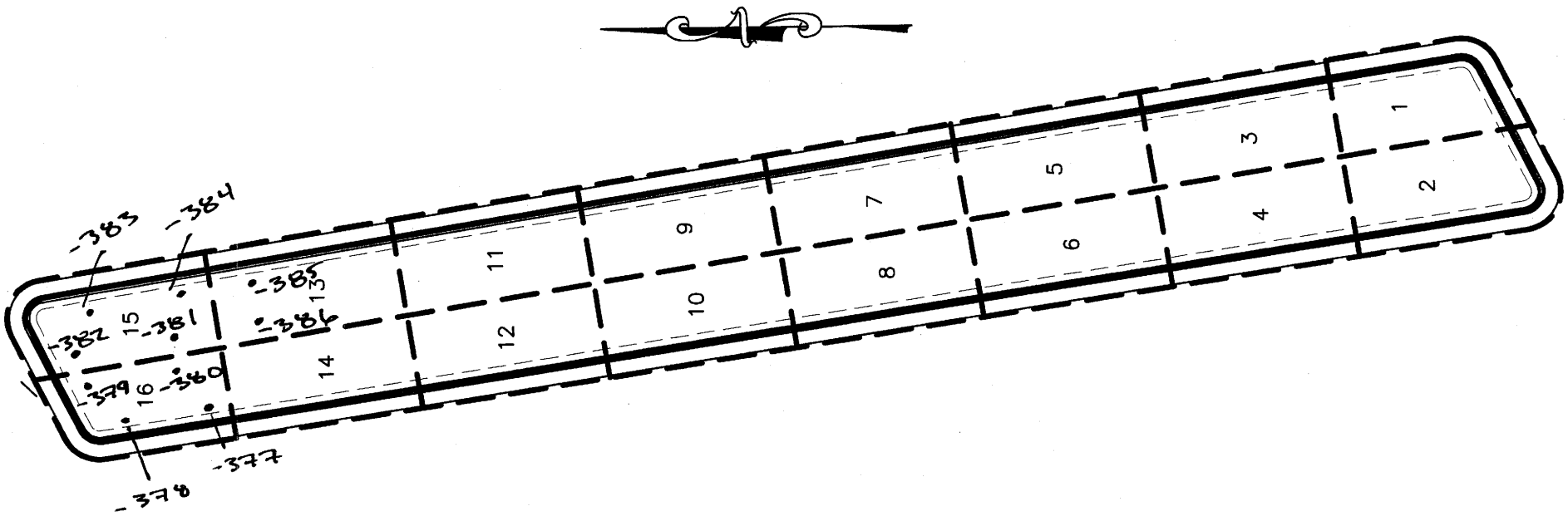
Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 367 | ACRE 5 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.2** | **16.5** | **104.0** | **95.1%** | **95.0%** | |
| ND - 368 | ACRE 5 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **120.9** | **14.4** | **105.7** | **96.6%** | **95.0%** | |
| ND - 369 | ACRE 3 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **119.5** | **14.8** | **104.1** | **95.1%** | **95.0%** | |
| ND - 370 | ACRE 3 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **120.4** | **15.0** | **104.7** | **95.7%** | **95.0%** | |
| ND - 371 | ACRE 1 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.0** | **14.7** | **105.5** | **96.4%** | **95.0%** | |
| ND - 372 | ACRE 1 | LIFT 5 | 6" | 652-09-03 | 109.4 | 15.8 | **121.9** | **16.8** | **104.4** | **95.4%** | **95.0%** | |
| ND - 373 | ACRE 15 | LIFT 4 | 6" | 652-09-03 | 109.4 | 15.8 | **122.7** | **13.8** | **107.8** | **98.6%** | **95.0%** | |
| ND - 374 | ACRE 15 | LIFT 4 | 6" | 652-09-03 | 109.4 | 15.8 | **120.9** | **16.1** | **104.1** | **95.2%** | **95.0%** | |
| ND - 375 | ACRE 15 | LIFT 4 | 6" | 652-09-03 | 109.4 | 15.8 | **119.7** | **14.2** | **104.8** | **95.8%** | **95.0%** | |
| ND - 376 | ACRE 15 | LIFT 4 | 6" | 652-09-03 | 109.4 | 15.8 | **121.6** | **15.8** | **105.0** | **96.0%** | **95.0%** | |
| ND - 377 | ACRE 16 | LIFT 5 | 6" | 652-10-03 | 104.8 | 18.5 | **119.1** | **19.1** | **100.0** | **95.4%** | **95.0%** | |
| ND - 378 | ACRE 16 | LIFT 5 | 6" | 652-10-03 | 104.8 | 18.5 | **117.3** | **17.6** | **99.7** | **95.2%** | **95.0%** | |
| ND - 379 | ACRE 16 | LIFT 5 | 6" | 652-10-03 | 104.8 | 18.5 | **119.9** | **18.6** | **101.1** | **96.5%** | **95.0%** | |
| ND - 380 | ACRE 16 | LIFT 5 | 6" | 652-10-03 | 104.8 | 18.5 | **117.0** | **17.4** | **99.7** | **95.1%** | **95.0%** | |
| ND - 381 | ACRE 15 | LIFT 5 | 6" | 652-10-03 | 104.8 | 18.5 | **119.5** | **19.9** | **99.7** | **95.1%** | **95.0%** | |
| ND - 382 | ACRE 15 | LIFT 5 | 6" | 652-10-03 | 104.8 | 18.5 | **120.2** | **19.9** | **100.3** | **95.7%** | **95.0%** | |
| ND - 383 | ACRE 15 | LIFT 5 | 6" | 652-10-03 | 104.8 | 18.5 | **119.4** | **18.9** | **100.4** | **95.8%** | **95.0%** | |
| ND - 384 | ACRE 15 | LIFT 5 | 6" | 652-10-03 | 104.8 | 18.5 | **118.8** | **18.9** | **99.9** | **95.3%** | **95.0%** | |
| ND - 385 | ACRE 13 | LIFT 5 | 6" | 652-10-03 | 104.8 | 18.5 | **121.2** | **18.7** | **102.1** | **97.4%** | **95.0%** | |
| ND - 386 | ACRE 13 | LIFT 5 | 6" | 652-10-03 | 104.8 | 18.5 | **118.8** | **18.9** | **99.9** | **95.3%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |




CFFDR-07 APPROX. DENSITY TEST LOCATIONS




CFFDR-07 APPROX. DENSITY TEST LOCATIONS

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | |
|---|---|---|
| Report Number : **CFFDR-08** | Geotechnics Representative : Jacob R. Buda | Page : 1 of 5 |
| Date (s) : **6.14. - 6.15.10** | Reviewed By : MAS | Date : 6-29-10 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 387 | ACRE 2 | LIFT 6 | 6" | 652-09-03 | 112.9 | 14.5 | **125.8** | **14.6** | **109.8** | **97.2%** | **95.0%** | |
| ND - 388 | ACRE 2 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **116.2** | **9.3** | **106.3** | **97.2%** | **95.0%** | |
| ND - 389 | ACRE 4 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **115.7** | **9.5** | **105.7** | **96.6%** | **95.0%** | |
| ND - 390 | ACRE 4 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **119.0** | **12.1** | **106.2** | **97.0%** | **95.0%** | |
| ND - 391 | ACRE 6 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **118.8** | **11.0** | **107.0** | **97.8%** | **95.0%** | |
| ND - 392 | ACRE 6 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **123.4** | **12.3** | **109.9** | **100.4%** | **95.0%** | |
| ND - 393 | ACRE 6 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **120.7** | **11.9** | **107.9** | **98.6%** | **95.0%** | |
| ND - 394 | ACRE 6 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **116.1** | **10.6** | **105.0** | **96.0%** | **95.0%** | |
| ND - 395 | ACRE 4 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **122.7** | **16.1** | **105.7** | **96.6%** | **95.0%** | |
| ND - 396 | ACRE 4 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **125.1** | **16.1** | **107.8** | **98.5%** | **95.0%** | |
| ND - 397 | ACRE 2 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **124.0** | **17.8** | **105.3** | **96.2%** | **95.0%** | |
| ND - 398 | ACRE 2 | LIFT 6 | 6" | 652-09-03 | 109.4 | 15.8 | **123.7** | **14.7** | **107.8** | **98.6%** | **95.0%** | |
| ND - 399 | ACRE 1 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **124.6** | **19.7** | **104.1** | **99.8%** | **95.0%** | |
| ND - 400 | ACRE 1 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **119.6** | **15.6** | **103.5** | **99.2%** | **95.0%** | |
| ND - 401 | ACRE 3 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **125.6** | **18.1** | **106.4** | **102.0%** | **95.0%** | |
| ND - 402 | ACRE 3 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **119.1** | **16.8** | **102.0** | **97.8%** | **95.0%** | |
| ND - 403 | ACRE 5 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **121.5** | **17.3** | **103.6** | **99.3%** | **95.0%** | |
| ND - 404 | ACRE 5 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **119.6** | **13.8** | **105.1** | **100.8%** | **95.0%** | |
| ND - 405 | ACRE 5 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **119.2** | **18.5** | **100.6** | **96.4%** | **95.0%** | |
| ND - 406 | ACRE 5 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **118.5** | **14.3** | **103.7** | **99.4%** | **95.0%** | |
| ND - 407 | ACRE 3 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **117.9** | **18.3** | **99.7** | **95.6%** | **95.0%** | |
| ND - 408 | ACRE 3 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **121.3** | **19.2** | **101.8** | **97.6%** | **95.0%** | |
| ND - 409 | ACRE 1 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **122.1** | **17.3** | **104.1** | **99.8%** | **95.0%** | |
| ND - 410 | ACRE 1 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **122.2** | **17.6** | **103.9** | **99.6%** | **95.0%** | |
| ND - 411 | ACRE 7 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **122.9** | **18.3** | **103.9** | **99.6%** | **95.0%** | |
| ND - 412 | ACRE 7 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **120.7** | **18.8** | **101.6** | **97.4%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

Geotechnics
INTEGRITY IN TESTING

# Field Density Report

| | | | | | |
|---|---|---|---|---|---|
| Report Number : | **CFFDR-08** | Geotechnics Representative : | Jacob R. Buda | Page : | 2 of 5 |
| Date (s) : | **6.14. - 6.15.10** | Reviewed By : | MMS | Date : | 6-29-10 |

| | | | |
|---|---|---|---|
| Contractor : | Glover Construction | Borrow Source : | On-Site Borrow Source |

| | |
|---|---|
| Compaction Equipment : | New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller |

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 413 | ACRE 9 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **122.5** | **18.7** | **103.2** | **98.9%** | **95.0%** | |
| ND - 414 | ACRE 9 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **121.6** | **18.7** | **102.4** | **98.2%** | **95.0%** | |
| ND - 415 | ACRE 9 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **119.0** | **13.8** | **104.6** | **100.3%** | **95.0%** | |
| ND - 416 | ACRE 9 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **121.8** | **19.5** | **101.9** | **97.7%** | **95.0%** | |
| ND - 417 | ACRE 7 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **121.6** | **15.4** | **105.4** | **101.0%** | **95.0%** | |
| ND - 418 | ACRE 7 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **124.3** | **19.7** | **103.8** | **99.6%** | **95.0%** | |
| ND - 419 | ACRE 8 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **118.4** | **17.9** | **100.4** | **96.3%** | **95.0%** | |
| ND - 420 | ACRE 8 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **119.6** | **19.3** | **100.3** | **96.1%** | **95.0%** | |
| ND - 421 | ACRE 10 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **122.4** | **18.3** | **103.5** | **99.2%** | **95.0%** | |
| ND - 422 | ACRE 10 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **119.4** | **18.2** | **101.0** | **96.9%** | **95.0%** | |
| ND - 423 | ACRE 10 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **120.3** | **17.1** | **102.7** | **98.5%** | **95.0%** | |
| ND - 424 | ACRE 10 | LIFT 6 | 6" | 652-10-01 | 112.9 | 14.5 | **125.7** | **13.2** | **111.0** | **98.4%** | **95.0%** | |
| ND - 425 | ACRE 8 | LIFT 6 | 6" | 652-10-01 | 112.9 | 14.5 | **126.3** | **14.2** | **110.6** | **98.0%** | **95.0%** | |
| ND - 426 | ACRE 8 | LIFT 6 | 6" | 652-10-01 | 112.9 | 14.5 | **127.2** | **14.6** | **111.0** | **98.3%** | **95.0%** | |
| ND - 427 | ACRE 11 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **124.1** | **16.3** | **106.7** | **102.3%** | **95.0%** | |
| ND - 428 | ACRE 11 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **123.5** | **20.0** | **102.9** | **98.7%** | **95.0%** | |
| ND - 429 | ACRE 13 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **117.1** | **17.0** | **100.1** | **96.0%** | **95.0%** | |
| ND - 430 | ACRE 13 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **121.5** | **17.6** | **103.3** | **99.1%** | **95.0%** | |
| ND - 431 | ACRE 15 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **120.2** | **17.7** | **102.1** | **97.9%** | **95.0%** | |
| ND - 432 | ACRE 15 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **120.6** | **19.6** | **100.8** | **96.7%** | **95.0%** | |
| ND - 433 | ACRE 15 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **121.7** | **20.4** | **101.1** | **96.9%** | **95.0%** | |
| ND - 434 | ACRE 15 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **121.5** | **20.2** | **101.1** | **96.9%** | **95.0%** | |
| ND - 435 | ACRE 13 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **122.5** | **18.7** | **103.2** | **98.9%** | **95.0%** | |
| ND - 436 | ACRE 13 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **118.9** | **15.8** | **102.7** | **98.4%** | **95.0%** | |
| ND - 437 | ACRE 11 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **121.3** | **18.0** | **102.8** | **98.6%** | **95.0%** | |
| ND - 438 | ACRE 11 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **123.6** | **15.9** | **106.6** | **102.2%** | **95.0%** | |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |

**Client:** Glover Construction
**Project Name :** Dare Co. C&D LF - Phase 4
**Project Number :** 2010-652

geotechnics
INTEGRITY IN TESTING

# Field Density Report

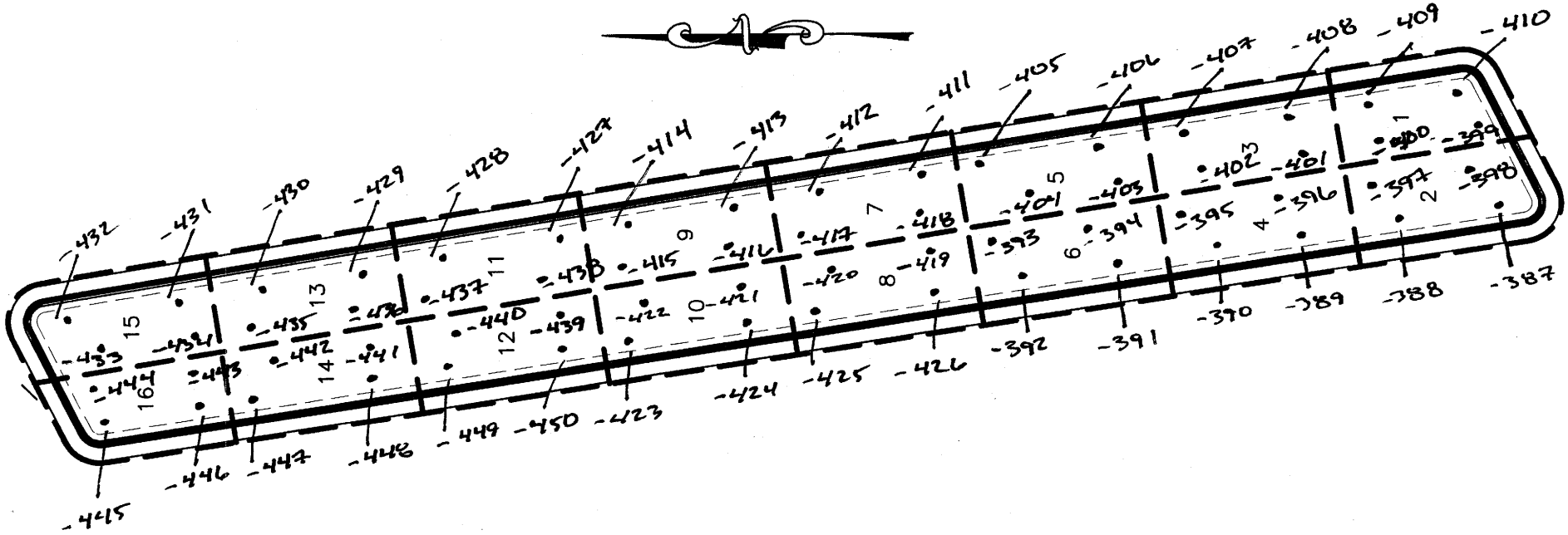
| | | |
|---|---|---|
| Report Number : **CFFDR-08** | Geotechnics Representative : Jacob R. Buda | Page : 3 of 5 |
| Date (s) : **6.14. - 6.15.10** | Reviewed By : MAPS | Date : 6-29-10 |

| | |
|---|---|
| Contractor : Glover Construction | Borrow Source : On-Site Borrow Source |

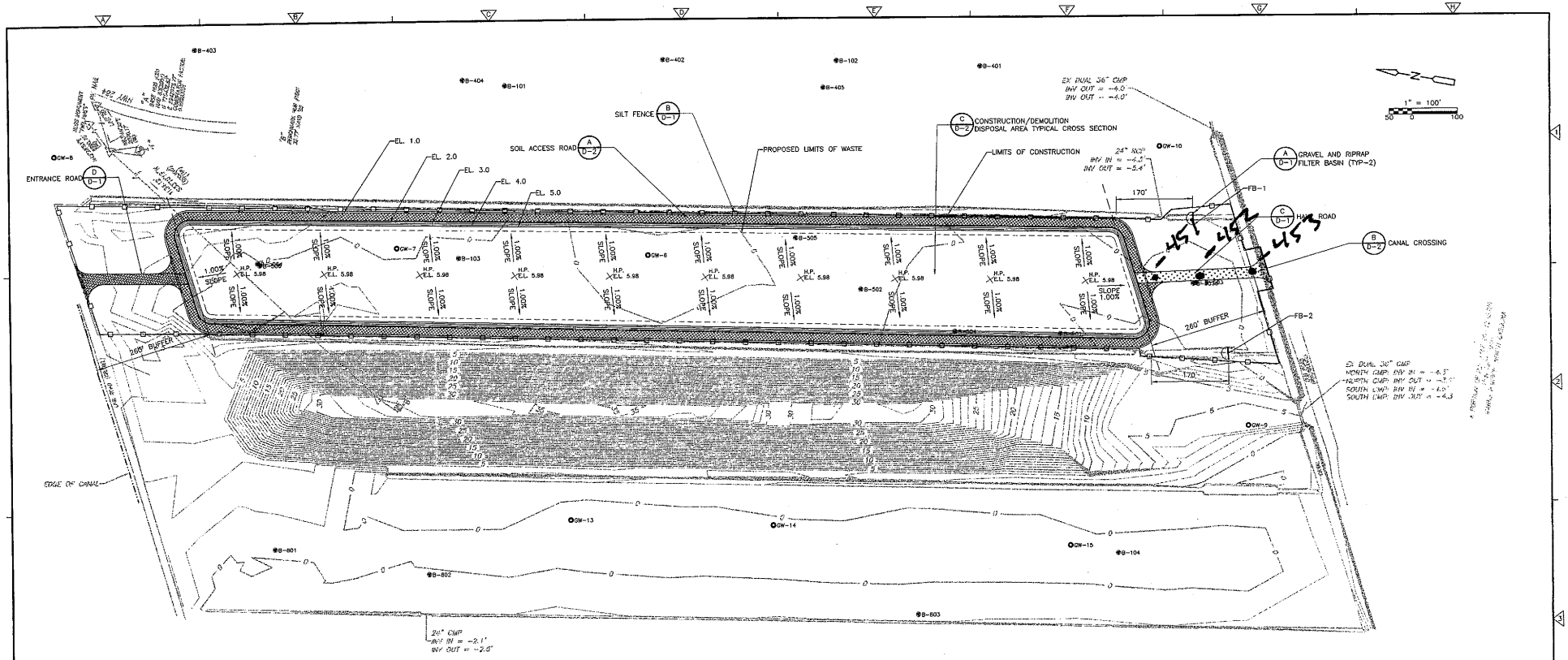
Compaction Equipment : New Holland TJ450 Farm Tractor w/ Smoothdrum Roller and CAT 683E Vibratory Smoothdrum Roller

| Test Number | Test Location | Elevation/ Lift | Rod Depth | Proctor I.D. No. | Proctor Data | | Measured In Place | | | Compaction | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDD pcf | Opt. %M | WD (pcf) | % M | DD (pcf) | % C | % Req. | |
| ND - 439 | ACRE 12 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **118.6** | **17.1** | **101.3** | **97.1%** | **95.0%** | |
| ND - 440 | ACRE 12 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **116.6** | **10.4** | **105.6** | **101.3%** | **95.0%** | |
| ND - 441 | ACRE 14 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **119.4** | **13.6** | **105.1** | **100.8%** | **95.0%** | |
| ND - 442 | ACRE 14 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **112.3** | **12.0** | **100.3** | **96.1%** | **95.0%** | |
| ND - 443 | ACRE 16 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **118.5** | **15.8** | **102.3** | **98.1%** | **95.0%** | |
| ND - 444 | ACRE 16 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **112.1** | **11.7** | **100.4** | **96.2%** | **95.0%** | |
| ND - 445 | ACRE 16 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **120.4** | **16.4** | **103.4** | **99.2%** | **95.0%** | |
| ND - 446 | ACRE 16 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **118.1** | **17.3** | **100.7** | **96.5%** | **95.0%** | |
| ND - 447 | ACRE 14 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **122.8** | **18.6** | **103.5** | **99.3%** | **95.0%** | |
| ND - 448 | ACRE 14 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **117.1** | **15.0** | **101.8** | **97.6%** | **95.0%** | |
| ND - 449 | ACRE 12 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **118.3** | **13.1** | **104.6** | **100.3%** | **95.0%** | |
| ND - 450 | ACRE 12 | LIFT 6 | 6" | 652-11-02 | 104.3 | 19.0 | **121.9** | **14.5** | **106.5** | **102.1%** | **95.0%** | |
| ND - 451 | S. ACCESS RD. | ~ GRADE | 6" | 652-08-04 | 138.3 | 6.9 | **139.1** | **3.3** | **134.7** | **97.4%** | **95.0%** | ABC BASE COURSE |
| ND - 452 | S. ACCESS RD. | ~ GRADE | 6" | 652-08-04 | 138.3 | 6.9 | **137.2** | **1.2** | **135.6** | **98.0%** | **95.0%** | ABC BASE COURSE |
| ND - 453 | S. ACCESS RD. | ~ GRADE | 6" | 652-08-04 | 138.3 | 6.9 | **136.8** | **1.5** | **134.8** | **97.5%** | **95.0%** | ABC BASE COURSE |

| Gauge Number | Gauge Model |
|---|---|
| 33577 | 3440 |




CFFDR-08 APPROX. DENSITY TEST LOCATIONS




LEGEND

- EXISTING MONITORING WELL
- EXISTING PIEZOMETER
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- HIGH POINT
- FILTER BASIN
- SILT FENCE
- HAUL ROAD
- PROPOSED SOIL ACCESS ROAD
- ENTRANCE ROAD
- LIMITS OF CONSTRUCTION

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR SHALL LOCATE AND/OR RELOCATE ALL EXISTING UTILITIES, DRAINAGE STRUCTURES, MONITORING WELLS, ETC. IN COORDINATION WITH THE APPROPRIATE UTILITIES, AGENCY, OR COMPANY WITHIN 72 HOURS PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR LOCATING, PROTECTING, MAINTAINING, AND RESTORING ALL SITE UTILITIES AND BUILDING SERVICES.
2. NO HAUL ROUTE SHALL BE USED FOR MATERIAL TRANSPORT UNTIL NO THE ROUTE HAS BEEN COORDINATED WITH THE OWNER.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING, AT NO ADDITIONAL COST TO THE OWNER, ANY EXISTING MONITORING WELLS, DRAINAGE STRUCTURES, ETC. DAMAGED DURING CONSTRUCTION.
4. CONTRACTOR'S TRAILER SHALL BE LOCATED WITHIN STAGING AREAS AS DESIGNATED BY THE OWNER ON THIS SHEET. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY UTILITY CONNECTIONS, A POTABLE WATER SUPPLY, AND TEMPORARY SANITARY SERVICE FOR TRAILER.
5. LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF THESE PLANS BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY AND AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES, STRUCTURES, OR PRESERVATION AREAS AND OTHER FEATURES AFFECTING HIS WORK.
6. THE CONTRACTOR SHALL REPLACE ALL PAVING (ASPHALT, STONE, OR CONCRETE), STABILIZED EARTH, CURBS, DRIVEWAYS, SIDEWALKS, MAILBOXES, DRAINAGE CULVERTS, FENCES, ETC. WITH THE SAME TYPE OF MATERIAL THAT WAS REMOVED OR DAMAGED DURING CONSTRUCTION.
7. STORM DRAINAGE PIPE LENGTHS SHOWN ARE APPROXIMATE AND MAY BE ADJUSTED AS REQUIRED IN THE FIELD, UPON APPROVAL BY ENGINEER.
8. EXISTING DRAINAGE DITCHES SHALL HAVE SEDIMENT AND DEBRIS REMOVED AND SHALL BE REPAIRED AND ALL NEW EROSION CONTROL AND SEDIMENTATION CONTROL DEVICES SHALL BE IN PLACE PRIOR TO ANY CLEARING AND GRUBBING. THEY SHALL BE INSTALLED TO THE LIMITS OF CONSTRUCTION SHOWN ON THE DRAWINGS, REQUIRED IN THE SPECIFICATIONS AND IN ACCORDANCE WITH ALL REGULATORY AGENCY REQUIREMENTS.
9. THE LIMITS OF DISTURBANCE SHOWN ON THE PLANS SHALL BE STRICTLY OBSERVED BY THE CONTRACTOR. ALL INGRESS AND EGRESS AND TRAFFIC PATTERNS ON THE SITE SHALL BE WITHIN THE LIMITS OF DISTURBANCE.
10. CONTRACTOR SHALL VERIFY THE EXISTANCE AND ACCURACY OF BENCHMARK AND CONTROL DATA PRIOR TO INITIATING CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER IF DISCREPANCES ARE FOUND.
11. CONTRACTOR SHALL STAKE OUT LIMITS OF WORK (INCLUDING CUT/FILL SLOPES) PRIOR TO INITIATING EXCAVATION AND BACKFILL ACTIVITIES. SURVEY DATA SHALL BE SUBMITTED TO ENGINEER FOR REVIEW. CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED AREAS PER SPECIFICATIONS EXCEPT FOR ROAD SURFACES AND AREA WITHIN PROPOSED EDGE OF WASTE.
12. CONTROL POINTS PROVIDED ARE BASED ON A LOCAL COORDINATE SYSTEM. COORDINATE WITH QUIBLE & ASSOC., PC (PHONE NO. 252-261-3300) PRIOR TO LAYING OUT WORK.

SURVEY NOTES:

1. TOPOGRAPHIC SURVEY DATE 04/12-05/11-09 BY MCKIM AND CREED, PA.
2. REFERENCE DB 530, PG 733 & PL C, SL 328.
3. DRAWING VERTICAL DATUM BASED ON GPS RAPID STATIC SESSIONS, OPUS REPORT NUMBERS 000023442, 000023441, 000023439 & 000031628 DATUM NAVD '88, FEET.
4. HORIZONTAL DATUM NAD 83(2007) AND VERTICAL DATUM VERIFICATION BASED UPON RAPID STATIC GPS SESSIONS 000381637, 000381747, 000180456, 000177169, 000147860, 000242228 AND 000237065.
5. CONDITIONS WITHIN SURVEY AREA MAY HAVE CHANGE SINCE DATE OF SURVEY.

NORTH CAROLINA PROFESSIONAL SEAL 028426 ENGINEER W. MICHAEL BRINCHEK

| REV. NO. | DATE | DRWN | CHKD | REMARKS |
|---|---|---|---|---|

DESIGNED BY: P. STOUT
DRAWN BY: P. STOUT
SHEET CHK'D BY: K. YANG
CROSS CHK'D BY: M. BRINCHEK
APPROVED BY: [illegible]
DATE: DECEMBER 2009

CDM
Camp Dresser & McKee
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Raleigh, NC 27612
Tel: (919) 787-3620 Fax: (919) 781-5730
North Carolina Firm Licensure: F-0412
consulting • engineering • construction • operations

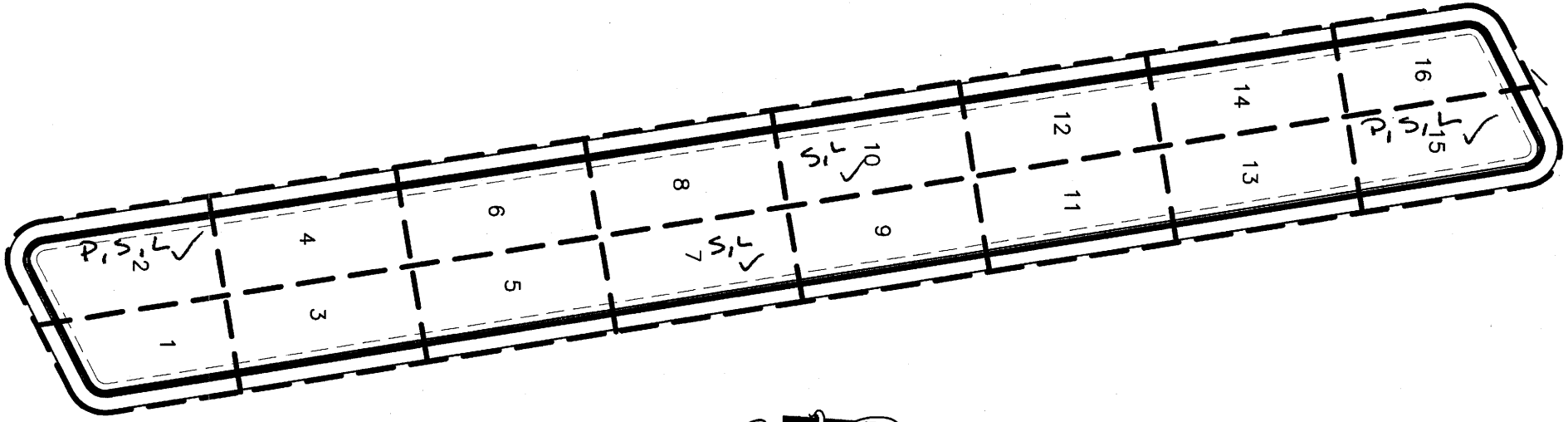
DARE COUNTY
NORTH CAROLINA
CONSTRUCTION & DEMOLITION DEBRIS LANDFILL
PHASE IV CONSTRUCTION DRAWINGS

GRADING PLAN

PROJECT NO. 17952 56960
FILE NAME: C003LFPL.DWG
SHEET NO.
C-3

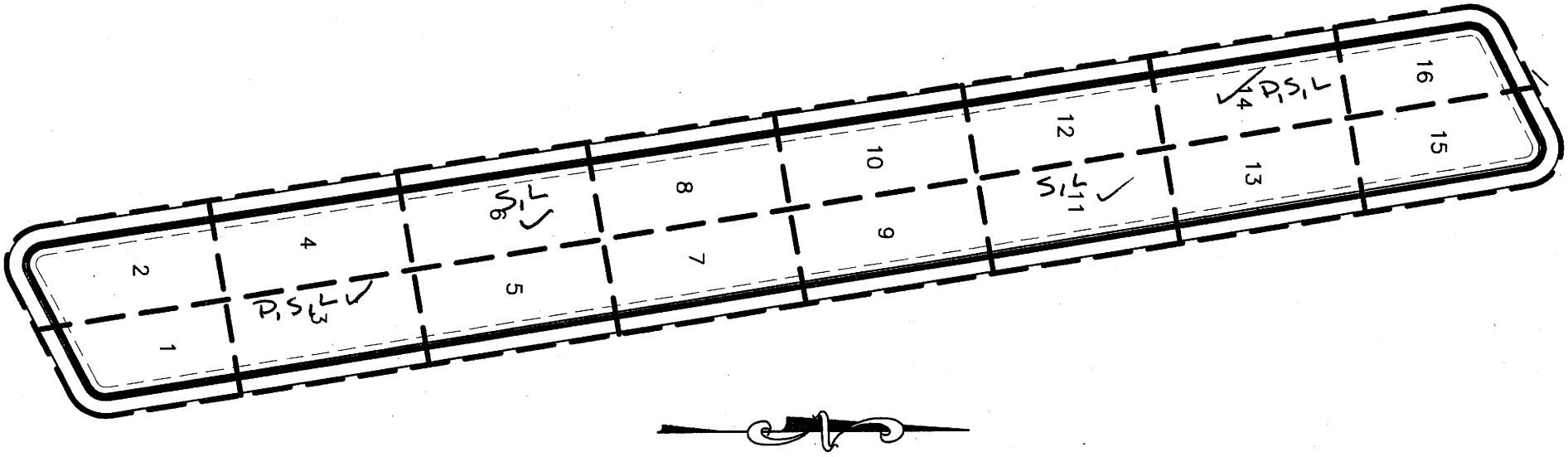
BID SET

12/03/09 1:15:17 PM L:\17952-56960\CONSTRUCTION_DRAWINGS\100%\C003LFPL.DWG



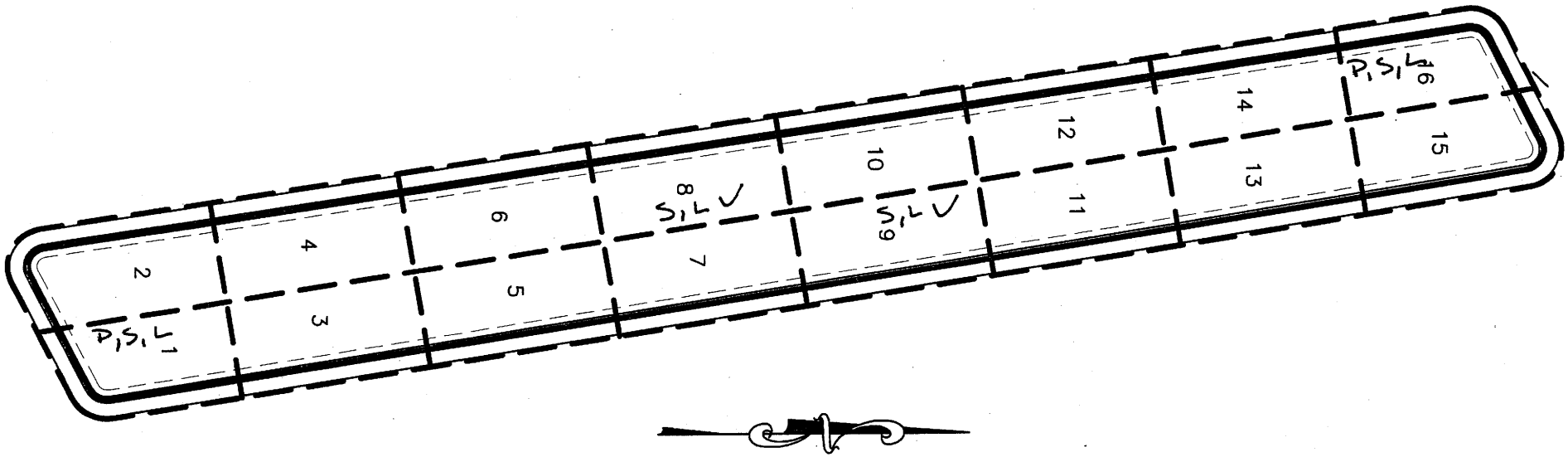

UPPER 2' COMMON FILL SAMPLING LOCATIONS

LIFT 3



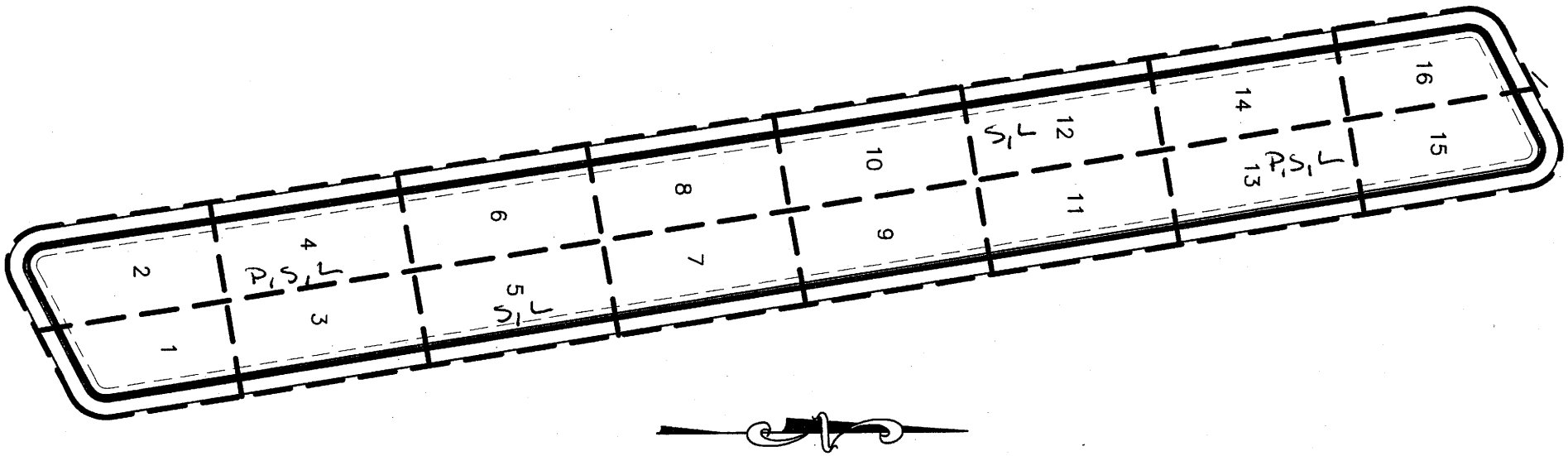

UPPER 2' COMMON FILL SAMPLING LOCATIONS

LIFT 4




UPPER 2' COMMON FILL SAMPLING LOCATIONS

LIFT 5




UPPER 2' COMMON FILL SAMPLING LOCATIONS

LIFT 6

# *Appendix A-8*

# COMPREHENSIVE LABORATORY TEST RESULTS

**Project:** Dare County Landfill; Cell 4

**Project Location:** Dare County, North Carolina

**Client:** CDM

**GET Project Number:** EC10-166T

| Sample Location | Sample Type | Sample Number | Sample Depth (ft) | Sample Date | USCS Classification | AASHTO Classification | Natural Moisture Content (%) | Atterberg Limits (LL/PL/PI) | Passing #200 Sieve (%) | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Northwest Quadrant | Bulk | Proctor No. 1 | 3' BFG | 4/27/2010 | SM | A-2-4(0) | 12.2 | NP/NL | 16.0 | 103.4 | 16.6 |
| Northeast Quadrant | Bulk | Proctor No. 2 | 3' BFG | 4/27/2010 | SP | A-3 | 11.8 | NP/NL | 3.5 | 98.7 | 17.8 |
| Southeast Quadrant | Bulk | Proctor No. 3 | 3' BFG | 4/27/2010 | SM | A-2-4(0) | 15.2 | NP/NL | 12.1 | 105.3 | 14.3 |
| Southwest Quadrant | Bulk | Proctor No. 4 | 3' BFG | 4/27/2010 | SM | A-2-4(0) | 12.2 | NP/NL | 12.5 | 103.7 | 13.2 |
| 35º 49.944' N / 75º 49.098' W | Hand Auger | D-1 | 3' BFG | 4/30/2010 | NT | NT | 13.6 | NT | NT | NT | NT |
| 35º 49.944' N / 75º 49.098' W | Hand Auger | D-2 | 4' BFG | 4/30/2010 | NT | NT | 12.7 | NT | NT | NT | NT |
| 35º 49.944' N / 75º 49.098' W | Hand Auger | D-3 | 5' BFG | 4/30/2010 | NT | NT | 15.9 | NT | NT | NT | NT |
| 35º 50.001' N / 75º 49.107' W | Hand Auger | D-4 | 3' BFG | 4/30/2010 | NT | NT | 9.8 | NT | NT | NT | NT |
| 35º 50.001' N / 75º 49.107' W | Hand Auger | D-5 | 4' BFG | 4/30/2010 | NT | NT | 11.6 | NT | NT | NT | NT |
| 35º 50.042' N / 75º 49.113' W | Hand Auger | D-6 | 3' BFG | 4/30/2010 | NT | NT | 13.0 | NT | NT | NT | NT |
| 35º 50.042' N / 75º 49.113' W | Hand Auger | D-7 | 4' BFG | 4/30/2010 | NT | NT | 13.2 | NT | NT | NT | NT |
| 35º 50.100' N / 75º 49.122' W | Hand Auger | D-8 | 3' BFG | 4/30/2010 | NT | NT | 15.1 | NT | NT | NT | NT |
| 35º 50.100' N / 75º 49.122' W | Hand Auger | D-9 | 4' BFG | 4/30/2010 | NT | NT | 14.7 | NT | NT | NT | NT |
| 35º 50.100' N / 75º 49.122' W | Hand Auger | D-10 | 5' BFG | 4/30/2010 | NT | NT | 14.5 | NT | NT | NT | NT |
| 35º 50.142' N / 75º 49.127' W | Hand Auger | D-11 | 3' BFG | 4/30/2010 | NT | NT | 10.6 | NT | NT | NT | NT |
| 35º 50.142' N / 75º 49.127' W | Hand Auger | D-12 | 4' BFG | 4/30/2010 | NT | NT | 13.2 | NT | NT | NT | NT |
| 35º 50.188' N / 75º 49.134' W | Hand Auger | D-13 | 3' BFG | 4/30/2010 | NT | NT | 11.6 | NT | NT | NT | NT |
| 35º 50.188' N / 75º 49.134' W | Hand Auger | D-14 | 4' BFG | 4/30/2010 | NT | NT | 11.3 | NT | NT | NT | NT |
| 35º 50.188' N / 75º 49.134' W | Hand Auger | D-15 | 5' BFG | 4/30/2010 | NT | NT | 14.1 | NT | NT | NT | NT |
| 35º 50.177' N / 75º 49.162' W | Hand Auger | D-16 | 3' BFG | 4/30/2010 | NT | NT | 15.6 | NT | NT | NT | NT |

NT = Not Tested

BFG = Below Finished Grade

NP/NL = Non Plastic/Non Liquid



GET Solutions, Inc.
Geotechnical • Environmental • Testing

106 Capital Trace; Unit E
Elizabeth City, NC 27909
Tel: 252-335-9765 Fax: 252-335-9766

# COMPREHENSIVE LABORATORY TEST RESULTS

**Project:** Dare County Landfill; Cell 4 **Project Location:** Dare County, North Carolina

**Client:** CDM **GET Project Number:** EC10-166T

| Sample Location | Sample Type | Sample Number | Sample Depth (ft) | Sample Date | USCS Classification | AASHTO Classification | Natural Moisture Content (%) | Atterberg Limits (LL/PL/PI) | Passing #200 Sieve (%) | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 35º 50.177' N / 75º 49.162' W | Hand Auger | D-17 | 4' BFG | 4/30/2010 | NT | NT | 12.7 | NT | NT | NT | NT |
| 35º 50.131' N / 75º 49.157' W | Hand Auger | D-18 | 3' BFG | 4/30/2010 | NT | NT | 13.1 | NT | NT | NT | NT |
| 35º 50.131' N / 75º 49.157' W | Hand Auger | D-19 | 4' BFG | 4/30/2010 | NT | NT | 14.4 | NT | NT | NT | NT |
| 35º 50.131' N / 75º 49.157' W | Hand Auger | D-20 | 5' BFG | 4/30/2010 | NT | NT | 11.3 | NT | NT | NT | NT |
| 35º 50.086' N / 75º 49.153' W | Hand Auger | D-21 | 3' BFG | 4/30/2010 | NT | NT | 18.2 | NT | NT | NT | NT |
| 35º 50.086' N / 75º 49.153' W | Hand Auger | D-22 | 4' BFG | 4/30/2010 | NT | NT | 14.3 | NT | NT | NT | NT |
| 35º 50.031' N / 75º 49.145' W | Hand Auger | D-23 | 3' BFG | 4/30/2010 | NT | NT | 12.9 | NT | NT | NT | NT |
| 35º 50.031' N / 75º 49.145' W | Hand Auger | D-24 | 4' BFG | 4/30/2010 | NT | NT | 12.9 | NT | NT | NT | NT |
| 35º 50.044' N / 75º 49.125' W | Hand Auger | D-25 | 3' BFG | 4/30/2010 | NT | NT | 11.4 | NT | NT | NT | NT |
| 35º 50.044' N / 75º 49.125' W | Hand Auger | D-26 | 4' BFG | 4/30/2010 | NT | NT | 11.6 | NT | NT | NT | NT |
| 35º 50.095' N / 75º 49.134' W | Hand Auger | D-27 | 3' BFG | 4/30/2010 | NT | NT | 14.7 | NT | NT | NT | NT |
| 35º 50.095' N / 75º 49.134' W | Hand Auger | D-28 | 4' BFG | 4/30/2010 | NT | NT | 15.6 | NT | NT | NT | NT |
| 35º 50.182' N / 75º 49.134' W | Hand Auger | D-29 | 2' BFG | 4/29/2010 | NT | NT | 11.6 | NT | NT | NT | NT |
| 35º 50.182' N / 75º 49.149' W | Hand Auger | D-30 | 2' BFG | 4/29/2010 | NT | NT | 6.9 | NT | NT | NT | NT |
| 35º 50.181' N / 75º 49.160' W | Hand Auger | D-31 | 2' BFG | 4/29/2010 | NT | NT | 6.7 | NT | NT | NT | NT |
| 35º 50.148' N / 75º 49.129' W | Hand Auger | D-32 | 2' BFG | 4/29/2010 | NT | NT | 11.9 | NT | NT | NT | NT |
| 35º 50.146' N / 75º 49.142' W | Hand Auger | D-33 | 2' BFG | 4/29/2010 | NT | NT | 12.0 | NT | NT | NT | NT |
| 35º 50.146' N / 75º 49.155' W | Hand Auger | D-34 | 2' BFG | 4/29/2010 | NT | NT | 11.7 | NT | NT | NT | NT |
| 35º 50.094' N / 75º 49.123' W | Hand Auger | D-35 | 2' BFG | 4/29/2010 | NT | NT | 10.3 | NT | NT | NT | NT |
| 35º 50.094' N / 75º 49.137' W | Hand Auger | D-36 | 2' BFG | 4/29/2010 | NT | NT | 12.2 | NT | NT | NT | NT |

NT = Not Tested

BFG = Below Finished Grade



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Elizabeth City, NC 27909
Tel: 252-335-9765 Fax: 252-335-9766

# COMPREHENSIVE LABORATORY TEST RESULTS

**Project:** Dare County Landfill; Cell 4

**Project Location:** Dare County, North Carolina

**Client:** CDM

**GET Project Number:** EC10-166T

| Sample Location | Sample Type | Sample Number | Sample Depth (ft) | Sample Date | USCS Classification | AASHTO Classification | Natural Moisture Content (%) | Atterberg Limits (LL/PL/PI) | Passing #200 Sieve (%) | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 35º 50.094' N / 75º 49.137' W | Hand Auger | D-37 | 2' BFG | 4/29/2010 | NT | NT | 11.0 | NT | NT | NT | NT |
| 35º 50.055' N / 75º 49.115' W | Hand Auger | D-38 | 2' BFG | 4/29/2010 | NT | NT | 9.1 | NT | NT | NT | NT |
| 35º 50.052' N / 75º 49.127' W | Hand Auger | D-39 | 2' BFG | 4/29/2010 | NT | NT | 7.2 | NT | NT | NT | NT |
| 35º 49.946' N / 75º 49.096' W | Hand Auger | D-40 | 2' BFG | 4/29/2010 | NT | NT | 7.7 | NT | NT | NT | NT |
| 35º 50.022' N / 75º 49.141' W | Hand Auger | D-41 | 2' BFG | 4/29/2010 | NT | NT | 11.4 | NT | NT | NT | NT |
| 35º 49.950' N / 75º 49.125' W | Hand Auger | D-42 | 1' BFG | 5/25/2010 | NT | NT | 19.4 | NT | 33.9 | NT | NT |
| 35º 49.950' N / 75º 49.125' W | Hand Auger | D-43 | 2' BFG | 5/25/2010 | NT | NT | 24.6 | NT | 32.0 | NT | NT |
| 35º 49.996' N / 75º 49.132' W | Hand Auger | D-44 | 1' BFG | 5/25/2010 | NT | NT | 20.0 | NT | 30.4 | NT | NT |
| 35º 49.996' N / 75º 49.132' W | Hand Auger | D-45 | 2' BFG | 5/25/2010 | NT | NT | 22.4 | NT | 45.9 | NT | NT |
| 35º 50.040' N / 75º 49.138' W | Hand Auger | D-46 | 1' BFG | 5/25/2010 | NT | NT | 18.0 | NT | 36.2 | NT | NT |
| 35º 50.040' N / 75º 49.138' W | Hand Auger | D-47 | 2' BFG | 5/25/2010 | NT | NT | 10.2 | NT | 14.3 | NT | NT |
| 35º 50.084' N / 75º 49.145' W | Hand Auger | D-48 | 1' BFG | 5/25/2010 | NT | NT | 22.8 | NT | 32.9 | NT | NT |
| 35º 50.084' N / 75º 49.145' W | Hand Auger | D-49 | 2' BFG | 5/25/2010 | NT | NT | 23.0 | NT | 15.6 | NT | NT |
| 35º 50.128' N / 75º 49.151' W | Hand Auger | D-50 | 1' BFG | 5/25/2010 | NT | NT | 20.8 | NT | 25.5 | NT | NT |
| 35º 50.128' N / 75º 49.151' W | Hand Auger | D-51 | 2' BFG | 5/25/2010 | NT | NT | 18.4 | NT | 28.6 | NT | NT |
| 35º 50.173' N / 75º 49.157' W | Hand Auger | D-52 | 1' BFG | 5/25/2010 | NT | NT | 19.6 | NT | 19.0 | NT | NT |
| 35º 50.173' N / 75º 49.157' W | Hand Auger | D-53 | 2' BFG | 5/25/2010 | NT | NT | 18.9 | NT | 28.0 | NT | NT |
| 35º 50.216' N / 75º 49.164' W | Hand Auger | D-54 | 1' BFG | 5/25/2010 | NT | NT | 22.0 | NT | 28.3 | NT | NT |
| 35º 50.216' N / 75º 49.164' W | Hand Auger | D-55 | 2' BFG | 5/25/2010 | NT | NT | 18.4 | NT | 27.2 | NT | NT |
| 35º 50.027' N / 75º 49.115' W | Hand Auger | D-56 | FG | 6/11/2010 | NT | NT | 16.6 | NT | NT | NT | NT |

NT = Not Tested
BFG = Below Finished Grade
FG = Finished Grade



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# COMPREHENSIVE LABORATORY TEST RESULTS

**Project:** Dare County Landfill; Cell 4

**Project Location:** Dare County, North Carolina

**Client:** CDM

**GET Project Number:** EC10-166T

| Sample Location | Sample Type | Sample Number | Sample Depth (ft) | Sample Date | USCS Classification | AASHTO Classification | Natural Moisture Content (%) | Atterberg Limits (LL/PL/PI) | Passing #200 Sieve (%) | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 35º 50.027' N / 75º 49.137' W | Hand Auger | D-57 | FG | 6/11/2010 | NT | NT | 12.5 | NT | NT | NT | NT |
| 35º 50.070' N / 75º 49.117' W | Hand Auger | D-58 | FG | 6/11/2010 | NT | NT | 16.2 | NT | NT | NT | NT |
| 35º 50.068' N / 75º 49.140' W | Hand Auger | D-59 | FG | 6/11/2010 | NT | NT | 12.7 | NT | NT | NT | NT |
| 35º 50.121' N / 75º 49.122' W | Hand Auger | D-60 | FG | 6/11/2010 | NT | NT | 16.9 | NT | NT | NT | NT |
| 35º 50.119' N / 75º 49.147' W | Hand Auger | D-61 | FG | 6/11/2010 | NT | NT | 11.3 | NT | NT | NT | NT |
| 35º 49.969' N / 75º 49.101' W | Hand Auger | D-62 | FG | 6/14/2010 | NT | NT | 18.4 | NT | NT | NT | NT |
| 35º 49.969' N / 75º 49.101' W | Hand Auger | D-63 | 1' BFG | 6/14/2010 | NT | NT | 18.8 | NT | NT | NT | NT |
| 35º 50.000' N / 75º 49.110' W | Hand Auger | D-64 | FG | 6/14/2010 | NT | NT | 14.5 | NT | NT | NT | NT |
| 35º 50.000' N / 75º 49.110' W | Hand Auger | D-65 | 1' BFG | 6/14/2010 | NT | NT | 19.9 | NT | NT | NT | NT |
| 35º 50.053' N / 75º 49.115' W | Hand Auger | D-66 | FG | 6/14/2010 | NT | NT | 13.4 | NT | NT | NT | NT |
| 35º 50.053' N / 75º 49.115' W | Hand Auger | D-67 | 1' BFG | 6/14/2010 | NT | NT | 16.8 | NT | NT | NT | NT |
| 35º 50.084' N / 75º 49.123' W | Hand Auger | D-68 | FG | 6/14/2010 | NT | NT | 14.3 | NT | NT | NT | NT |
| 35º 50.084' N / 75º 49.123' W | Hand Auger | D-69 | 1' BFG | 6/14/2010 | NT | NT | 19.5 | NT | NT | NT | NT |
| 35º 50.137' N / 75º 49.127' W | Hand Auger | D-70 | FG | 6/14/2010 | NT | NT | 11.0 | NT | NT | NT | NT |
| 35º 50.137' N / 75º 49.127' W | Hand Auger | D-71 | 1' BFG | 6/14/2010 | NT | NT | 15.2 | NT | NT | NT | NT |
| 35º 50.166' N / 75º 49.158' W | Hand Auger | D-72 | FG | 6/17/2010 | NT | NT | 14.2 | NT | NT | NT | NT |
| 35º 50.211' N / 75º 49.164' W | Hand Auger | D-73 | FG | 6/17/2010 | NT | NT | 14.8 | NT | NT | NT | NT |
| 35º 50.258' N / 75º 49.146' W | Hand Auger | D-74 | FG | 6/17/2010 | NT | NT | 12.5 | NT | NT | NT | NT |
| 35º 50.258' N / 75º 49.146' W | Hand Auger | D-75 | 1' BFG | 6/17/2010 | NT | NT | 14.8 | NT | NT | NT | NT |
| 35º 50.258' N / 75º 49.146' W | Hand Auger | D-76 | 2' BFG | 6/17/2010 | NT | NT | 14.6 | NT | NT | NT | NT |

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FG = Finished Grade



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# COMPREHENSIVE LABORATORY TEST RESULTS

**Project:** Dare County Landfill; Cell 4

**Project Location:** Dare County, North Carolina

**Client:** CDM

**GET Project Number:** EC10-166T

| Sample Location | Sample Type | Sample Number | Sample Depth (ft) | Sample Date | USCS Classification | AASHTO Classification | Natural Moisture Content (%) | Atterberg Limits (LL/PL/PI) | Passing #200 Sieve (%) | Maximum Dry Density (pcf) | Optimum Moisture (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 35º 50.258' N / 75º 49.146' W | Hand Auger | D-77 | 3' BFG | 6/17/2010 | NT | NT | 14.9 | NT | NT | NT | NT |
| 35º 50.253' N / 75º 49.171' W | Hand Auger | D-78 | FG | 6/17/2010 | NT | NT | 11.9 | NT | NT | NT | NT |
| 35º 50.253' N / 75º 49.171' W | Hand Auger | D-79 | 1' BFG | 6/17/2010 | NT | NT | 13.8 | NT | NT | NT | NT |
| 35º 50.253' N / 75º 49.171' W | Hand Auger | D-80 | 2' BFG | 6/17/2010 | NT | NT | 14.8 | NT | NT | NT | NT |
| 35º 50.253' N / 75º 49.171' W | Hand Auger | D-81 | 3' BFG | 6/17/2010 | NT | NT | 14.3 | NT | NT | NT | NT |
| Lot 4 | Bulk | Proctor #5 | 2' BFG | 5/25/2010 | SM | A-2-4 | 24.5 | NP/NL | 28.1 | 108.5 | 16.0 |
| Lot 1 | Bulk | Proctor #6 | 1' BFG | 5/25/2010 | SM | A-2-4 | 23.5 | NP/NL | 12.5 | 103.4 | 14.1 |

NT = Not Tested
BFG = Below Finished Grade
FG = Finished Grade
NP/NL = Non Plastic/Non Liquid

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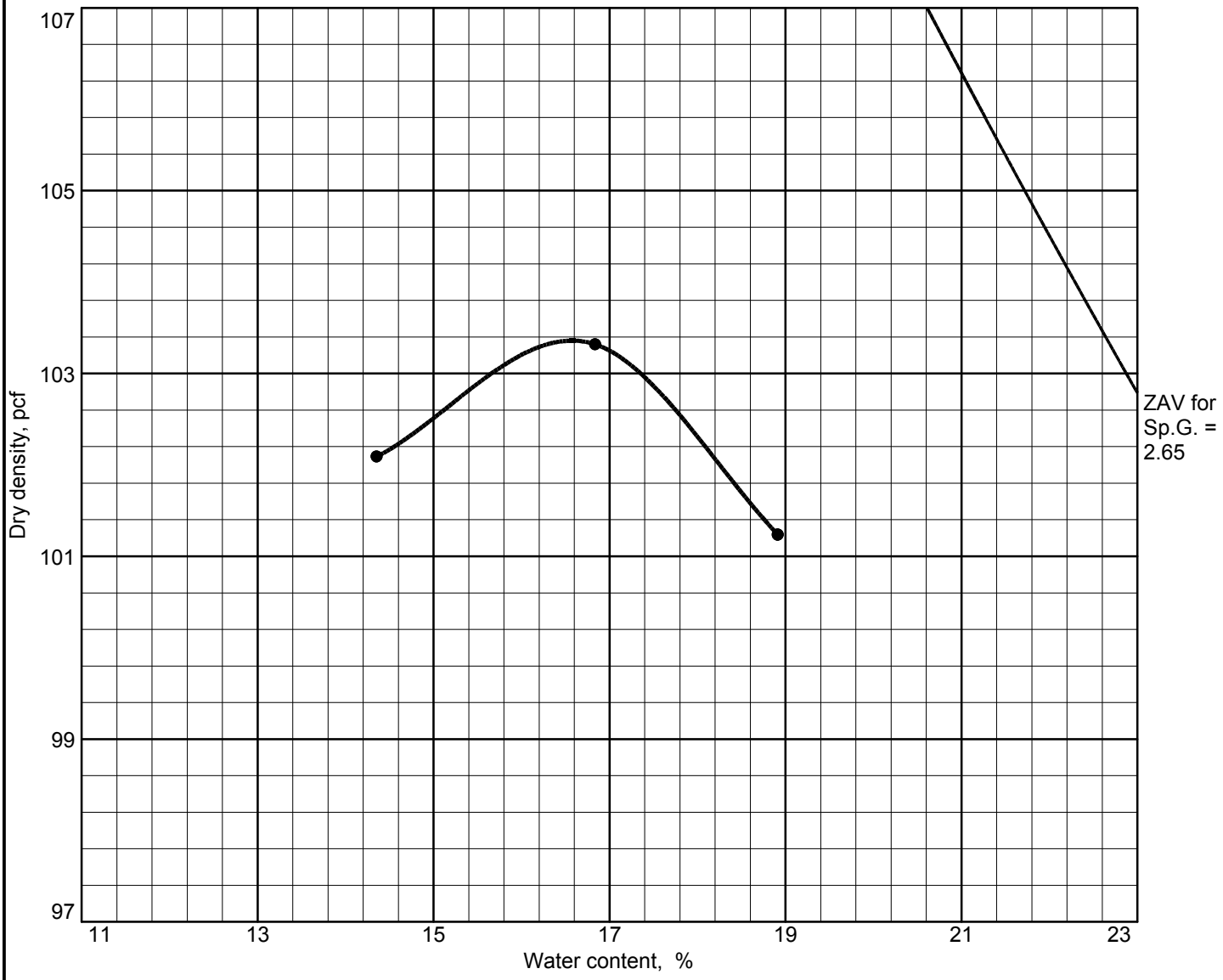
# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)




Test specification: ASTM D 698-00a Method A Standard

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > No.4 | % < No.200 |
|---|---|---|---|---|---|---|---|---|
| | USCS | AASHTO | | | | | | |
| | SM | A-2-4(0) | 12.2 | | NP | NP | 0.0 | 16.0 |

| TEST RESULTS | MATERIAL DESCRIPTION |
|---|---|
| Maximum dry density = 103.4 pcf<br>Optimum moisture = 16.6 % | Tan Silty fine SAND (SM) |

**Project No.** EC10-166T **Client:** CDM

**Project:** Dare County Landfill Phase {CELL} 4

● **Location:** App170'South from Northend and app 82'West from East edge

**Remarks:**

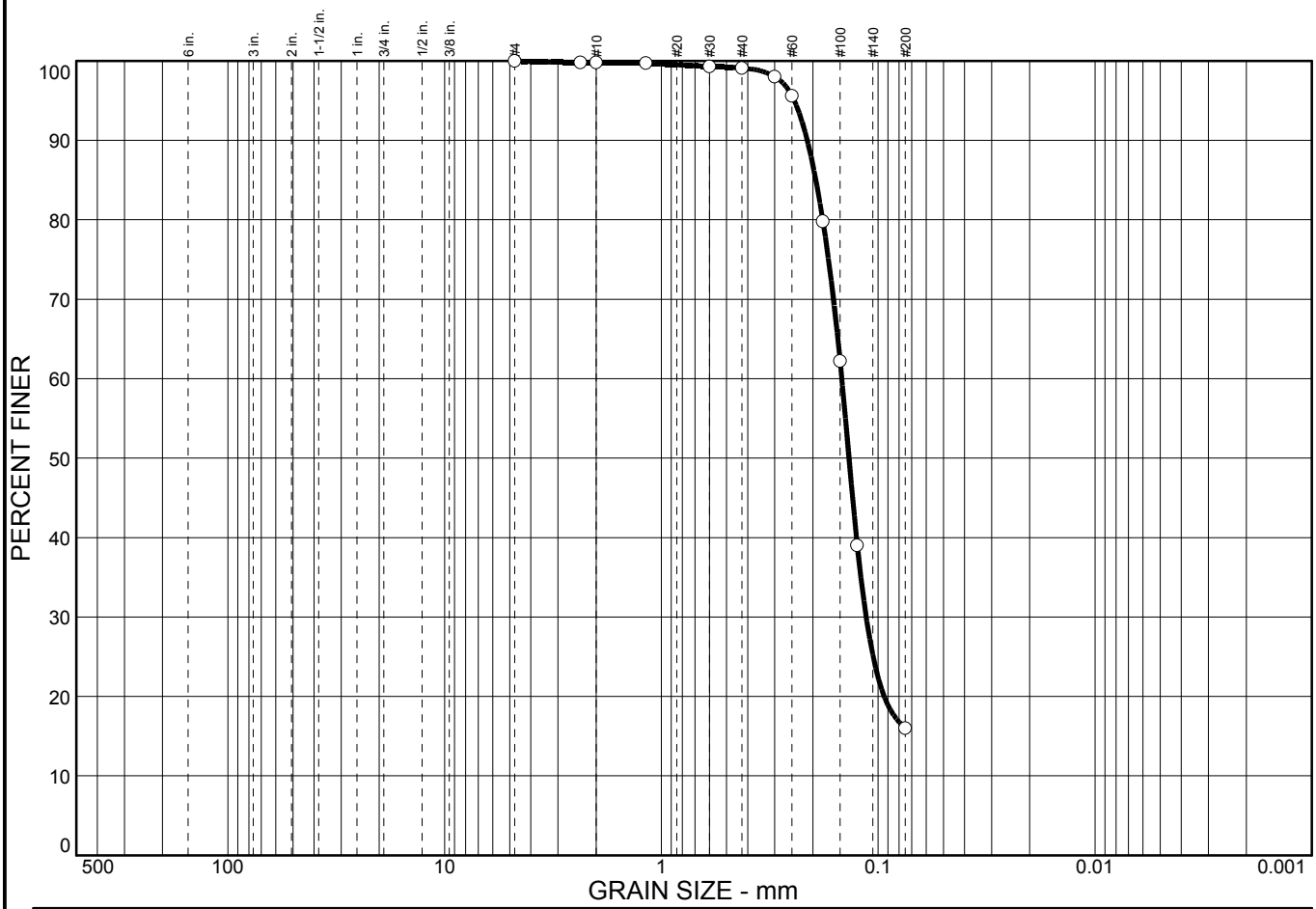
Proctor-#1

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

**GET SOLUTIONS, INC.**

**Figure**

# Particle Size Distribution Report




| % COBBLES | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|
| 0.0 | 0.0 | 84.0 | 16.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| #4 | 100.0 | | |
| #8 | 99.8 | | |
| #10 | 99.8 | | |
| #16 | 99.7 | | |
| #30 | 99.3 | | |
| #40 | 99.1 | | |
| #50 | 98.0 | | |
| #60 | 95.6 | | |
| #80 | 79.8 | | |
| #100 | 62.2 | | |
| #120 | 39.0 | | |
| #200 | 16.0 | | |

* (no specification provided)

**Soil Description**

Tan Silty fine SAND (SM)

**Atterberg Limits**

PL= LL= NP PI= NP

**Coefficients**

$D_{85}$= 0.194 $D_{60}$= 0.147 $D_{50}$= 0.137
$D_{30}$= 0.114 $D_{15}$= $D_{10}$=
$C_u$= $C_c$=

**Classification**

USCS= SM AASHTO= A-2-4(0)

**Remarks**

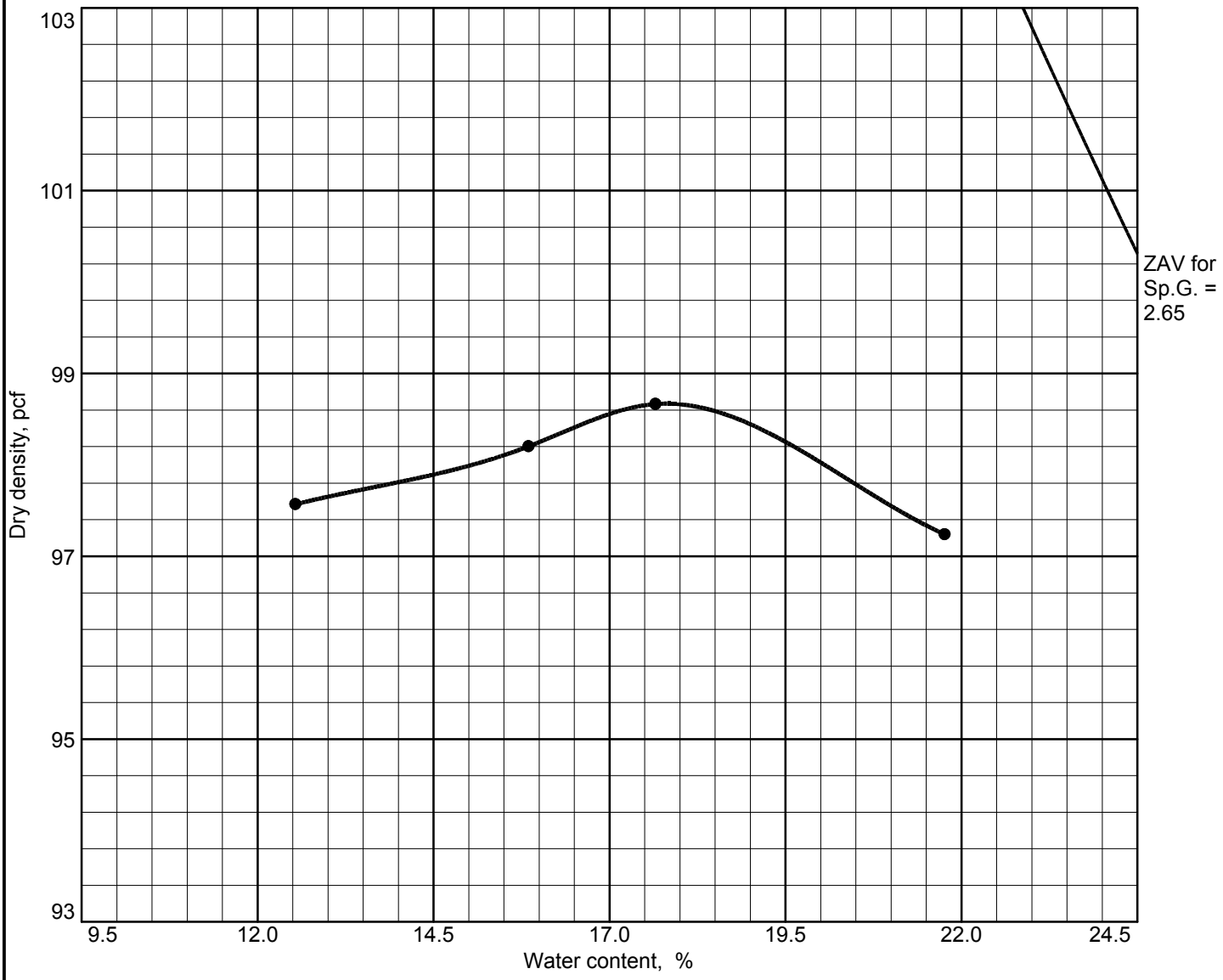
Proctor No. 1
F.M.=0.41

**Sample No.:** 1 **Source of Sample:** **Date:**
**Location:** App170'South from Northend and app 82'West from East edge **Elev./Depth:**

**GET SOLUTIONS, INC.**

**Client:** CDM
**Project:** Dare County Landfill Phase {CELL} 4
**Project No:** EC10-166T **Figure**

# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)




Test specification: ASTM D 698-00a Method A Standard

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > No.4 | % < No.200 |
|---|---|---|---|---|---|---|---|---|
| | USCS | AASHTO | | | | | | |
| | SP | A-3 | 11.8 | | NP | NP | 0.0 | 3.5 |

| TEST RESULTS | MATERIAL DESCRIPTION |
|---|---|
| Maximum dry density = 98.7 pcf<br>Optimum moisture = 17.8 % | Gray poorly graded fine to medium SAND (SP) |

**Project No.** EC10-166T **Client:** CDM

**Project:** Dare County Landfill Phase {CELL} 4

● **Location:** App 55' South from Northend and app 20'East from West edge

**Remarks:**

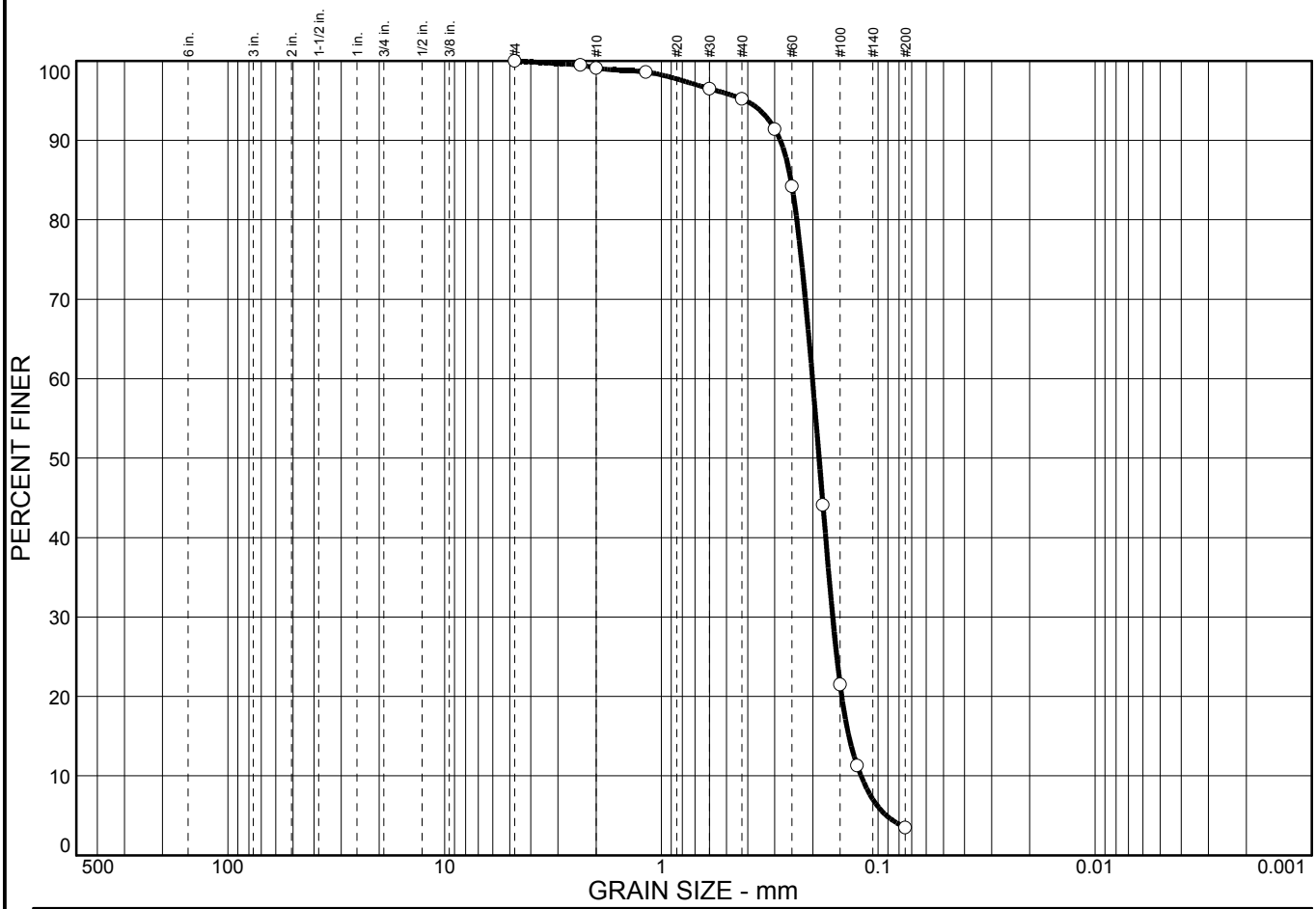
Proctor-#2

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

**GET SOLUTIONS, INC.**

**Figure**

# Particle Size Distribution Report




| % COBBLES | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|
| 0.0 | 0.0 | 96.5 | 3.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| #4 | 100.0 | | |
| #8 | 99.5 | | |
| #10 | 99.1 | | |
| #16 | 98.6 | | |
| #30 | 96.5 | | |
| #40 | 95.2 | | |
| #50 | 91.4 | | |
| #60 | 84.2 | | |
| #80 | 44.1 | | |
| #100 | 21.5 | | |
| #120 | 11.3 | | |
| #200 | 3.5 | | |

* (no specification provided)

**Soil Description**

Gray poorly graded fine to medium SAND (SP)

**Atterberg Limits**

PL= NP LL= NP PI= NP

**Coefficients**

$D_{85}$= 0.253 $D_{60}$= 0.201 $D_{50}$= 0.188
$D_{30}$= 0.162 $D_{15}$= 0.137 $D_{10}$= 0.120
$C_u$= 1.68 $C_c$= 1.09

**Classification**

USCS= SP AASHTO= A-3

**Remarks**

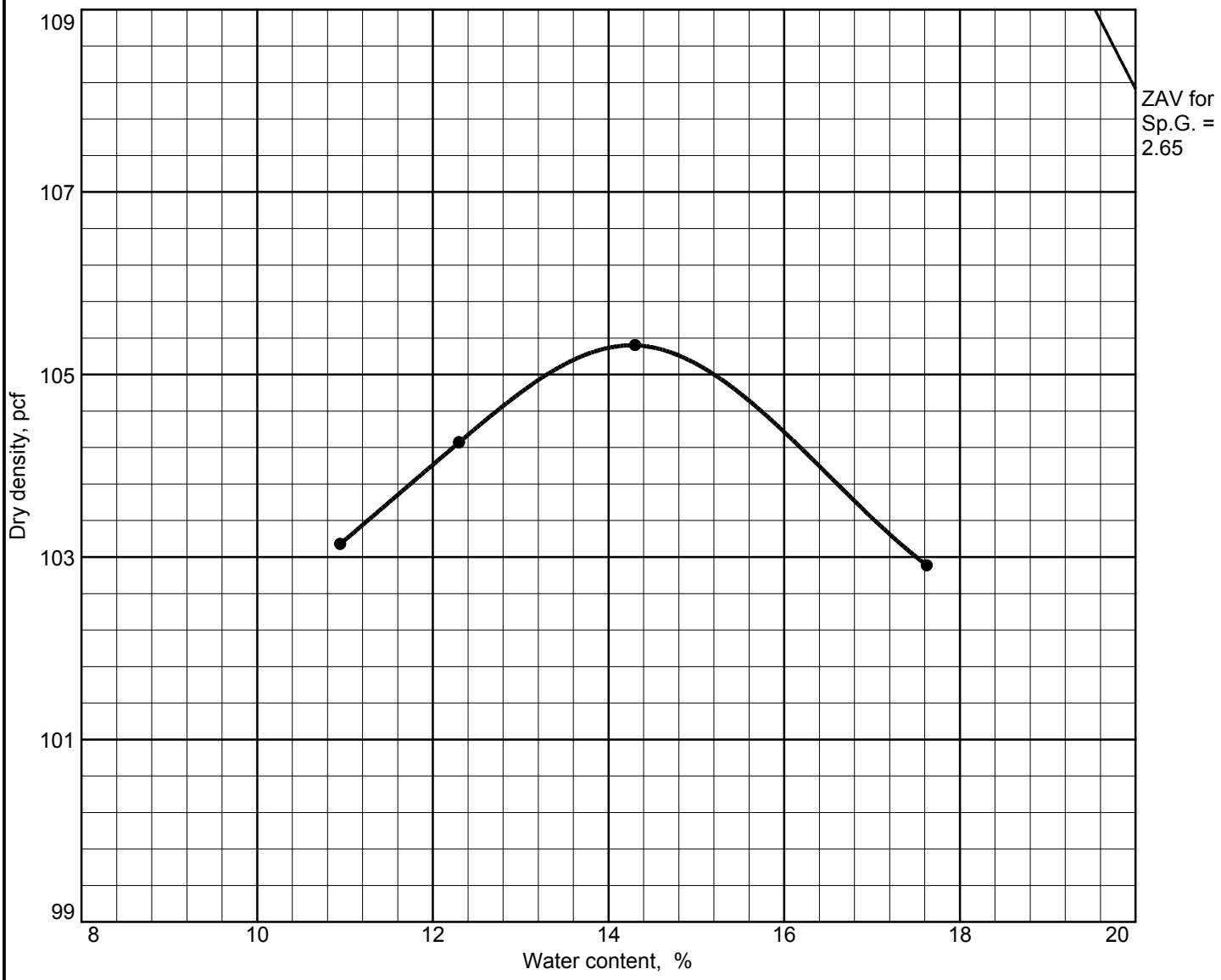
Proctor No. 2
F.M.=0.93

**Sample No.:** 2 **Source of Sample:** **Date:**
**Location:** App 55' South from Northend and app 20'East from West edge **Elev./Depth:**

**GET SOLUTIONS, INC.**

**Client:** CDM
**Project:** Dare County Landfill Phase {CELL} 4
**Project No:** EC10-166T **Figure**

# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)




Test specification: ASTM D 698-00a Method A Standard

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > No.4 | % < No.200 |
|---|---|---|---|---|---|---|---|---|
| | USCS | AASHTO | | | | | | |
| | SM | A-2-4(0) | 15.2 | | NP | NP | 0.0 | 12.1 |

| TEST RESULTS | MATERIAL DESCRIPTION |
|---|---|
| Maximum dry density = 105.3 pcf<br>Optimum moisture = 14.3 % | Gray Silty fine to medium SAND (SM) with marine shell fragments |

**Project No.** EC10-166T **Client:** CDM

**Project:** Dare County Landfill Phase {CELL} 4

● **Location:** App 937'South from Northend and 95'West of East edge

**Remarks:**

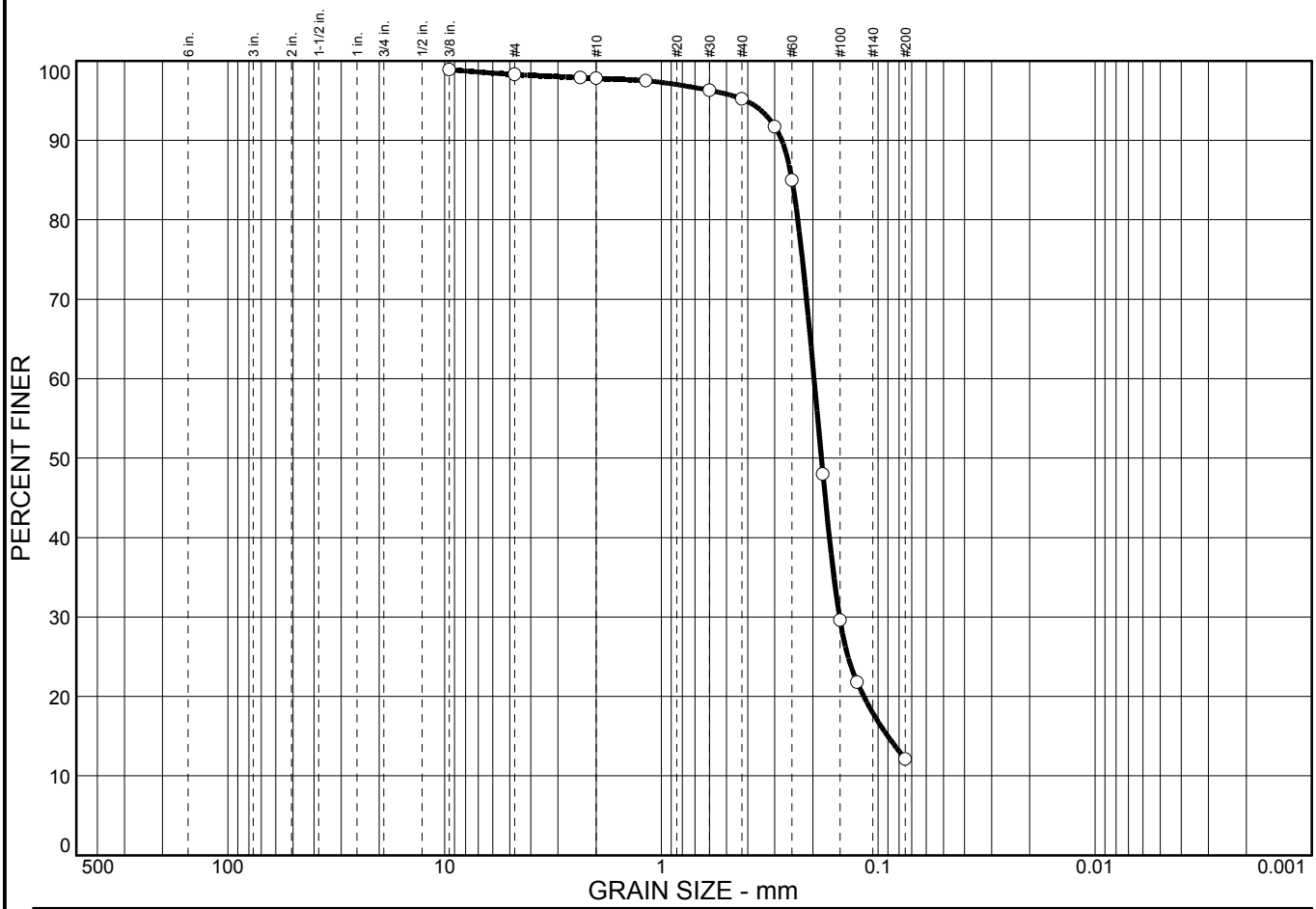
Proctor-#3

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

**GET SOLUTIONS, INC.**

**Figure**

# Particle Size Distribution Report




| % COBBLES | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|
| | | 86.2 | 12.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 in. | 98.9 | | |
| #4 | 98.3 | | |
| #8 | 97.9 | | |
| #10 | 97.8 | | |
| #16 | 97.5 | | |
| #30 | 96.3 | | |
| #40 | 95.2 | | |
| #50 | 91.7 | | |
| #60 | 85.0 | | |
| #80 | 48.0 | | |
| #100 | 29.6 | | |
| #120 | 21.8 | | |
| #200 | 12.1 | | |

* (no specification provided)

**Soil Description**

Gray Silty fine to medium SAND (SM) with marine shell fragments

**Atterberg Limits**

PL= NP LL= NP PI= NP

**Coefficients**

$D_{85}$= 0.250 $D_{60}$= 0.198 $D_{50}$= 0.183
$D_{30}$= 0.151 $D_{15}$= 0.0904 $D_{10}$=
$C_u$= $C_c$=

**Classification**

USCS= SM AASHTO= A-2-4(0)

**Remarks**

Proctor No. 3
F.M.=0.90

**Sample No.:** 3 **Source of Sample:** **Date:**
**Location:** App 937'South from Northend and 95'West of East edge **Elev./Depth:**

**GET SOLUTIONS, INC.**

**Client:** CDM
**Project:** Dare County Landfill Phase {CELL} 4
**Project No:** EC10-166T **Figure**

# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

Test specification: ASTM D 698-00a Method A Standard

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > No.4 | % < No.200 |
|---|---|---|---|---|---|---|---|---|
| | USCS | AASHTO | | | | | | |
| | | A-2-4(0) | 12.2 | | NP | NP | 0.0 | 12.5 |

| TEST RESULTS | MATERIAL DESCRIPTION |
|---|---|
| Maximum dry density = 103.7 pcf<br>Optimum moisture = 13.2 % | Gray-Tan Silty fine SAND (SM) with Clay |

**Project No.** EC10-166T **Client:** CDM

**Project:** Dare County Landfill Phase {CELL} 4

● **Location:** App 156'North from Southend and app 51' East from West edge

**Remarks:**

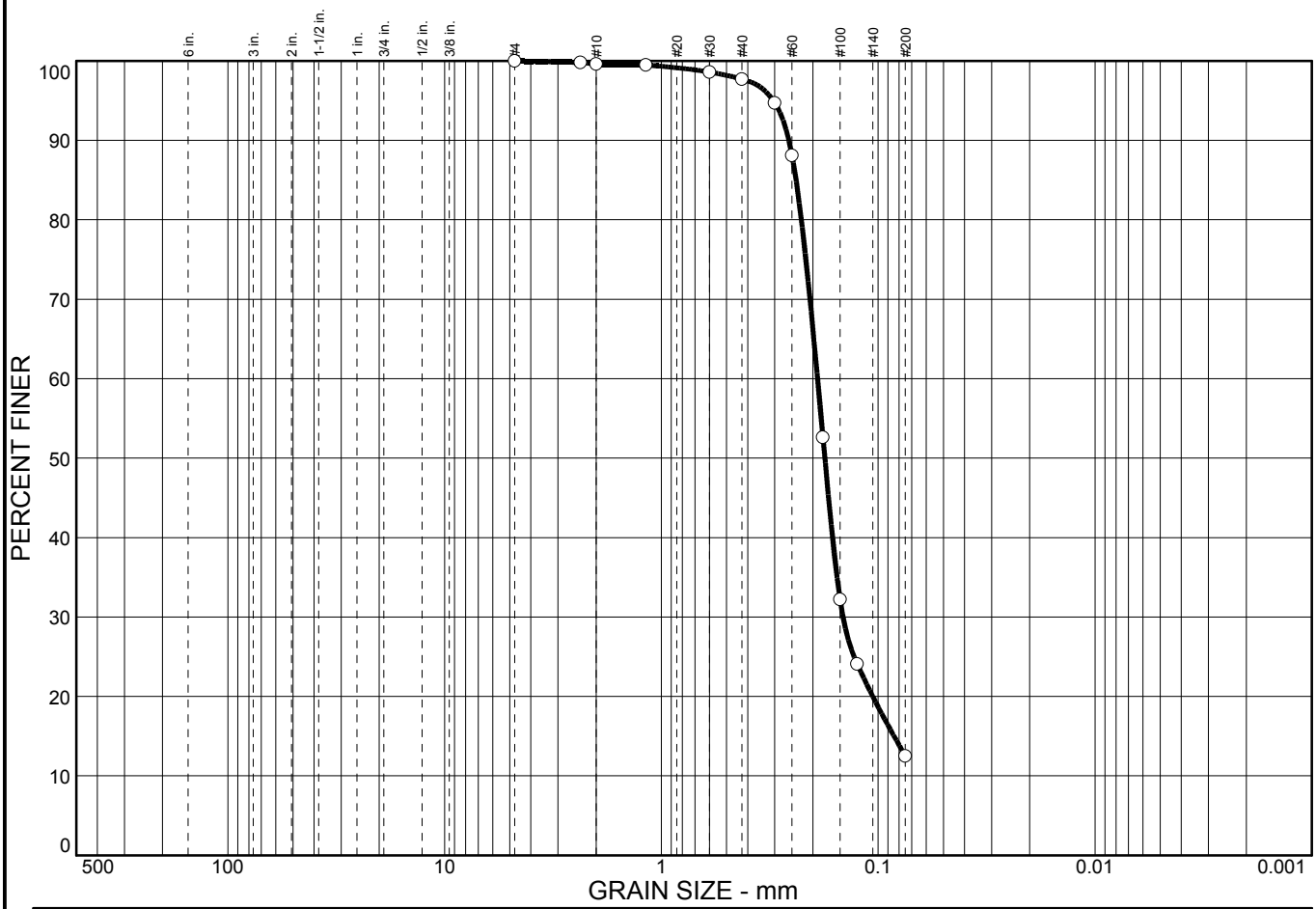
Proctor-#4

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

**GET SOLUTIONS, INC.**

**Figure**

# Particle Size Distribution Report




| % COBBLES | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|
| 0.0 | 0.0 | 87.5 | 12.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| #4 | 100.0 | | |
| #8 | 99.8 | | |
| #10 | 99.6 | | |
| #16 | 99.5 | | |
| #30 | 98.6 | | |
| #40 | 97.7 | | |
| #50 | 94.7 | | |
| #60 | 88.1 | | |
| #80 | 52.6 | | |
| #100 | 32.2 | | |
| #120 | 24.1 | | |
| #200 | 12.5 | | |

* (no specification provided)

**Soil Description**

Gray-Tan Silty fine SAND (SM) with Clay

**Atterberg Limits**

PL= NP LL= NP PI= NP

**Coefficients**

$D_{85}$= 0.239 $D_{60}$= 0.191 $D_{50}$= 0.176
$D_{30}$= 0.145 $D_{15}$= 0.0845 $D_{10}$=
$C_u$= $C_c$=

**Classification**

USCS= SM AASHTO= A-2-4(0)

**Remarks**

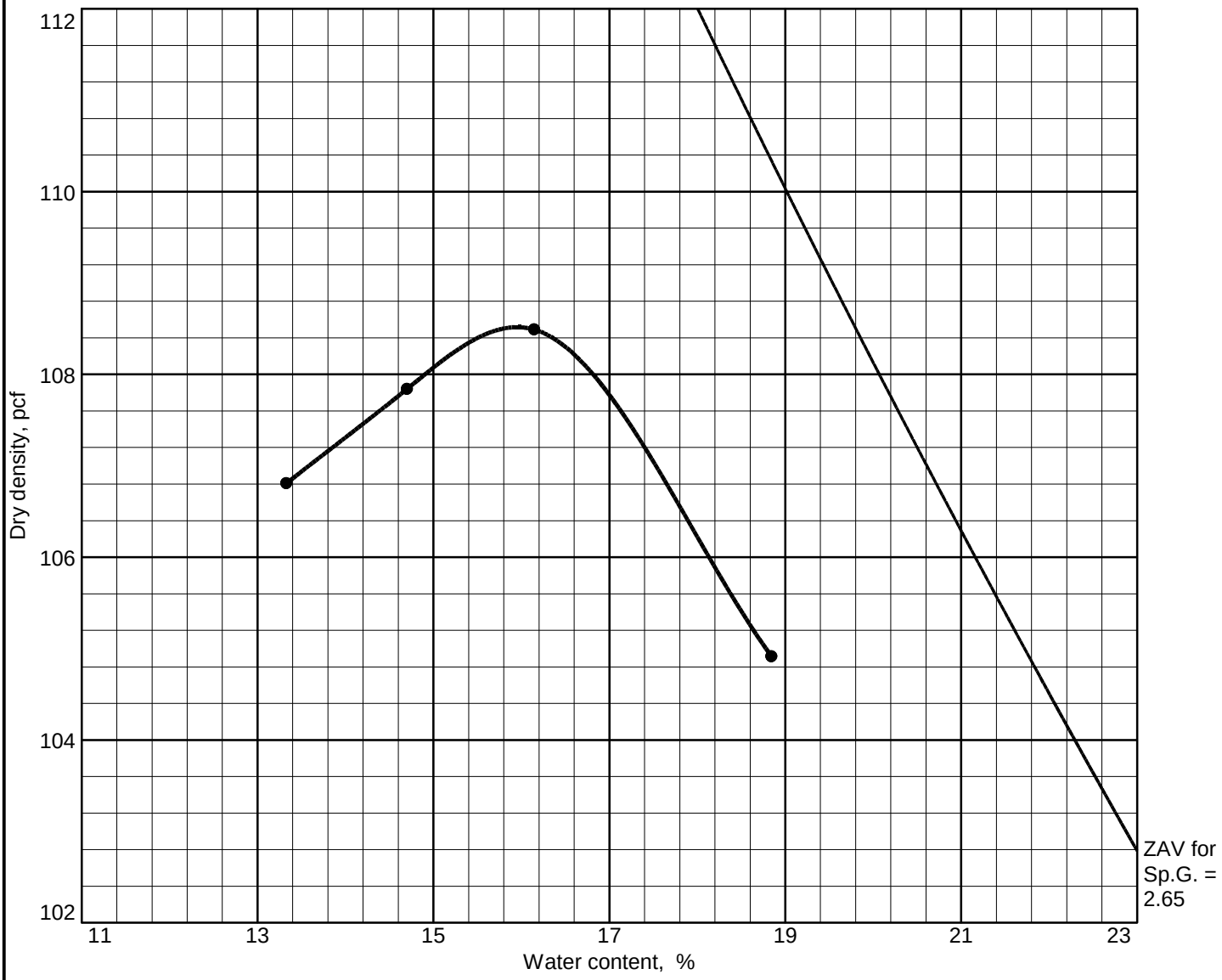
Proctor No. 4
F.M.=0.75

**Sample No.:** 4 **Source of Sample:** **Date:**
**Location:** App 156'North from Southend and app 51' East from West edge **Elev./Depth:**

**GET SOLUTIONS, INC.**

**Client:** CDM
**Project:** Dare County Landfill Phase {CELL} 4
**Project No:** EC10-166T **Figure**

# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)




Test specification: ASTM D 698-00a Method A Standard

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > No.4 | % < No.200 |
|---|---|---|---|---|---|---|---|---|
| | USCS | AASHTO | | | | | | |
| 2' BFG | SM | | 24.5 | | NP | NP | 0.0 | 28.1 |

| TEST RESULTS | MATERIAL DESCRIPTION |
|---|---|
| Maximum dry density = 108.5 pcf<br>Optimum moisture = 16.0 % | Dark Brown Silty fine SAND (SM) with Clay |

**Project No.** EC10-166T **Client:** CDM

**Project:** Dare County Landfill Phase {CELL} 4

● **Location:** Center of Lot#10

**Remarks:**

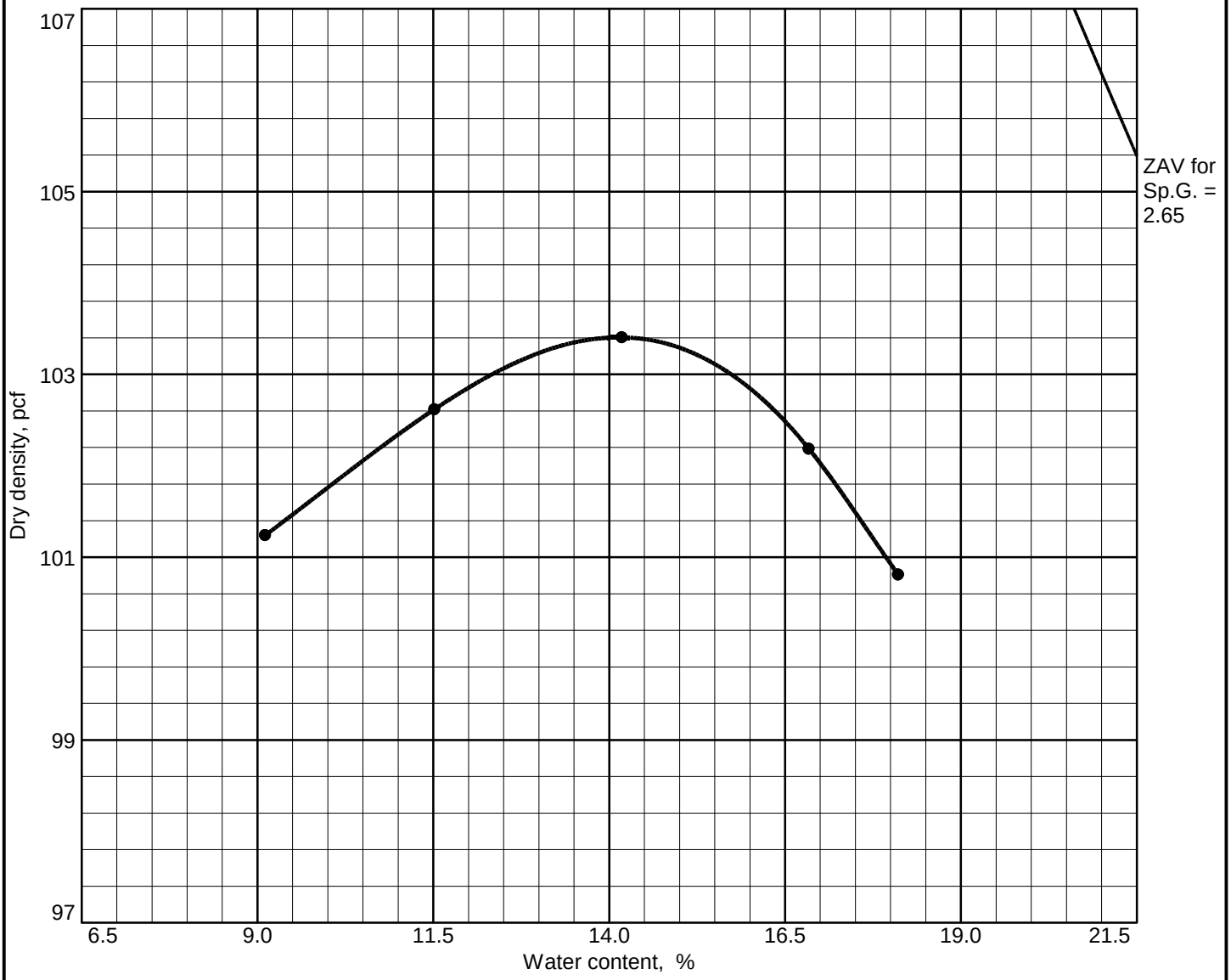
Proctor-#5

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

**GET SOLUTIONS, INC.**

**Figure**

# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)




Test specification: ASTM D 698-00a Method A Standard

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > No.4 | % < No.200 |
|---|---|---|---|---|---|---|---|---|
| | USCS | AASHTO | | | | | | |
| 1'BFG | SM | | 23.5 | | NP | NP | 0.0 | 12.5 |

| TEST RESULTS | MATERIAL DESCRIPTION |
|---|---|
| Maximum dry density = 103.4 pcf<br>Optimum moisture = 14.1 % | Gray-Tan Silty fine SAND with trace clay |

**Project No.** EC10-166T **Client:** CDM

**Project:** Dare County Landfill Phase {CELL} 4

● **Location:** Center of Lot-#1

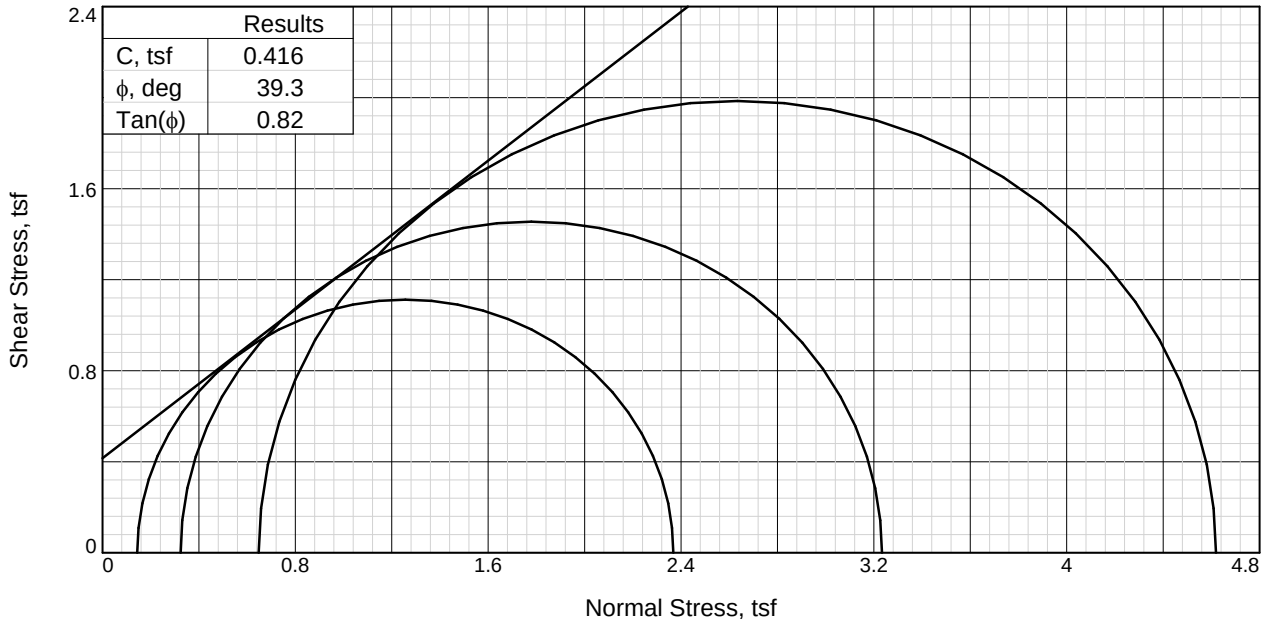
**Remarks:**

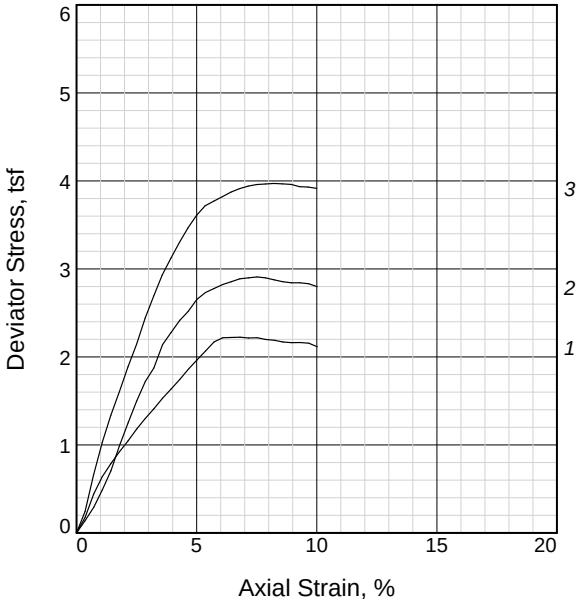
Proctor-#6

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)

**GET SOLUTIONS, INC.**

**Figure**




| Sample No. | | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 16.6 | 16.6 | 16.6 |
| | Dry Density, pcf | 98.3 | 98.2 | 98.2 |
| | Saturation, % | 64.5 | 64.4 | 64.4 |
| | Void Ratio | 0.6835 | 0.6841 | 0.6839 |
| | Diameter, in. | 2.80 | 2.80 | 2.80 |
| | Height, in. | 5.60 | 5.60 | 5.60 |
| At Test | Water Content, % | 25.3 | 25.4 | 25.8 |
| | Dry Density, pcf | 99.1 | 98.8 | 98.2 |
| | Saturation, % | 100.0 | 100.0 | 100.0 |
| | Void Ratio | 0.6700 | 0.6742 | 0.6839 |
| | Diameter, in. | 2.79 | 2.79 | 2.80 |
| | Height, in. | 5.59 | 5.59 | 5.60 |
| Strain rate, in./min. | | 0.06 | 0.06 | 0.06 |
| Back Pressure, tsf | | 0.07 | 0.11 | 0.22 |
| Cell Pressure, tsf | | 0.22 | 0.43 | 0.86 |
| Fail. Stress, tsf | | 2.22 | 2.91 | 3.97 |
| Ult. Stress, tsf | | | | |
| $\sigma_1$ Failure, tsf | | 2.37 | 3.23 | 4.62 |
| $\sigma_3$ Failure, tsf | | 0.14 | 0.32 | 0.65 |

**Type of Test:**
Consolidated Undrained
**Sample Type:** Recompacted
**Description:** Tan Silty fine SAND (SM)

**Assumed Specific Gravity=** 2.65
**Remarks:**

**Client:** CDM

**Project:** Dare County Landfill Phae (Cell) 4

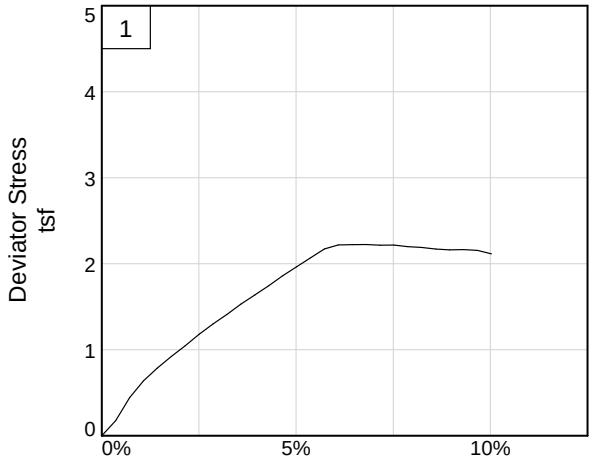
**Location:** App170'South from North End and 82'West from East Edge
**Sample Number:** Proctor No. 1
**Proj. No.:** EC10-166T **Date Sampled:**

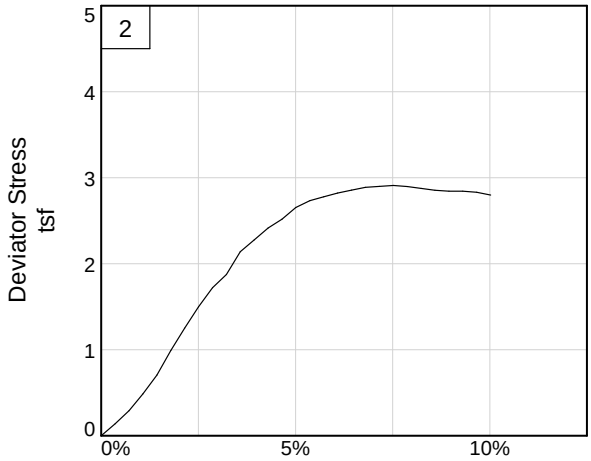
TRIAXIAL SHEAR TEST REPORT

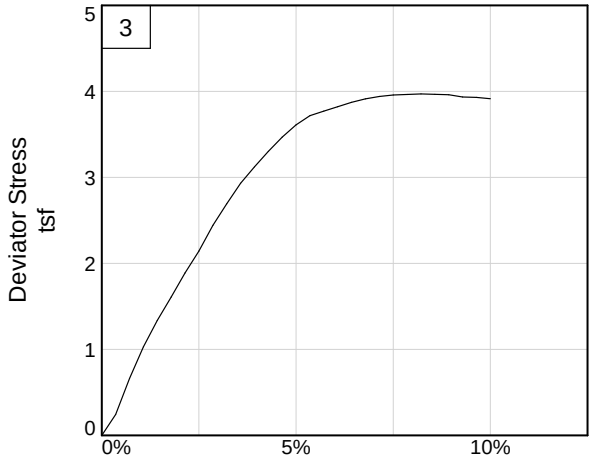
GET SOLUTIONS, INC.

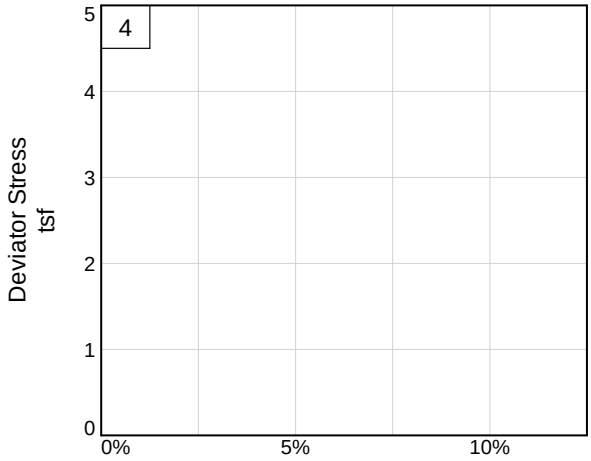
**Figure** T1

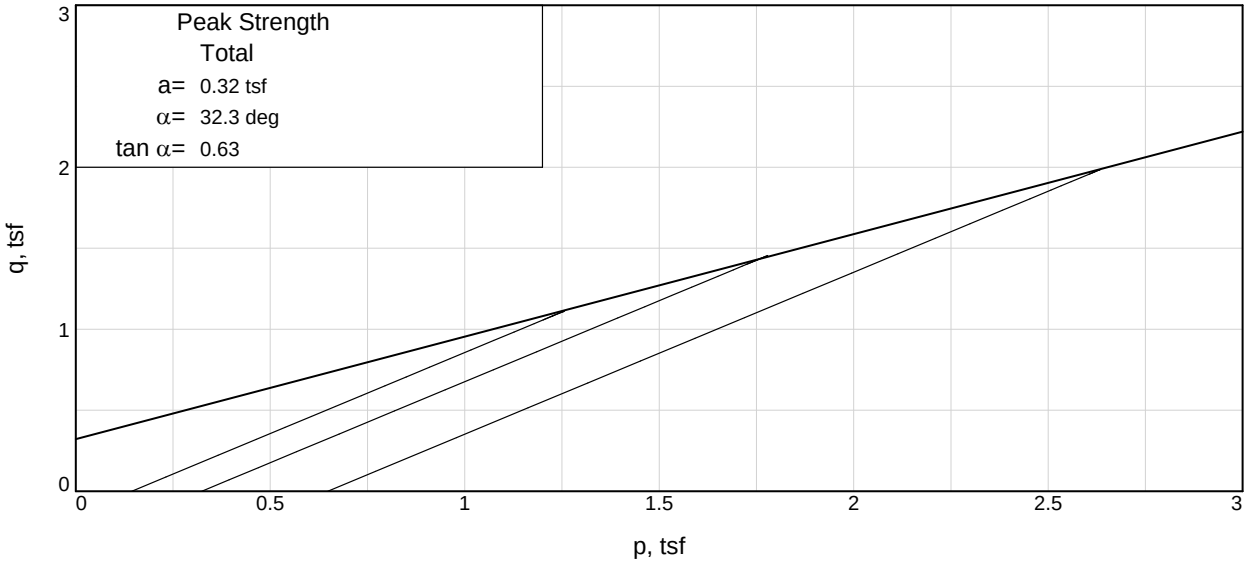
**Tested By:** PB **Checked By:** GS



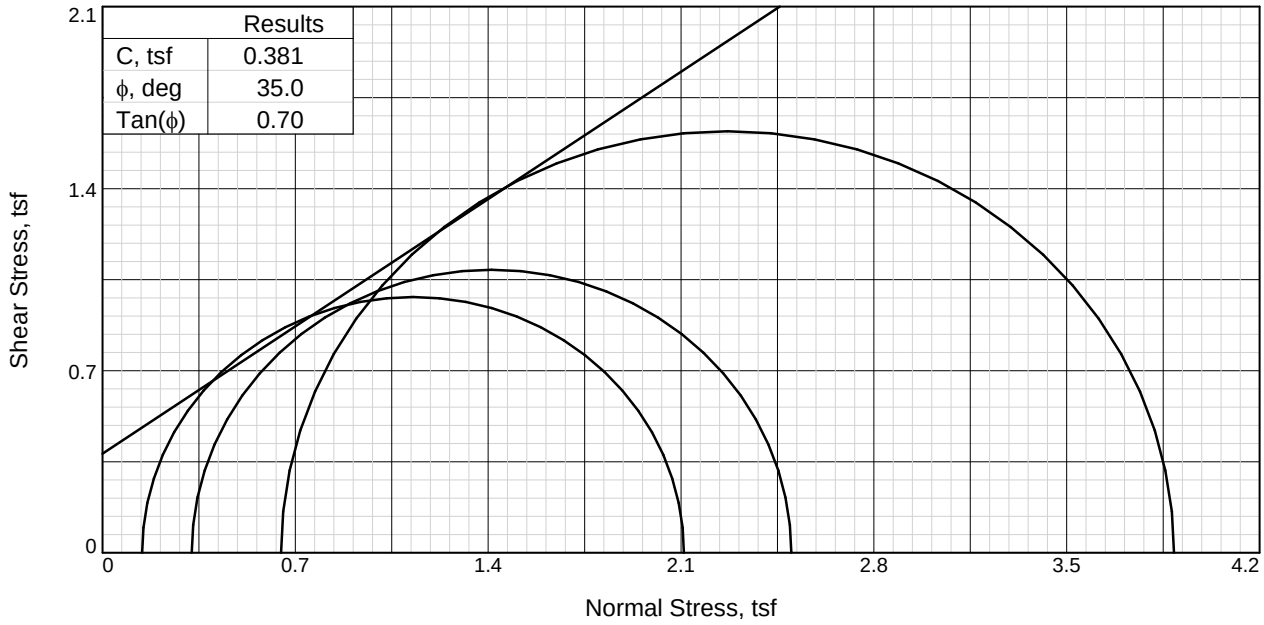



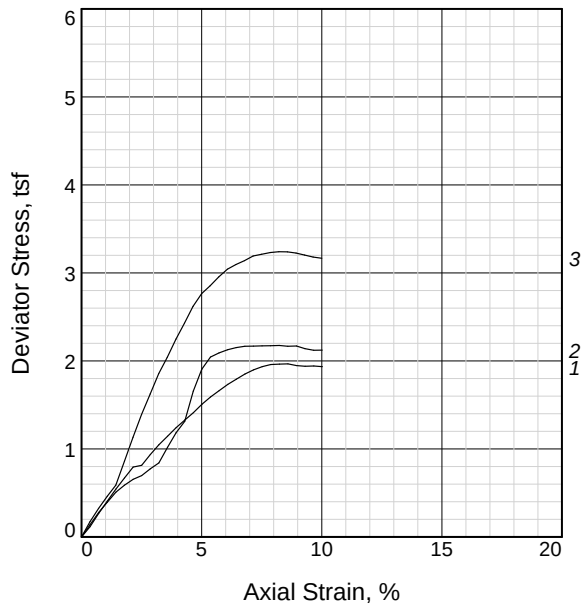




**Client:** CDM
**Project:** Dare County Landfill Phae (Cell) 4
**Location:** App170'South from North End and 82'West from East Edge
**Sample Number:** Proctor No. 1
**Project No.:** EC10-166T
**Figure** _____

**GET Solutions, Inc.**

**Tested By:** PB **Checked By:** GS




| Sample No. | | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 17.8 | 17.8 | 17.8 |
| | Dry Density, pcf | 93.8 | 93.8 | 93.9 |
| | Saturation, % | 61.9 | 61.8 | 62.0 |
| | Void Ratio | 0.7629 | 0.7645 | 0.7623 |
| | Diameter, in. | 2.80 | 2.80 | 2.80 |
| | Height, in. | 5.60 | 5.60 | 5.60 |
| At Test | Water Content, % | 28.3 | 28.5 | 28.8 |
| | Dry Density, pcf | 94.6 | 94.3 | 93.9 |
| | Saturation, % | 100.0 | 100.0 | 100.0 |
| | Void Ratio | 0.7488 | 0.7542 | 0.7623 |
| | Diameter, in. | 2.79 | 2.79 | 2.80 |
| | Height, in. | 5.58 | 5.59 | 5.60 |
| Strain rate, in./min. | | 0.06 | 0.06 | 0.06 |
| Back Pressure, tsf | | 0.07 | 0.11 | 0.22 |
| Cell Pressure, tsf | | 0.22 | 0.43 | 0.86 |
| Fail. Stress, tsf | | 1.97 | 2.18 | 3.24 |
| Ult. Stress, tsf | | | | |
| $\sigma_1$ Failure, tsf | | 2.11 | 2.50 | 3.89 |
| $\sigma_3$ Failure, tsf | | 0.14 | 0.32 | 0.65 |

**Type of Test:**
Consolidated Undrained
**Sample Type:** Recompacted
**Description:** Gray Poorly Graded fine to medium SAND (SP)

**Assumed Specific Gravity=** 2.65
**Remarks:**

**Client:** CDM

**Project:** Dare County Landfill Phae (Cell) 4

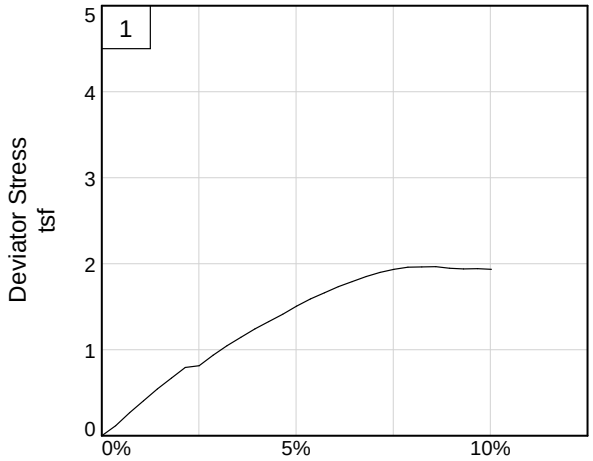
**Location:** App55'South from North End and 20'East from West Edge
**Sample Number:** Proctor No. 2
**Proj. No.:** EC10-166T **Date Sampled:**

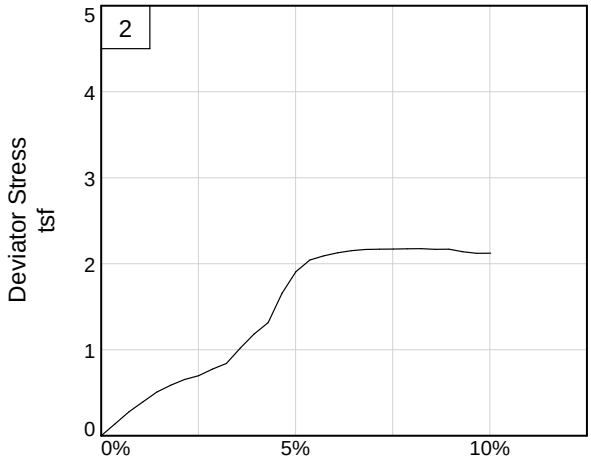
TRIAXIAL SHEAR TEST REPORT

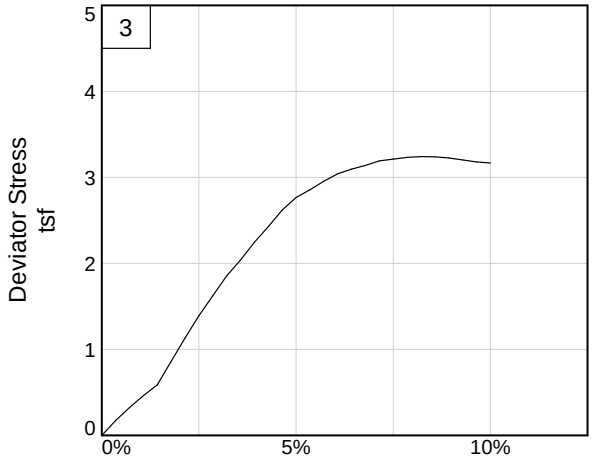
GET SOLUTIONS, INC.

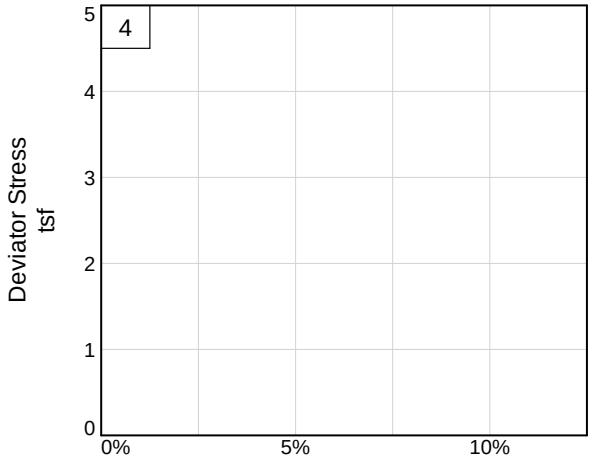
**Figure** T2

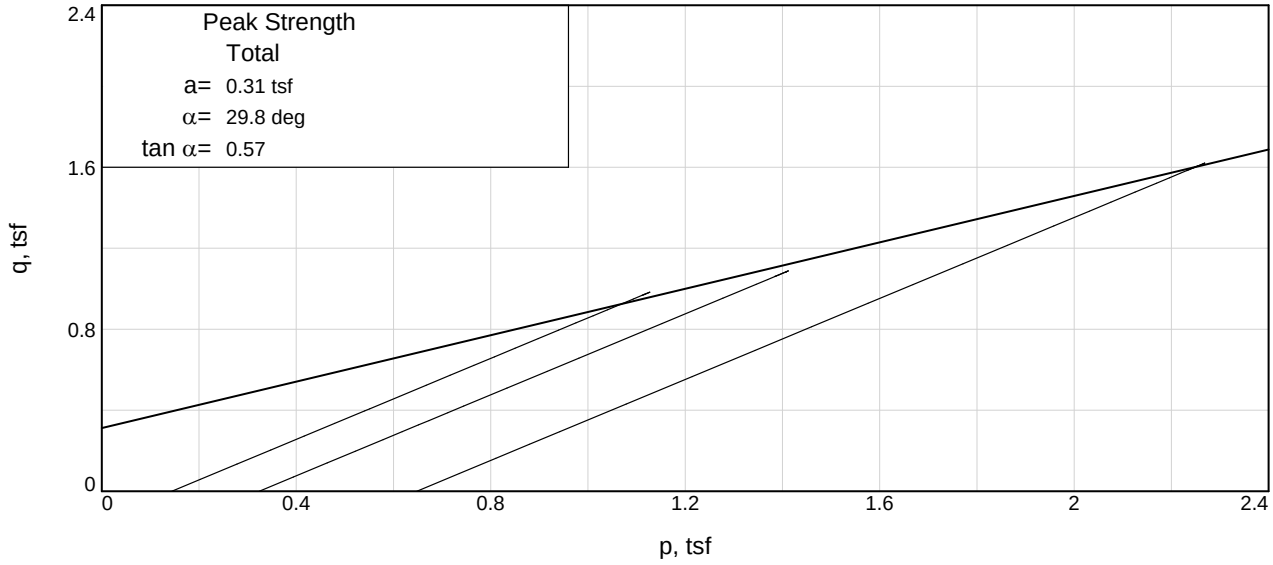
**Tested By:** PB **Checked By:** GS



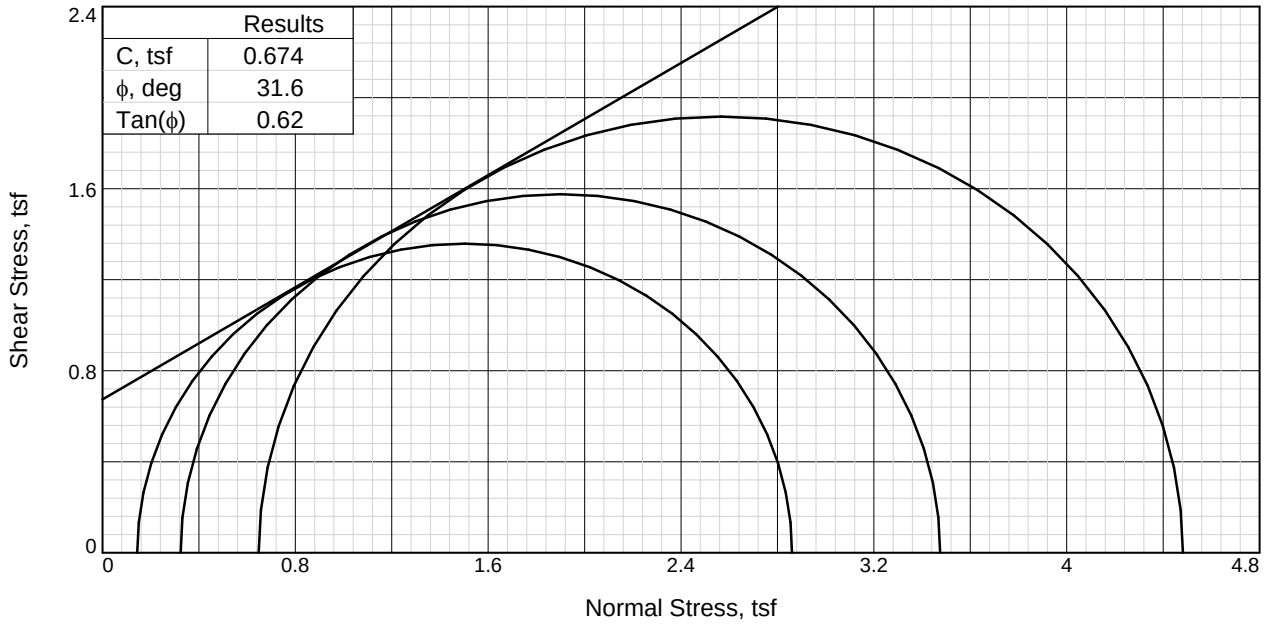



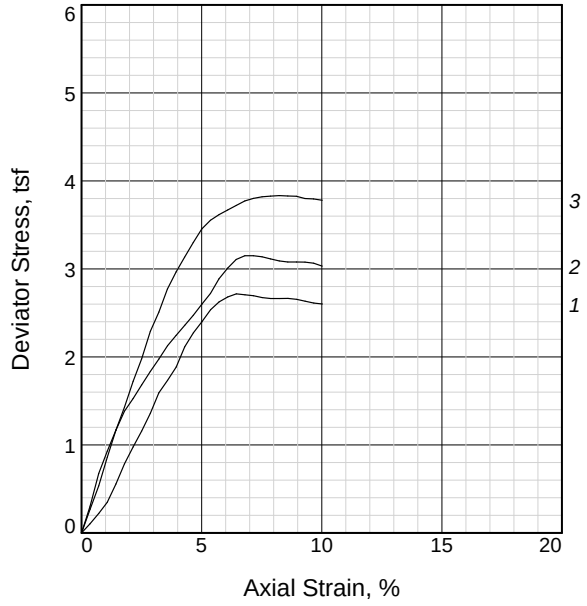




**Client:** CDM
**Project:** Dare County Landfill Phae (Cell) 4
**Location:** App55'South from North End and 20'East from West Edge
**Sample Number:** Proctor No. 2
**Project No.:** EC10-166T
**Figure** _____

**GET Solutions, Inc.**

**Tested By:** PB **Checked By:** GS




| Sample No. | | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 14.3 | 14.3 | 14.3 |
| | Dry Density, pcf | 100.1 | 100.0 | 100.0 |
| | Saturation, % | 57.8 | 57.8 | 57.7 |
| | Void Ratio | 0.6530 | 0.6538 | 0.6551 |
| | Diameter, in. | 2.80 | 2.80 | 2.80 |
| | Height, in. | 5.60 | 5.60 | 5.60 |
| At Test | Water Content, % | 24.1 | 24.3 | 24.4 |
| | Dry Density, pcf | 100.9 | 100.6 | 100.5 |
| | Saturation, % | 100.0 | 100.0 | 100.0 |
| | Void Ratio | 0.6398 | 0.6441 | 0.6462 |
| | Diameter, in. | 2.79 | 2.79 | 2.79 |
| | Height, in. | 5.58 | 5.59 | 5.59 |
| Strain rate, in./min. | | 0.06 | 0.06 | 0.06 |
| Back Pressure, tsf | | 0.07 | 0.11 | 0.22 |
| Cell Pressure, tsf | | 0.22 | 0.43 | 0.86 |
| Fail. Stress, tsf | | 2.72 | 3.15 | 3.83 |
| Ult. Stress, tsf | | | | |
| $\sigma_1$ Failure, tsf | | 2.86 | 3.48 | 4.48 |
| $\sigma_3$ Failure, tsf | | 0.14 | 0.32 | 0.65 |

**Type of Test:**
Consolidated Undrained
**Sample Type:** Recompacted
**Description:** Gray Silty fine to medium SAND (SM) with marine shell fragments

**Assumed Specific Gravity=** 2.65
**Remarks:**

**Client:** CDM

**Project:** Dare County Landfill Phae (Cell) 4

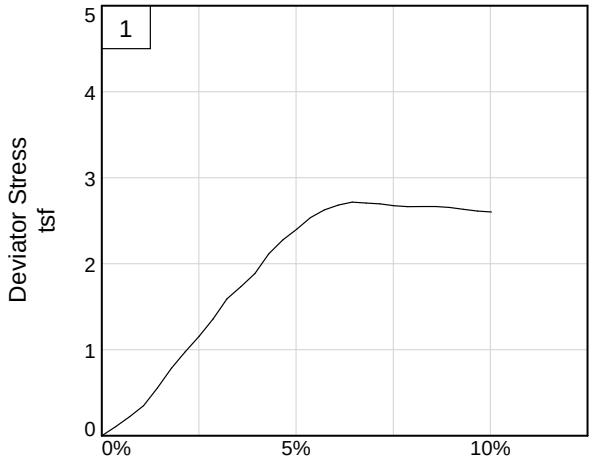
**Location:** App973'South from North End and 95'West from East Edge
**Sample Number:** Proctor No. 3
**Proj. No.:** EC10-166T **Date Sampled:**

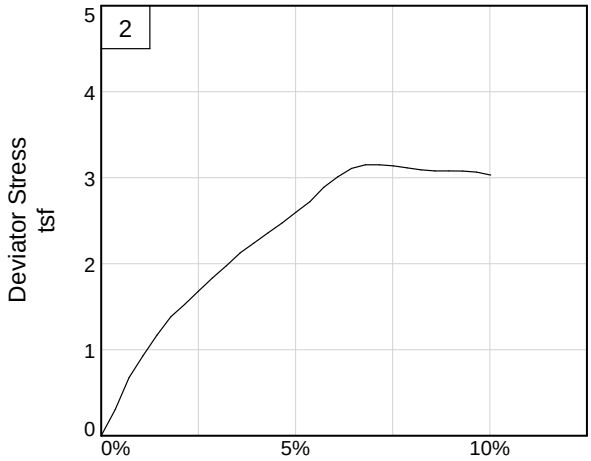
TRIAXIAL SHEAR TEST REPORT

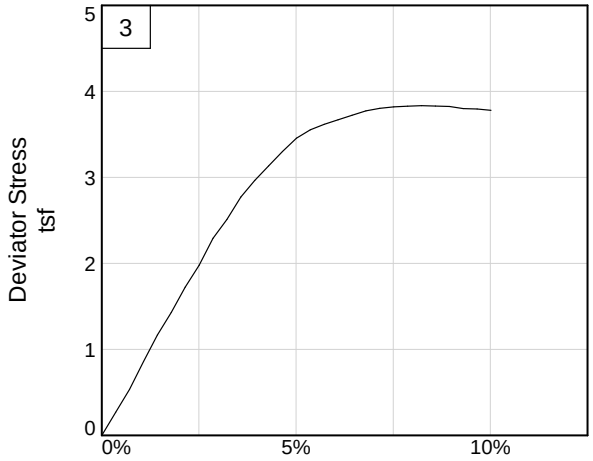
GET SOLUTIONS, INC.

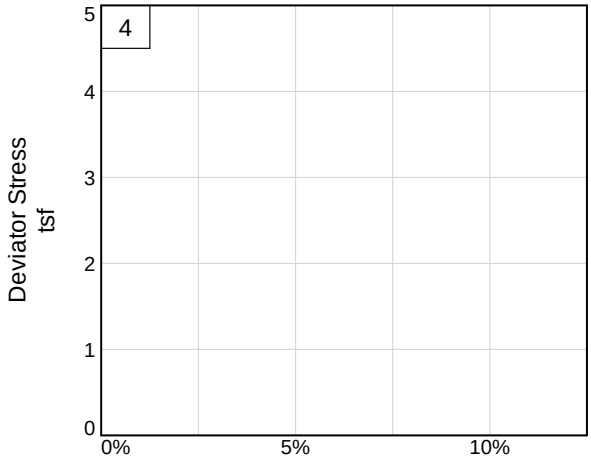
**Figure** T3

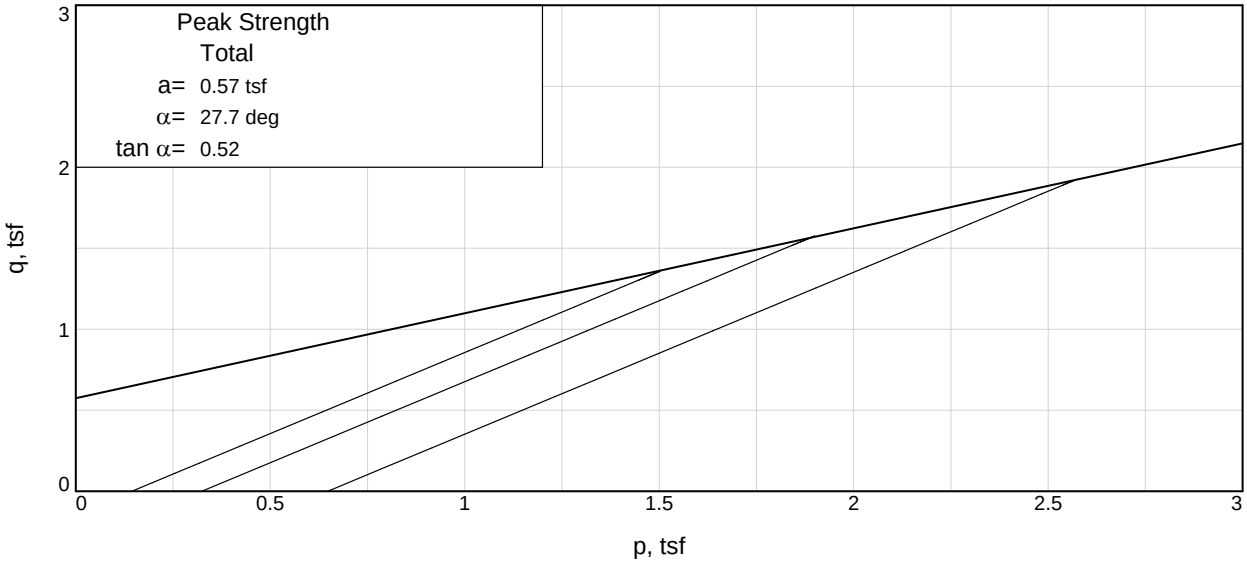
**Tested By:** PB **Checked By:** GS



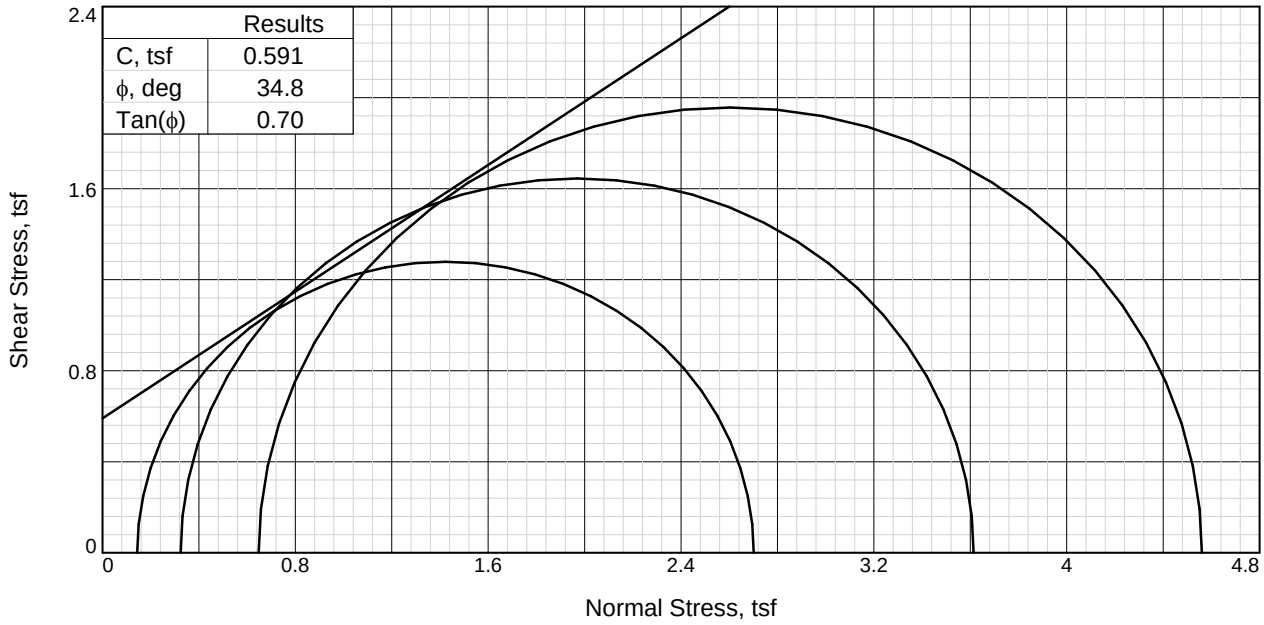



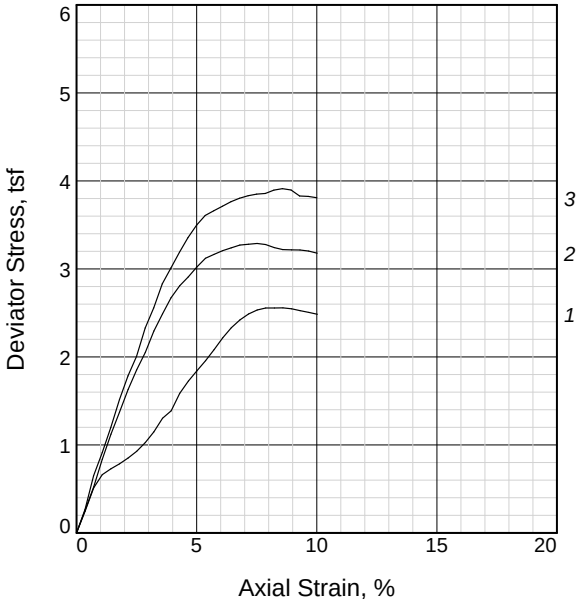




**Client:** CDM
**Project:** Dare County Landfill Phae (Cell) 4
**Location:** App973'South from North End and 95'West from East Edge
**Sample Number:** Proctor No. 3
**Project No.:** EC10-166T
**Figure** _____

**GET Solutions, Inc.**

**Tested By:** PB **Checked By:** GS




| Sample No. | | 1 | 2 | 3 |
|---|---|---|---|---|
| Initial | Water Content, % | 13.2 | 13.2 | 13.2 |
| | Dry Density, pcf | 98.5 | 98.6 | 98.5 |
| | Saturation, % | 51.7 | 51.7 | 51.6 |
| | Void Ratio | 0.6794 | 0.6785 | 0.6800 |
| | Diameter, in. | 2.80 | 2.80 | 2.80 |
| | Height, in. | 5.60 | 5.60 | 5.60 |
| At Test | Water Content, % | 25.1 | 25.2 | 25.7 |
| | Dry Density, pcf | 99.3 | 99.1 | 98.5 |
| | Saturation, % | 100.0 | 100.0 | 100.0 |
| | Void Ratio | 0.6659 | 0.6686 | 0.6800 |
| | Diameter, in. | 2.79 | 2.79 | 2.80 |
| | Height, in. | 5.58 | 5.59 | 5.60 |
| Strain rate, in./min. | | 0.06 | 0.06 | 0.06 |
| Back Pressure, tsf | | 0.07 | 0.11 | 0.22 |
| Cell Pressure, tsf | | 0.22 | 0.43 | 0.86 |
| Fail. Stress, tsf | | 2.56 | 3.29 | 3.91 |
| Ult. Stress, tsf | | | | |
| $\sigma_1$ Failure, tsf | | 2.70 | 3.61 | 4.56 |
| $\sigma_3$ Failure, tsf | | 0.14 | 0.32 | 0.65 |

**Type of Test:**
Consolidated Undrained

**Sample Type:** Recompacted

**Description:** Gray-Tan Silty fine SAND (SM) with Clay

**Assumed Specific Gravity=** 2.65

**Remarks:**

**Client:** CDM

**Project:** Dare County Landfill Phae (Cell) 4

**Location:** App156'North from South End and 51'East from West Edge

**Sample Number:** Proctor No. 4

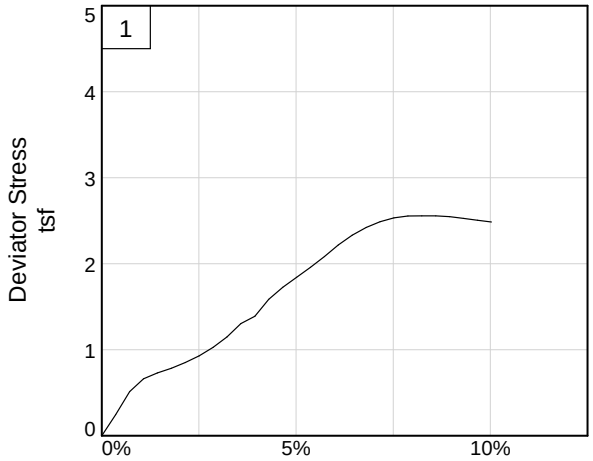
**Proj. No.:** EC10-166T **Date Sampled:**

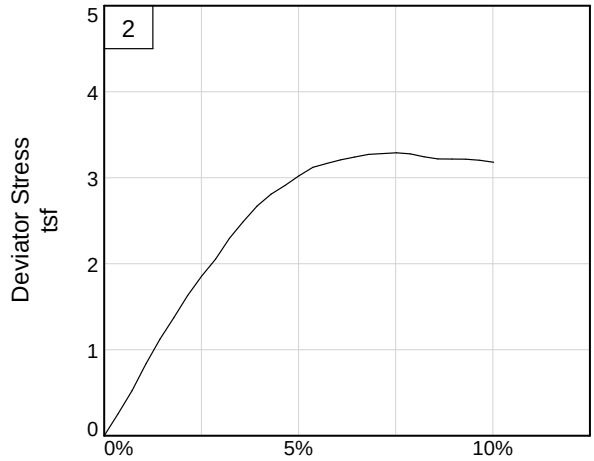
TRIAXIAL SHEAR TEST REPORT

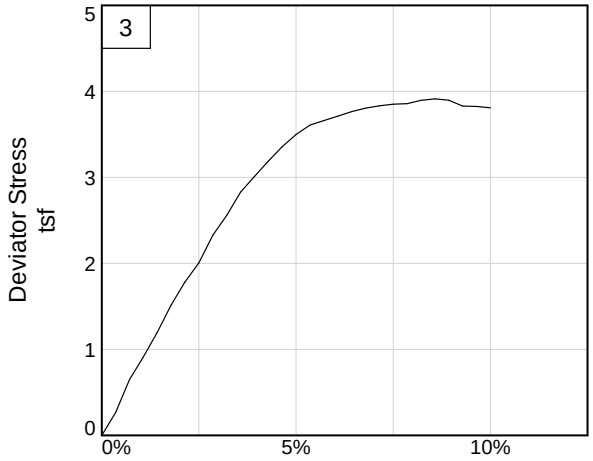
GET SOLUTIONS, INC.

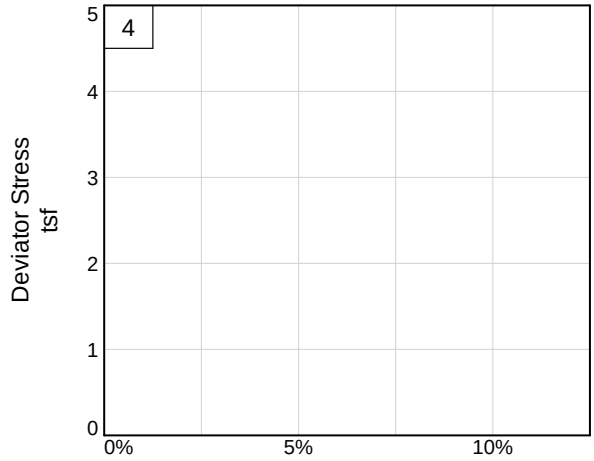
**Figure** T4

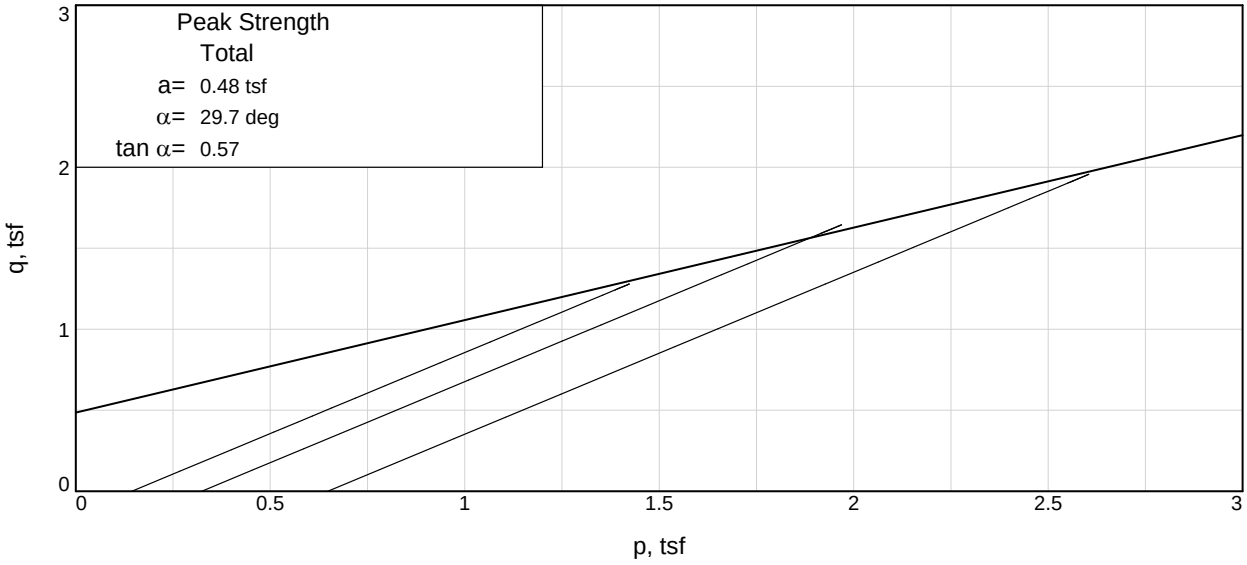
**Tested By:** PB **Checked By:** GS




**Client:** CDM
**Project:** Dare County Landfill Phae (Cell) 4
**Location:** App156'North from South End and 51'East from West Edge
**Sample Number:** Proctor No. 4
**Project No.:** EC10-166T
**Figure** _____

**GET Solutions, Inc.**

**Tested By:** PB **Checked By:** GS

**G E T Solutions, Inc.**
106 Capital Trace; Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 4/29/10 |
| Project Location: | Dare County North Carolina | Technician: | R. Woodard |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear Temp. (˚F) |
| Grading Contractor: | Glover | General Test Location: | Cell 4 pad |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 1 | 13.7 | 97.1 | 110.5 | 2 | 95% | 98% | X | | 2' BFG | 35º 50.182' N 75º 49.134' W |
| 2 | 8.8 | 103.3 | 112.3 | 3 | 95% | 98% | X | | 2' BFG | 35º 50.182' N 75º 49.149' W |
| 3 | 8.9 | 105.2 | 114.4 | 3 | 95% | 100+% | X | | 2' BFG | 35º 50.181' N 75º 49.160' W |
| 4 | 14.9 | 102.8 | 118.1 | 3 | 95% | 98% | X | | 2' BFG | 35º 50.148' N 75º 49.129' W |
| 5 | 14.5 | 103.9 | 118.9 | 3 | 95% | 99% | X | | 2' BFG | 35º 50.146' N 75º 49.142' W |
| 6 | 14.6 | 104.8 | 120.1 | 3 | 95% | 99% | X | | 2' BFG | 35º 50.146' N 75º 49.155' W |
| 7 | 13.5 | 105.4 | 119.7 | 3 | 95% | 100% | X | | 2' BFG | 35º 50.094' N 75º 49.123' W |
| 8 | 13.0 | 105.6 | 119.3 | 3 | 95% | 100% | X | | 2' BFG | 35º 50.094' N 75º 49.137' W |
| 9 | 12.9 | 105.8 | 119.4 | 3 | 95% | 100% | X | | 2' BFG | 35º 50.055' N 75º 49.115' W |
| 10 | 13.6 | 104.7 | 118.9 | 3 | 95% | 99% | X | | 2' BFG | 35º 50.052' N 75º 49.127' W |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | | | |
|---|---|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 1 | 2 | 3 4 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 | 98.7 | 105.3 103.7 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 16.6% | 17.8% | 14.3% 13.2% |
| Description of Material Tested: | Tan SAND, Gray SAND | Field Testing Procedure: | ASTM D 6938 | | |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth | | |
| Gauge Standardization counts: | Moisture: 659 Density: 2642 | | □ B) Backscatter | | |

| Gauge make/model/serial #: | Troxler | 3430 | 32867 |
|---|---|---|---|
| | MAKE | MODEL | SERIAL # |

Remarks:

**G E T Solutions, Inc.**
106 Capital Trace; Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 4/29/10 |
| Project Location: | Dare County North Carolina | Technician: | R. Woodard |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear Temp. (˚F) |
| Grading Contractor: | Glover | General Test Location: | Cell 4 pad |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 11 | 7.2 | 107.3 | 115.1 | 3 | 95% | 100+% | X | | 2' BFG | 35º 50.946' N 75º 49.096' W |
| 12 | 8.3 | 104.8 | 113.5 | 3 | 95% | 100% | X | | 2' BFG | 35º 50.969' N 75º 49.104' W |
| 13 | 6.2 | 111.9 | 118.8 | 3 | 95% | 100+% | X | | 2' BFG | 35º 50.010' N 75º 49.113' W |
| 14 | 9.2 | 108.9 | 118.9 | 3 | 95% | 100+% | X | | 2' BFG | 35º 50.022' N 75º 49.141' W |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | | | |
|---|---|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 1 | 2 | 3 | 4 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 | 98.7 | 105.3 | 103.7 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 16.6% | 17.8% | 14.3% | 13.2% |
| Description of Material Tested: | Tan SAND, Gray SAND | Field Testing Procedure: | ASTM D 6938 | | | |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth | | | |
| Gauge Standardization counts: | Moisture: 659 Density: 2642 | | □ B) Backscatter | | | |

| Gauge make/model/serial #: | Troxler | 3430 | 32867 |
|---|---|---|---|
| | MAKE | MODEL | SERIAL # |

Remarks:

**G E T Solutions, Inc.**
106 Capital Trace; Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 4/30/10 |
| Project Location: | Dare County North Carolina | Technician: | R. Woodard |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear — Temp. (˚F) 66 |
| Grading Contractor: | Glover | General Test Location: | Cell 4 pad |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 1 | 13.3 | 111.4 | 126.3 | 3 | 95% | 100+% | x | | 3' BFG | 35º 49.944' N 75º 49.098' W |
| 2 | 11.0 | 111.0 | 124.1 | 3 | 95% | 100+% | x | | 4' BFG | 35º 49.944' N 75º 49.098' W |
| 3 | 13.8 | 110.9 | 125.9 | 3 | 95% | 100+% | x | | 5' BFG | 35º 49.944' N 75º 49.098' W |
| 4 | 10.9 | 111.4 | 123.5 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.001' N 75º 49.107' W |
| 5 | 12.4 | 110.7 | 124.4 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.001' N 75º 49.107' W |
| 6 | 12.7 | 110.6 | 124.7 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.042' N 75º 49.113' W |
| 7 | 12.2 | 110.9 | 124.5 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.042'N 75º 49.113'W |
| 8 | 15.6 | 109.3 | 126.3 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.100' N 75º 49.122' W |
| 9 | 15.9 | 110.6 | 124.9 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.100' N 75º 49.122' W |
| 10 | 15.2 | 108.4 | 124.9 | 3 | 95% | 100+% | x | | 5' BFG | 35º 50.100' N 75º 49.122' W |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | | | |
|---|---|---|---|---|---|
| Compaction Equipment Used: | Vibratory Roller | Proctor Number: | 1 | 2 | 3 | 4 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 | 98.7 | 105.3 | 103.7 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 16.6% | 17.8% | 14.3% | 13.2% |
| Description of Material Tested: | Gray SAND | Field Testing Procedure: | ASTM D 6938 | | | |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth | | | |
| Gauge Standardization counts: | Moisture: 655 — Density: 2604 | | □ B) Backscatter | | | |

| Gauge make/model/serial #: | MAKE | MODEL | SERIAL # |
|---|---|---|---|
| | Troxler | 3430 | 32867 |

Remarks:

**G E T Solutions, Inc.**
106 Capital Trace; Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 4/30/10 |
| Project Location: | Dare County North Carolina | Technician: | R. Woodard |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear — Temp. (˚F) 66 |
| Grading Contractor: | Glover | General Test Location: | Cell 4 pad |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 11 | 10.9 | 110.2 | 122.2 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.142' N 75º 49.127' W |
| 12 | 15.2 | 110.8 | 127.6 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.142' N 75º 49.127' W |
| 13 | 11.1 | 109.7 | 121.8 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.188' N 75º 49.134' W |
| 14 | 12.7 | 111.3 | 125.5 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.188' N 75º 49.134' W |
| 15 | 13.6 | 111.9 | 126.2 | 3 | 95% | 100+% | x | | 5' BFG | 35º 50.188' N 75º 49.134' W |
| 16 | 13.8 | 106.6 | 121.2 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.177' N 75º 49.162' W |
| 17 | 13.6 | 109.1 | 123.9 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.177' N 75º 49.162' W |
| 18 | 11.8 | 110.8 | 123.9 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.131' N 75º 49.157' W |
| 19 | 13.7 | 108.5 | 123.5 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.131' N 75º 49.157' W |
| 20 | 13.6 | 109.0 | 122.6 | 3 | 95% | 100+% | x | | 5' BFG | 35º 50.131' N 75º 49.157' W |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | |
|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 1 2 3 4 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 98.7 105.3 103.7 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 16.6% 17.8% 14.3% 13.2% |
| Description of Material Tested: | Gray SAND | Field Testing Procedure: | ASTM D 6938 |
| Proctor Type: | ASTM | Field Testing Method: | ■ A) Direct transmission & test depth |
| Gauge Standardization counts: | Moisture: 655 | | □ B) Backscatter |
| Gauge make/model/serial #: | Troxler / 3430 / 32867 (MAKE / MODEL / SERIAL #) | | |

Remarks:

**G E T Solutions, Inc.**
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Tel: (252) 335-9765
Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 4/30/10 |
| Project Location: | Dare County North Carolina | Technician: | R. Woodard |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | | Weather: | Clear — Temp. (˚F) 66 |
| Grading Contractor: | | General Test Location: | Cell 4 pad |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 21 | 20.2 | 106.4 | 127.9 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.086' N 75º 49.153' W |
| 22 | 16.8 | 107.5 | 125.5 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.086' N 75º 49.153' W |
| 23 | 13.2 | 110.2 | 124.7 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.031' N 75º 49.145' W |
| 24 | 14.2 | 109.6 | 123.7 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.031' N 75º 49.145' W |
| 25 | 13.7 | 109.8 | 124.8 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.044' N 75º 49.125' W |
| 26 | 12.6 | 111.1 | 125.8 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.044' N 75º 49.125' W |
| 27 | 14.8 | 108.9 | 124.9 | 3 | 95% | 100+% | x | | 3' BFG | 35º 50.095' N 75º 49.134' W |
| 28 | 14.9 | 109.5 | 124.1 | 3 | 95% | 100+% | x | | 4' BFG | 35º 50.095' N 75º 49.134' W |
| | | | | | | | | | | |
| | | | | | | | | | | |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | |
|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 1 2 3 4 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 98.7 105.3 103.7 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 16.6% 17.8% 14.3% 13.2% |
| Description of Material Tested: | Gray SAND | Field Testing Procedure: | ASTM D 6938 |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth |
| Gauge Standardization counts: | Moisture: 655 Density: 2604 | | □ B) Backscatter |

| Gauge make/model/serial #: | Troxler | 3430 | 32867 |
|---|---|---|---|
| | MAKE | MODEL | SERIAL # |

Remarks:

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# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 5/25/10 |
| Project Location: | Dare County North Carolina | Technician: | J. Meads |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Overcast Temp. (˚F) 75 |
| Grading Contractor: | Glover | General Test Location: | Lots 2, 4, 6, 8, 10, 12, 14 |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 1 | 17.6 | 99.8 | 117.4 | 2 | 95% | 100+% | x | | 1' BFG | Approx. center of Lot 2' 35.40 05' N 75.49.125' W |
| 2 | 22.4 | 101.0 | 123.6 | 6 | 95% | 98% | x | | 2' BFG | Approx. center of Lot 2' 35.40 05' N 75.49.125' W |
| 3 | 21.3 | 98.2 | 119.1 | 2 | 95% | 100% | x | | 1' BFG | Approx. center of Lot 4 35.49.996' N 75.49.132' W |
| 4 | 20.7 | 100.2 | 120.9 | 6 | 95% | 97% | x | | 2' BFG | Approx. center of Lot 4 35.49.996' N 75.49.132' W |
| 5 | 22.7 | 94.8 | 116.4 | 2 | 95% | 96% | x | | 1' BFG | Approx. center of Lot 6 35.50.040' N 75.48.138' W |
| 6 | 10.9 | 110.0 | 122.0 | 5 | 95% | 100% | x | | 2' BFG | Approx. center of Lot 6 35.50.040' N 75.48.138' W |
| 7 | 20.4 | 98.1 | 118.5 | 2 | 95% | 99% | x | | 1' BFG | Approx. center of Lot 8 35.50.084' N 75.49.145' W |
| 8 | 24.7 | 98.3 | 122.6 | 2 | 95% | 100% | x | | 2' BFG | Approx. center of Lot 8 35.50.084' N 75.49.145' W |
| 9 | 22.4 | 97.3 | 119.1 | 2 | 95% | 98% | x | | 1' BFG | Approx. center of Lot 10 35.50.128' N 75.49.151' W |
| 10 | 17.7 | 107.4 | 126.4 | 5 | 95% | 99% | x | | 2' BFG | Approx. center of Lot 10 35.50.128' N 75.49.151' W |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 1 | 2 | 3 | 4 | 5 | 6 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 | 98.7 | 105.3 | 103.7 | 108.5 | 103.4 |
| Test Elevation Established By: | Geotechnics | Optimum Moisture (%): | 16.6% | 17.8% | 4.3% | 13.2% | 16.0% | 14.1% |
| Description of Material Tested: | Onsite excavated soils | Field Testing Procedure: | ASTM D 6938 | | | | | |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth | | | | | |
| Gauge Standardization counts: | Moisture: 602 Density: 2754 | | □ B) Backscatter | | | | | |
| Gauge make/model/serial #: | Troxler / 3430 / 31918 (MAKE / MODEL / SERIAL #) | | | | | | | |

Remarks:

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Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 5/25/10 |
| Project Location: | Dare County North Carolina | Technician: | J. Meads |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Overcast Temp. (˚F) 75 |
| Grading Contractor: | Glover | General Test Location: | Lots 2, 4, 6, 8, 10, 12, 14 |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 11 | 20.3 | 100.8 | 121.4 | 6 | 95% | 97% | X | | 1' BFG | Approx. center of lot 12 35.50.173' N 75.49.157' W |
| 12 | 19.9 | 99.7 | 119.5 | 6 | 95% | 96% | X | | 2' BFG | Approx. center of lot 12 35.50.173' N 75.49.157' W |
| 13 | 21.8 | 97.2 | 118.4 | 2 | 95% | 98% | x | | 1' BFG | Approx. center of lot 14 35.50.215' N 75.49.164' W |
| 14 | 18.6 | 101.3 | 120.1 | 6 | 95% | 98% | x | | 2' BFG | Approx. center of lot 14 35.50.215' N 75.49.164' W |
| | | | | | | | | | | |
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| | | | | | | | | | | |
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| | | | | | | | | | | |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 1 | 2 | 3 | 4 | 5 | 6 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 103.4 | 98.7 | 105.3 | 103.7 | 108.5 | 103.4 |
| Test Elevation Established By: | Geotechnics | Optimum Moisture (%): | 16.6% | 17.8% | 4.3% | 13.2% | 16.0% | 14.1% |
| Description of Material Tested: | Onsite excavated soils | Field Testing Procedure: | ASTM D 6938 | | | | | |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth | | | | | |
| Gauge Standardization counts: | Moisture: 602 Density: 2754 | | □ B) Backscatter | | | | | |
| Gauge make/model/serial #: | Troxler / 3430 / 31918 (MAKE / MODEL / SERIAL #) | | | | | | | |

Remarks:

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Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 6/11/10 |
| Project Location: | Dare County North Carolina | Technician: | J. Meads |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear Temp. (˚F) 75 |
| Grading Contractor: | Glover | General Test Location: | Cell 4 Pad; Sub-Lots 5, 6, 7, 8, 9, 10 |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 1 | 17.8 | 105.3 | 119.8 | 5 | 95% | 97% | x | | FG | Lot 5; 35.50.027' N 74.49.115' W |
| 2 | 11.0 | 111.8 | 124.1 | 5 | 95% | 100+% | x | | FG | Lot 4; 35.50.027' N 75.49.137' W |
| 3 | 15.9 | 104.9 | 121.5 | 5 | 95% | 97% | x | | FG | Lot 7 35.50.070' N 75.49.117' W |
| 4 | 14.3 | 107.6 | 123.0 | 5 | 95% | 99% | x | | FG | Lot 6 35.50.068' N 75.49.140' W |
| 5 | 16.1 | 105.1 | 122.0 | 5 | 95% | 97% | x | | FG | Lot 9 35.50.121' N 75.49.122' W |
| 6 | 13.1 | 108.7 | 122.9 | 5 | 95% | 100% | x | | FG | Lot 10 35.50.119' N 75.49.147' W |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | |
|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 5 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 108.5 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 16.0% |
| Description of Material Tested: | Onsite excavated soils | Field Testing Procedure: | ASTM D 6938 |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth |
| Gauge Standardization counts: | Moisture: 602 | | Density: 2768 |
| | | | ☐ B) Backscatter |

| Gauge make/model/serial #: | Troxler | 3430 | 31918 |
|---|---|---|---|
| | MAKE | MODEL | SERIAL # |

Remarks:

**G E T Solutions, Inc.**
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# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 6/14/10 |
| Project Location: | Dare County North Carolina | Technician: | G. Gallop |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear — Temp. (˚F) 90 |
| Grading Contractor: | Glover | General Test Location: | Cell 4 |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 1 | 16.3 | 101.8 | 118.4 | 6 | 95% | 98% | x | | FG | 35º 49.969 N / 75º 49.101' W |
| 2 | 21.4 | 102.3 | 124.2 | 6 | 95% | 99% | x | | 1' BFG | 35º 49.969' N / 75º 49.101' W |
| 3 | 13.8 | 101.6 | 115.7 | 6 | 95% | 98% | x | | FG | 35º 50.000' N / 75º 49.110' W |
| 4 | 25.7 | 95.2 | 119.7 | 2 | 95% | 96% | x | | 1' BFG | 35º 50.000' N / 75º 49.110' W |
| 5 | 11.3 | 105.9 | 117.9 | 5 | 95% | 98% | x | | FG | 35º 50.053' N / 75º 49.115' W |
| 6 | 26.0 | 95.0 | 119.7 | 2 | 95% | 96% | x | | 1' BFG | 35º 50.053' N / 75º 49.115' W |
| 7 | 11.7 | 104.8 | 117.0 | 5 | 95% | 96% | x | | FG | 35º 50.084' N / 75º 49.123' W |
| 8 | 24.7 | 96.4 | 120.2 | 2 | 95% | 98% | x | | 1' BFG | 35º 50.084' N / 75º 49.123' W |
| 9 | 10.9 | 108.0 | 119.8 | 5 | 95% | 99% | x | | FG | 35º 50.137' N / 75º 49.127' W |
| 10 | 17.3 | 99.8 | 117.6 | 6 | 95% | 96% | x | | 1' BFG | 35º 50.137' N / 75º 49.127' W |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | |
|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 2 5 6 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 98.7 108.5 103.4 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 17.8% 16.0% 14.1% |
| Description of Material Tested: | On-site Excavated Soils | Field Testing Procedure: | ASTM D 6938 |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth |
| Gauge Standardization counts: | Moisture: 705 Density: 2497 | | □ B) Backscatter |
| Gauge make/model/serial #: | Troxler / 3430 / 31918 (MAKE / MODEL / SERIAL #) | | |

Remarks:

**G E T Solutions, Inc.**
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Fax:(252) 335-9766

# COMPACTION TEST REPORT

| | | | |
|---|---|---|---|
| Project: | Dare County Landfill - Phase (Cell) 4 | Date: | 6/17/10 |
| Project Location: | Dare County North Carolina | Technician: | J. Meads |
| Client: | CDM | Job Number: | EC10-166T |
| General Contractor: | Glover | Weather: | Clear — Temp. (˚F) 89 |
| Grading Contractor: | Glover | General Test Location: | Cell 4 |

| Test Number | Moisture (%) | Dry Density (pcf) | Wet Density (pcf) | Proctor Number | % Proctor | | Pass | Fail | Test Elevation* | Test Location (Grid, Coordinates, Roadway Station, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spec | Actual | | | | |
| 1 | 13.5 | 105.0 | 119.2 | 5 | 95% | 97% | x | | FG | Lot 12; 35º 50.166' N 75º 49.158' W |
| 2 | 14.1 | 107.6 | 122.8 | 5 | 95% | 99% | x | | FG | Lot 14; 35º 50.211' N 75º 49.164' W |
| 3 | 11.9 | 108.0 | 120.9 | 5 | 95% | 99% | X | | FG | Lot 15; 35º 50.258' N 75º 49.146' W |
| 4 | 13.5 | 106.9 | 121.3 | 5 | 95% | 98% | X | | 1' BFG | Lot 15; 35º 50.258' N 75º 49.146' W |
| 5 | 15.0 | 104.5 | 120.2 | 3 | 95% | 100% | x | | 2' BFG | Lot 15; 35º 50.258' N 75º 49.146' W |
| 6 | 15.3 | 104.0 | 119.9 | 3 | 95% | 100% | x | | 3' BFG | Lot 15; 35º 50.258' N 75º 49.146' W |
| 7 | 9.7 | 108.5 | 119.0 | 5 | 95% | 100% | x | | FG | Lot 16; 35º 50.253' N 75º 49.171' W |
| 8 | 12.0 | 105.5 | 118.1 | 5 | 95% | 97% | x | | 1' FG | Lot 16; 35º 50.253' N 75º 49.171' W |
| 9 | 12.8 | 103.4 | 116.6 | 3 | 95% | 100% | x | | 2' FG | Lot 16; 35º 50.253' N 75º 49.171' W |
| 10 | 15.0 | 103.0 | 118.5 | 3 | 95% | 100% | x | | 3' FG | Lot 16; 35º 50.253' N 75º 49.171' W |

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade, BOF = Base of Footing

| | | | |
|---|---|---|---|
| Compaction Equipment Used: | Roller | Proctor Number: | 3 5 |
| Test Location Established By: | GET Solutions Inc. | Max. Dry Density (pcf): | 105.3 108.5 |
| Test Elevation Established By: | GET Solutions Inc. | Optimum Moisture (%): | 14.3% 16.0% |
| Description of Material Tested: | Onsite excavated soils | Field Testing Procedure: | ASTM D 6938 |
| Proctor Type: | ASTM D698 | Field Testing Method: | ■ A) Direct transmission & test depth |
| Gauge Standardization counts: | Moisture: Density: | | □ B) Backscatter |

| Gauge make/model/serial #: | MAKE | MODEL | SERIAL # |
|---|---|---|---|
| | Troxler | 3430 | 31918 |

Remarks: