

FIELD DENSITY TEST REPORT

Report Number: M5131245.0004
Service Date: 11/06/13
Report Date: 11/07/13
Task:

Midwest Testing
LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, ND 58203
701-772-2832

Client

CHS Milton Group
Attn: Tom Lehar
515 W. Montrose Ave.
PO Box 127
Milton, ND 58260

Project

Inbound/Outbound Scales - CHS Grain Elevator
Railroad Avenue
Calvin, ND

Project Number: M5131245

Material Information

| Mat. No. | Proctor Ref. No. | Classification and Description | Laboratory Test Method | Lab Test Data | | Project Requirements | |
|----------|------------------|--|------------------------|---------------------------|------------------------|----------------------|----------------|
| | | | | Optimum Water Content (%) | Max. Lab Density (pcf) | Water Content (%) | Compaction (%) |
| 1 | M5131245.0003 | SILTY SAND - brown, with a little gravel | ASTM D698 | 10.9 | 117.5 | | 95 |

Field Test Data

| Test No. | Test Location | Lift / Elev. | Mat. No. | Probe Depth (in) | Wet Density (pcf) | Water Content (pcf) | Water Content (%) | Dry Density (pcf) | Percent Compaction (%) |
|--|---------------------------|--------------|----------|------------------|-------------------|---------------------|-------------------|-------------------|------------------------|
| South west scale foundation pad | | | | | | | | | |
| 1 | 20' S & 1' W of NW corner | at | 1 | 8 | 127.8 | 11.5 | 9.9 | 116.3 | 99.0 |
| 2 | 15' N & 1' W of SW corner | at | 1 | 8 | 128.3 | 12.5 | 10.8 | 115.8 | 98.6 |
| 3 | 12' N & 1' E of SE corner | at | 1 | 8 | 129.1 | 12.2 | 10.4 | 116.9 | 99.5 |
| 4 | 15' S & 1' E of NE corner | at | 1 | 8 | 127.5 | 11.1 | 9.5 | 116.4 | 99.1 |
| 5 | 25' S & 8' E of NW corner | at | 1 | 8 | 126.2 | 10.5 | 9.1 | 115.7 | 98.5 |
| North east scale foundation pad | | | | | | | | | |
| 6 | 30' S & 1' E of NE corner | at | 1 | 8 | 128.5 | 11.7 | 10.0 | 116.8 | 99.4 |
| 7 | 1' S & 6' W of SE corner | at | 1 | 8 | 127.7 | 12.0 | 10.4 | 115.7 | 98.5 |
| 8 | 15' N & 1' W of SW corner | at | 1 | 8 | 127.8 | 12.5 | 10.8 | 115.3 | 98.1 |
| 9 | 5' S & 1' W of NW corner | at | 1 | 8 | 127.6 | 11.5 | 9.9 | 116.1 | 98.8 |

Datum: Bottom of foundation pad

Serial No: 28590

Std. Cnt. M:634

Std. Cnt. D: 2078

Comments: Test and/or retest results on this report meet project requirements as noted above.

Services: Perform in-place density and moisture content tests to determine degree of compaction and material moisture condition.

Midwest Testing Laboratory, Inc. Rep.: Leonard Schultz

Reported To: Tom (CHS)

Contractor: Mikkelson Bros.

Report Distribution:

(1) CHS Milton Group, Emailed

Reviewed By:

rvw2: wro


Joel R. Dilley

Senior Associate - Office Manager

Test Methods: ASTM D6938

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

November 7, 2013

CHS Milton Group
PO Box 127
Milton, ND 58260

Attn: Mr. Tom Lehar
E: Tom.Lehar@chsinc.com

Re: Compaction Tests
Inbound/Outbound Scales
CHS Grain Elevator
Calvin, North Dakota
MTL/Terracon Project Number: M5131245

Dear Mr. Lehar:

This letter is provided at your request to discuss compaction testing for the above referenced project. We understand the scales will be supported on a mat foundation positioned near the existing grade. You indicated the footings were designed using a maximum net allowable soil bearing pressure of 1500 pounds per square foot. The Geotechnical Evaluation Report prepared for the project (Braun Intertec Corporation Project FA-13-06700 dated October 29, 2013) recommends a maximum net allowable soil bearing pressure of 1500 psf for a mat foundation supported on a minimum of 7 ½ feet of engineered fill after excavation of the existing fill and topsoil.

On October 22, 2013, we visited the site to observe the base of the excavation prior to placement of engineered fill. The excavations extended to a depth of approximately 8 feet below the surrounding grade. The soils observed at the base of the excavation consisted of natural, inorganic sandy lean clays that were observed to be firm and stable (see Report No. M5131245.0001). The soils observed at the time of our visit are consistent with those noted in the Geotechnical Evaluation Report prepared for the project, and should be suitable for support of the proposed construction. As requested, we returned to the site on October 23 to perform compaction tests, however upon our arrival to the site we were informed that compaction tests were not needed.

Upon your request, we returned to the site on November 6, 2013 to perform compaction tests of the engineered fill. At this time, the excavations had been backfilled up to the ground surface. Concrete had been placed for one of the mat foundations, and the other mat foundation was

Compaction Testing

Inbound/Outbound Scales ■ Calvin, North Dakota
November 7, 2013 ■ MTL/Terracon Project No. M5131245




formed and reinforcing steel had been placed. During our visit, we performed nine compaction tests in the mat foundation areas. The test results indicate compaction levels ranging from 98 to 99.5 percent of the Standard Proctor maximum density. Since the concrete and formwork was in place, we were unable to test at elevations other than at the final grade or directly below the foundation areas.

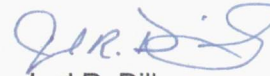
In general, engineered fill compacted to a minimum of 95 percent of the Standard Proctor maximum density would be suitable for support of foundations with bearing pressures of 1500 psf or less. We typically recommend that a minimum of one compaction be performed for each 2500 square feet at vertical increments of no more than 2 feet. Tests pits or dynamic cone penetrometer (DCP) testing could be used to further evaluate compaction levels at other elevations. Testing at greater depths below the completed mat foundations is not possible using conventional compaction testing procedures.

We appreciate the opportunity of working with you. Should you have any questions regarding this letter or, if we may be of further service to you, please feel free to contact us.

Sincerely,

Midwest Testing Laboratory, a Terracon Company


William R. Olson, PE
Geotechnical Engineer


Joel R. Dilley
Office Manager

cc: 1 – Client (pdf)
1 – File



Bauske, Shelly A.

From: Jim Jacobs <jim@northwestscale.com>
Sent: Thursday, November 07, 2013 1:28 PM
To: Bauske, Shelly A.; Fahn, Patrick J.
Subject: CHS-Calvin, ND Request for Variance
Attachments: Inbound Outbound Scales - CHS Grain Elevator.Field Density Testing.2013-....pdf

Importance: High

Pat & Shelly,

Attached is a report from Midwest Testing stating the soil work completed at the CHS Calvin jobsite should meet the requirements for the floating slab scale design. I believe this should be what you need to complete the variance request for this project.

Please let me know if you have any further questions!

Thank you,
Jim Jacobs

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