

T
E
L
L
T
A
L
E
S

FROM



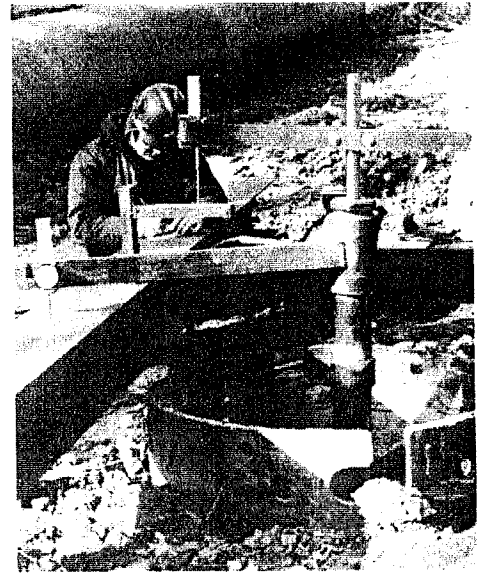
SUMMER 1992

WALTER REED ARMY INSTITUTE OF RESEARCH FOREST GLEN, MARYLAND

For the Army Corps of Engineers and the Walter Reed Army Medical Center, State-of-the-Art testing is a way of life. So it was only natural that for the proposed construction of the a new building complex for the Walter Reed Army Institute of Research (WRAIR), State-of-the-Art Osterberg Cell testing of the prototype drilled shaft foundation was performed by LOADTEST, Inc.

Geotechnical engineering consultant David Connors of Woodward Clyde Associates, recommended using LOADTEST Inc.'s patented Osterberg Cell technology for testing the site's residual geologic profile. Utilizing the input of Baltimore District Army Corps of Engineers geologist Walter Wickboldt, CGP and the drilling experience of foundation contractor McKinney Drilling Company, two drilled shafts were tested.

The shafts were instrumented with vibrating wire strain gauges to help characterize the load transfer in skin friction. Testing was performed in two stages to separately test the ultimate capacity of both skin friction and bearing. Testing results determined capacities of about **1400 kips** in shear and **1200 kips** in end bearing. The results of the testing provided the engineering parameters needed to design the most economical drilled shaft foundation possible for the new structure.



Head Office:
4509 NW 23rd Ave., Suite 19, Gainesville, Florida 32606

Regional Offices:
100 Water Street, East Providence, Rhode Island 02914
785 The Kingsway, Peterborough, Ontario, Canada K9J 6W7

Telephone: (904) 378-3717
1-800-368-1138

Fax: (904) 372-9808

(401) 438-2626 (401) 438-0764
(705) 749-0076 (705) 743-6854

DEEP FOUNDATION TESTING, EQUIPMENT & SERVICES • SPECIALIZING IN OSTERBERG CELL TECHNOLOGY

HUGH B. WILLIAMS INDUSTRY ADVANCEMENT FUND

LOADTEST, Inc. is proud to be a sponsor of the International Association of Foundation Drilling, (ADSC) with its **HBW/Buy ADSC Summer of '92 Sales Promotion**. As part of this effort, for every sale that is invoiced to an ADSC Contractor between June 1st and August 31st, 1% of the invoice price will be donated to the Hugh B. Williams Industry Advancement Fund. (Up to a maximum donation of \$250 per individual sale.)

DEER ISLAND FACILITY BOSTON, MASSACHUSETTS

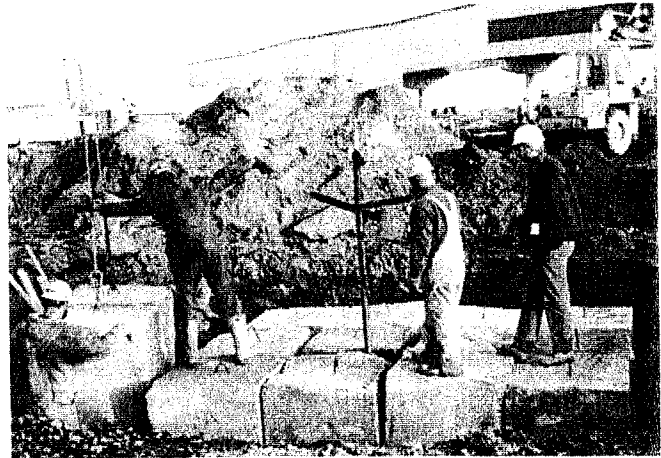
The multi-billion dollar Deer Island Water Treatment Facility expansion is in one word **BIG**. To test the glacial tills onsite, the Millgard Corporation and geotechnical consultant Frank Gryniewicz of GZA GeoEnvironmental, Newton Upper Falls, Massachusetts turned to LOADTEST Inc.'s Osterberg Cell technology for big results. Three Osterberg Cell load tests were performed to access the feasibility of redesigning the building foundation from the proposed driven pile foundation to a drilled shaft alternative. In the process of coming up with an economical value engineering redesign, the testing performed for the Millgard Corporation and GZA GeoEnvironmental set what we believe to be a North American record for load testing, with combined maximum shear and end bearing loads of over **3000 tons**. For this project, no other load testing method could have achieved this capacity and still have the equivalent of 3000 tons capacity in reserve.

HANCOCK INTERNATIONAL AIRPORT SYRACUSE, NEW YORK

Lightly loaded drilled shafts for the support of an addition to the terminal building at Syracuse International Airport were the subject of Osterberg Cell testing by LOADTEST, Inc. in early March. Drilled shaft installation was performed by Northeast Caissons under the direction of their superintendent: Al Gillan.

A total of three production shafts were tested using two-stage Osterberg Cell testing methods, as explained below.

After installation of the two initial shafts containing the Osterberg Cells, the first stage expansion of the Osterberg Cell tested the shear resistance of the completed shaft. The second stage, testing the end bearing capacity of the shafts, was performed after a surcharge of 60, 2-ton concrete blocks was placed over the top of the shaft.



The third shaft tested was based in a deeper, denser, sand zone and was loaded to **800 kips** in shear and **800 kips** end bearing. For this third test, the ultimate capacity was reached simultaneously in both shear and end bearing, and a surcharge was not necessary for this shaft.

Talk about time efficiency! Northeast Caissons installed the third test shaft containing an Osterberg Cell using a high early strength concrete mix on Monday morning, and LOADTEST, Inc. completed testing on Tuesday afternoon: **27 hours** later. After the completion of testing, all cells were grouted to allow the shafts to be used for structural load transfer.

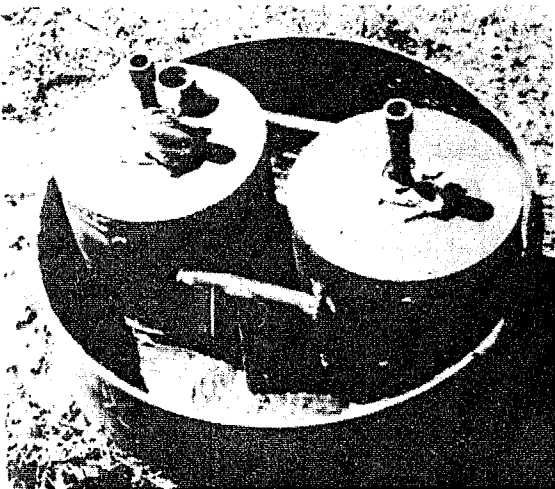
DID YOU KNOW?

- Osterberg Cell load tests are performed in accordance with ASTM D-1143. Loads can be maintained for any hold period required (ie. 12 or 24 hr.).

**UNIVERSITY OF ALABAMA
S.C.I. BUILDING
TUSCALOOSA, ALABAMA**

Value engineering prior to construction led Dick Shea of the Morris-Shea Bridge Company and Bhate Engineering Corporation's Willie NeSmith, P.E. to the use of Osterberg cell technology on the University of Alabama campus. Two-stage testing was performed by LOADTEST, Inc. on a single drilled test shaft installed by the Morris-Shea Bridge Company.

The test shaft was first drilled to the target depth of 48 feet. An arrangement of two-300 ton capacity Osterberg Cells on a steel bearing plate was seated at the base of the shaft to allow testing of up to 600 tons in each the shear and end bearing directions. An 11.5 ft. length of shaft was concreted and then tested two days later for shear resistance to a maximum load of 145 tons for the shaft section. After completing the shear testing, the shaft was completed to the ground surface and then tested to determine the ultimate end bearing capacity. Maximum cell loads applied during the end bearing test were about 400 tons.



Critical time savings were achieved by using the Osterberg Cell for load testing. Dick Shea's crew began installation of the test shaft on a Saturday, and by Wednesday afternoon both the shear resistance and end bearing of the shaft had been tested to their ultimate capacity. The results of the Osterberg Cell load test performed by LOADTEST, Inc. were used by Bhate Engineering to provide an economical foundation design for the University of Alabama structure.

CALIBRATION OF OSTERBERG CELLS

Prior to use, each of LOADTEST, Inc.'s Osterberg Cells are precision calibrated by American Equipment and Fabricating Company in East Providence, Rhode Island. Using a test frame that was specifically designed for calibration of Osterberg cells, each cell is calibrated to a maximum of 600 tons at cell extensions of 1, 3, and 5 inches. The results of these calibrations are linearly extended for loads above 600 tons, up to the 3000 ton capacity of the largest cells.

To verify the extended portion of the calibration, the National Institute of Standards and Technology (NIST) in Gaithersburg, Maryland was contracted to test one of Loadtest's 3000 ton capacity Osterberg Cells. The NIST's "Bliss Universal Testing Machine" is one of the largest machines of its type in the world. Testing capacities for the five-story testing apparatus are 6000 tons in compression, 3000 tons tension, and flexural testing of up to 2000 tons.

Calibration testing was carried out to the **3000 ton rated capacity** of the Osterberg cell at the cell extensions of 1, 3, and 5 inches. Results of the calibration indicated that the linear extension of the 600 ton calibration performed by American Equipment and Fabricating was accurate to within 1% of the NIST calibration at maximum load. Based upon these very favorable results, we believe that up to 600 ton maximum load calibrations should be performed for all cells, with higher load calibrations performed for only select instances.

COMING NEXT ISSUE

- **Osterberg Cell testing of fully instrumented, rock socketed drilled shafts for the US 231 bridge over the Ohio River under construction between Owensboro, Kentucky and Rockport, Indiana. Testing is being performed within cofferdam structures for the Federal Highway Administration, the Kentucky Department of Highways and the Indiana Dept. of Transportation.**

LTI PROFILE: RON HORTA

Name any site in North America where the Osterberg Cell load test has been performed, and you can bet Ron Horta was there in the thick of it. Ron is LOADTEST Inc.'s chief technician for site locations. Based out of American Equipment and Fabricating Company in East Providence, Rhode Island, Ron has worked with the Osterberg load cell following its inception by Dr. Jorj Osterberg and fabrication under the direction of Charlie Guild.

Ron splits his time between work as a machinist during the construction of the Osterberg cells and technician duties during field load testing. At the project site, Ron has the responsibility of making sure that the field assembly, welding, and installation of the cell and pressure piping is performed correctly. Before testing, Ron assists with the setting up of reference and monitoring instrumentation as well as connecting all hydraulic

lines and gauges. During the actual testing, he is responsible for operating the cell pressurizing system. After completion of the testing, Ron assists in the grouting of the Osterberg cell when the test shaft or pile is to be used for carrying structural loads.



When not traveling around the country for LOADTEST, Inc. Ron spends his time hunting, fishing, or skiing with his wife Bernadette, and his sons Ronnie, Bernie, and Eric.

LOADTEST, Inc.
4509 N. W. 23rd Avenue
Suite 19
Gainesville, Florida 32606

If addressee unavailable, please route to geotechnical or foundations department