

LOADTEST, Inc.
2631-D NW 41st Street
Gainesville, Florida 32606
(800) 368-1138
(352) 378-3717

"Providing confidence in foundations through load testing around the world"

SUMMER 2004 • LOADTEST

INTERNATIONAL NEWS

LOADTEST has operated an office in Singapore since 1996, but 2003 was a banner year. Leading this effort is **Thomas Molnit**, managing director of LOADTEST Asia, headquartered in Singapore. Projects in Korea, Malaysia, Taiwan, Hong Kong and China rounded out our Asian activity. **Peter Jones** was our key man on two of the world's largest cable stay bridge projects in China, the Hangzhou and Su Tong Bridges, both near Shanghai. **Jon Sinnreich** has moved back to the US after an ex-pat stint in Singapore and he will be a welcome addition to our North American operations; welcome home Jon! **Mel England** and **Carlos Fischer** have been very active on two major testing projects in Germany.

UPCOMING CONFERENCES

Deep Foundation Institute
29th Annual Conference on Deep Foundations
The Fairmont Hotel
Vancouver, BC, Canada
Sep 29 - Oct 1, 2004

MAJOR STRUCTURES USING THE O-CELL® TEST

- **New World Record Load Test (18,000 tons 163 MN) – Pomeroy Mason Bridge, Ohio River**
- **Hangzhou Bay Bridge – Shanghai, China**
- **Mandalay Bay Casino – Las Vegas, Nevada**
- **One Raffles Quay - Singapore**
- **Venetian Casino – Las Vegas, Nevada**
- **Po River Bridge – Milan, Italy**
- **Su Tong Bridge - China**

Corporate Headquarters

2631-D NW 41st Street • Gainesville, Florida 32606
Phone: (352) 378-3717 • 1-800-368-1138 • Fax: (352) 378-3934

Regional Offices

5740 Executive Drive, Suite 108
Baltimore, MD 21228
(800) 436-2355
(410) 788-4180
Fax: (410) 788-4182

815 High St., Unit 9
Peterborough, Ontario,
Canada K9J8J9
(705) 749-0076
Fax: (705) 743-6854

International Offices

79 Kampong Bahu Road
Singapore 169377
011 65 6377 5665
Fax: 011 65 6377 3359

14 Scotts Avenue,
Sunbury on Thames,
Middlesex, TW16 7HZ
+44 (0) 1932 784807



www.loadtest.com

TELLTALES

Contents

Featured Projects

- World Record - page 2
- L.A. Coliseum - page 2
- I-235 Des Moines, IA - page 3
- Singapore Courthouse Garage - page 3

International News

- Back Cover

Conferences

- Back Cover

Contact Info

- Back Cover

World Record Test!

On August 27, 2003 a new world record for deep foundation testing of 18,400 tons (163 MN) was set by Loadtest, Inc. in Meigs County, West Virginia on the Pomeroy-Mason Ohio River Bridge project, exceeding Loadtest's 2001 world record by 1,400 tons.

STAY IN THE LOOP

If you have an address change, or know of someone who would like to be added to the TELLTALES subscriber list, please send an email to telltale@loadtest.com

TELLTALES is published by Loadtest, Inc.

O-Cell is a registered trademark of Loadtest, Inc.

INGENUITY + VERSATILITY = VALUE

Over water, inside an existing building, in the median of an interstate, or testing a recently installed drilled shaft within an existing superstructure; these are a few examples of the versatility of O-cell® technology. Our unique patented testing process enables architects, designers and shaft manufacturers to test virtually **any shaft, in any location, in any type of condition at their convenience**. As our clients have discovered, the O-cell system is easy to assemble. Installation is virtually the same as that for a regular shaft; and testing can be done within seven days of concreting, or sooner depending on concrete strength.

LOADTEST has adapted its **O-cell technology to work with driven piles, auger-cast piles and pre-cast piles**. The flexible nature of the O-cell method allows economical testing of drilled shafts or barrettes with design capacities as low as 200 tons (1.80 MN).

Time-critical needs can be met by utilizing LOADTEST's customized software to produce results in real time. **Plotting and graphing of the O-cell tests are done during the test at the site.**



*World Record O-Cell® Test
Pomeroy - Mason Ohio River Bridge*

Leveraging our experience, versatility and professional approach to our client's project is how **LOADTEST adds value**. Our team of engineers can assist designers, architects and contractors with designing test programs of most deep foundations.

With over 12 years of experience and over 800 O-cell load test projects, LOADTEST has established itself as a world leader when it comes to analyzing and consulting on drilled shaft, or deep foundation test performance and design. Please contact LOADTEST and let us put our ingenuity, versatility and experience to work for you and add value to your next deep foundation project.

WV/OHIO WORLD RECORD PROJECT**OVER WATER NO LESS!**

A replacement bridge over the Ohio River between Pomeroy, Ohio and Mason, West Virginia will allow the removal of existing bridge piers that cause barge congestion on this busy elbow of the Ohio River. Engineers designing the foundations for the new cable stay structure turned to LOADTEST and the O-cell method to verify their design loads. Test results indicate the shafts were particularly robust. Our applied test loads to one test shaft exceeded 18,400 tons (163 MN) and this project now holds the new World Record exceeding the former World Record load test by 1,400 tons. Mr. Robert Simpson and Mr. Bill Ryan of LOADTEST conducted the World Record Test.

Our appreciation to all who assisted with this test including: Mr. Ted Kloeker of National Engineering & Contracting Co., Mr. Jamal Nusairat of E.L. Robinson Engineering of Ohio, Mr. Don Tillis of the Ohio Department of Transportation, Mr. Eric Kistner of Fuller, Mossbarger, Scott & May (FMSM) Engineers and Mr. Michael Zwick of the URS Corporation from their Cincinnati, Ohio office.

OHIO PROJECT PROFILE

- **Location:** Bridge over the Ohio River between Pomeroy, OH – Mason, WV
- **Date:** August 27, 2003
- **Contractor:** JV involving National Engineering & Contracting Company (Hebron, KY) and CJ Mahan Construction (Grove City, OH).
- **Subsurface:** Sand and gravel overlying shale with mudstone and sandstone.
- **Shaft diameter:** 96" (2,440 mm)
- **Shaft Length:** 86.0 ft (26.2 m)
- **O-Cell configuration:** 3 x 34" O-cells arranged (concentrically) on a single plane

MAX LOAD/MOVEMENTS:

- **36,700 kips (163 MN)/ 2.93" up, 1.43" down**

L.A. COLISEUM**TWO BIRDS WITH ONE STONE
THE O-CELL WAY**

After the January 1994 Northridge earthquake rocked the Los Angeles Coliseum causing severe cracking and bending of the foundation, construction crews scrambled to repair the Coliseum before the first football kickoff in September. The geotechnical engineering firm Law/Crandall, contacted by the Coliseum's owners' the Cordell Corporation, assisted in evaluating the extent of the foundation damage caused by the earthquake. The investigation revealed that the upper and lower seating sections had shifted and cracked during the tremor. As part of the reconstruction effort, installation of new drilled shafts for the inner concourse were designed to provide increased lateral support for upper deck seating. Initial design called for piles of 36"-52" in diameter and 65'-95' deep all to occur in the inner concourse area, which limited overhead working room to 8'. A 10' trench was excavated to effectively double the overhead room, but difficult drilling conditions below 65' slowed the schedule dramatically and caused the foundation team to look for alternative solutions.

*L.A. Coliseum*

LOADTEST was able to provide two solutions with O-cell technology. Due to the restricted area, the use of O-cell technology eliminated the need for bulky dunnage associated with Kentledge style testing. Additionally, after preliminary O-cell testing, the foundation team allowed the shafts to be reduced in length by approximately 20'-35'. They also recognized the Osterberg test consolidated and stiffened the end bearing of the shaft, although the shafts were shortened by as much as 35%, much less displacement occurred with this preloaded end bearing technique.

Our thanks to Mr. Barry Meyer and Paul Schade of Law/Crandall, Mr. Bob Demarco and Henry Dumanan of Tutor Saliba.

L.A. COLISEUM PROFILE

- **Location:** L.A. Coliseum
- **Date:** June-July 1994
- **Contractor:** Tutor Saliba
- **Subsurface:** Up to 35 feet of sandy, gravelly fill over sand and gravel and cobbles
- **Shaft diameter:** 52" (1 300mm)
- **Shaft Lengths:** 60' – 95'
- **O-Cell configuration:** 1" x 21" O-cell placed within 3' (1 m) of shaft tip

MAX LOAD/MOVEMENTS:

- **All of the new shafts were tested to an equivalent top load of 2,800-4,200 kips (total of 28 tests). Initial base movements ranged from 1 to 4 inches. Reloading after the initial tests showed that base displacements were reduced to a range of 0.1 to 0.3 inches at design loads.**

I-235 DES MOINES, IA

BETWEEN THE GUARDRAILS

There are literally dozens of highway expansion projects currently under construction across the United States; but few require testing in the median of an existing 4 lane expressway. Construction of a replacement bridge over I-235 at 28th Street, in Des Moines IA required Loadtest to perform two tests in these tight quarters. The original structure was a two lane overpass with no shoulders or sidewalks. The replacement bridge will include 4 lanes of traffic and pedestrian walkways. Minimizing lane closures and traffic delays on the existing expressway was a main priority of this project and the O-cell method allowed testing to be performed in the median of this busy corridor.

The two test shafts were drilled into the clay shale bedrock using polymer slurry for stabilization. Not only were these test shafts in a confined area, they were also production shafts. With virtually no overhead obstructions, save a reference beam, the O-cell method was ideally suited for this project.

LOADTEST personnel, led by Mr. Bill Ryan and Mr. Michael Ahrens, performed the tests on this project at the request of the Iowa DOT in conjunction with the FHWA.

The shafts were constructed by Longfellow drilling.

I-235 PROJECT PROFILE

- **Location:** I-235 Des Moines, IA
- **Date:** August 2002
- **Contractor:** Longfellow Drilling Inc.
- **Subsurface:** stiff to firm silty glacial clay underlain by clay shale bedrock.
- **Shaft diameters:** 48" (1,800mm)
- **Shaft Lengths:** 66^{1/2'} – 67'
- **O-Cell configuration:** 1 x 26" O-cell per shaft

MAX LOAD/MOVEMENTS:

Test Shaft #1

- **1,077 kips (4.78 MN) / 1.21" up and 0.27" down**

Test Shaft #2

- **1,476 kips (6.57 MN) / 0.58" up and 0.18" down**

SINGAPORE COURTHOUSE GARAGE

LET'S TEST INSIDE AN EXISTING STRUCTURE!

The new Supreme Court building in Singapore was designed to be constructed over an existing building with 4 basement levels. Zap Piling Pte Ltd. performed the bored piling for Sato Koyo Pte Ltd. (general contractor) and LOADTEST Asia Pte Ltd. performed the O-Cell testing. The piling work was done from temporary steel decking at ground level through hacked access holes (*see picture*) in the existing basement slabs down to the existing basement floor (16 m below). 255 new bored piles with an inserted H-pile ("king post") with diameters 1400-mm needed to be constructed. A proof load test was executed inside the existing building using the O-Cell method.



The O-Cell method requires no reaction system at the pile head, unlike conventional methods and was the only method available for performing static maintained load tests to 2,400 tons on the working piles. This project was supervised by Mr. Jon Sinnreich and Mr. Khoo Han Sen of the LOADTEST Asia office in Singapore.

SINGAPORE PROJECT PROFILE

- **Location:** Singapore
- **Date:** Jan. 25, 2002 (start)
- **Contractor:** Sato Koyo Pte Ltd.
- **Subsurface:** 5.5 m backfill + sand & gravel, 10.3 m soft marine clay, 3.9 m loose fine silty sand, 12.1 m v. dense clayey sand, hard silty clay to undetermined depth
- **Shaft diameter:** 56" (1,400mm)
- **Shaft Lengths:** 36.5 m
- **O-Cell configuration:** 1 x 21" lower, 1 x 21" upper

MAX LOAD/MOVEMENTS:

- **Lower - 13.7 MN, 23.6 mm**
- **Middle - 6.14 MN, 38.4 mm (upward)**
- **Upper - 13.2 MN, 54.2 mm**