BERMINGHAM

FOUNDATION SOLUTIONS SINCE 1897

IN THIS ISSUE

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Custom Equipment – EE Cruz/Nicholson JV	1
CEO's Message	1
New Orleans Projects	
West Return Wall & Seabrook Floodgate Complex	2
Halifax Pier Expansion	3
Waterloo Wastewater Treatment Plant	3
Ottawa — Rideau Canal Bridge	4
ConExpo	4

EE CRUZ/NICHOLSON JV CUSTOM EQUIPMENT FOR TOP-DOWN CONSTRUCTION – COLUMBIA UNIVERSITY, NEW YORK CITY

Bermingham Foundation Solutions pulled out all the stops to design and supply equipment for The E.E. Cruz/Nicholson Construction Company joint venture who were contracted for construction of the foundation for Columbia University's new Jerome L. Green Science Centre in NYC. The project consisted of 150,000 square feet of watertight perimeter diaphragm wall, as well as 96 load bearing elements (LBEs) installed to depths of up to 240 ft.

REBAR CAGE TILTER

In order to minimize splicing of 160 foot long cages and to improve safety, Bermingham was engaged to design and build a rebar cage tilting device.

This device needed to be capable of tilting rebar cages weighing up to 100,000 lbs.

To meet the customer's demanding schedule, Bermingham people designed and fabricated the Cage Tilter in-house in just ten weeks.

A modular design was used to facilitate transportation and logistics. The design consisted of twenty truss panels which could be pinned together on site in conjunction with a hinged base frame, top frame and lifting spreader beam. The 176 ft. long, 148,000 lbs. Cage Tilter was delivered in June 2011. Bermingham's Dean Loebach, Mechanical Engineer, and David MacIntyre, Assembly Shop Foreman, were on hand to oversee installation of the Cage Tilter on site and to provide technical assistance as required.

COLUMN POSITIONING

Another construction challenge facing EE Cruz/Nicholson JV on the Manhattanville project was to place 92 large structural steel columns into drilled shafts within very tight positional tolerances. Each column had to be placed at elevations varying from 5 feet above grade to 23 feet below grade with plan and elevation positional tolerances of +/-0.25 inches and a verticality of 0.5% (0.29 degrees).

The positive experience with the Cage Tilter prompted EE Cruz/Nicholson JV to contract Bermingham again – this time to supply three custom-designed Column Positioning Devices. The machines needed to accommodate 92 uniquely profiled columns of varying lengths – from 30 ft. to 66 ft. – with a weight range of 3,000 lbs. to 69,000 lbs. Once these large structural columns were positioned within the required tolerance, the machines had to be able to hold the column in place for up to three days while the concrete in the drilled shaft cured. The delivery schedule for the Column Positioning Devices was extremely aggressive with a total time to design, fabricate and deliver the first machine within six weeks! Again, Bermingham rose to the challenge and delivered the first column positioning in October 2011. Dean Loebach, Mechanical Engineer, travelled to the site to oversee installation and operation of the Column Positioning and provide technical assistance as required.

"The Column Positioning system developed by Berminghammer for our Top Down Construction achieved excellent results placing columns within their specified tolerances with ease."

"The Berminghammer team was able to meet our schedule and was exceptional to work with."

– Frank Spinozza, Project Manager, E.E. Cruz





CEO'S MESSAGE Investment from Soletanche Freyssinet will help us grow

I am pleased to welcome our new strategic partner -Soletanche Freyssinet, a VINCI company - and the future opportunities that our relationship presents. VINCI is a world leader in construction and concessions. Paris-based, this publicly traded company employs 180,000 people in some 100 countries. Backed by Soletanche Freyssinet, Bermingham has a mandate to grow. We intend to expand overseas operations with increased equipment sales and rentals, as well as enter into joint-ventures on large scale projects worldwide. We also plan to expand within Canada. With a long history of bringing new technologies to North America, Bermingham's new strategic partnership with Soletanche Freyssinet and its affiliated companies, will allow it to provide customers with access to leading specialty foundation and ground improvement techniques. We look forward to strengthening our relationship with our current customers and welcoming new ones in the years ahead

Patrick Bermingham, CEO

NEW ORLEANS PROJECTS BERMINGHAM PLAYS KEY ROLE IN FLOOD PROTECTION UPGRADES

BERMINGHAM SYSTEM AN EXCELLENT SOLUTION FOR WEST RETURN WALL PROJECT

Bermingham's pile driving equipment and expertise was supplied to Odebrecht-Johnson Brothers JV to drive 5,586 H-piles required to upgrade a 3.5 mile long north section of the new T-wall along a small canal running into Lake Pontchartrain.

What made the project both interesting and challenging was that the old L-wall could not be removed until completion of the new T-wall, deemed to have better flood protection. "This dictated that all pile driving work and material delivery had to be done from small barges in the narrow canal," explained Bermingham's Warren Waite adding that the canal had to remain open for other barges delivering materials along the site. "The challenge was driving up to 123 ft long HP 14X89 on fore and aft batters of 1:2, 1:2.5 and 1:3 with the required reaches and limitations of a smaller sized barge and crane - it was difficult. The piling system also had to be able to self-load the piles, as there was no room for service cranes."

Bermingham provided an excellent solution. After reviewing various options with the contractor, a new system was developed to handle the various batters without re-rigging and that could also self load the piles. The Free Floating Bridled Batter Lead concept and Berminghammer B21 hammers were also successful at reducing the crane reach in order to achieve the aft batters without overloading the crane and barge.

Odebrecht-Johnson Brothers JV originally anticipated that daily production rates would be nine piles per day per rig and ordered four systems. Because actual production reached up to 27 piles per day per rig (triple!), the fourth system was not needed.



Production Rates Exceeded Expectations

Needless to say, the pile driving work was finished on schedule and as Wayne Baumgartner, Vice President, Odebrecht- Johnson Brothers remarks, "All worked well and everyone is very happy with the results."





▲ Custom Free-Floating Bridled Batter Lead

SEABROOK FLOODGATE COMPLEX

The Seabrook Floodgate Complex, located south of the Ted Hickey Bridge on the Inner Harbour Navigation Canal, is designed to keep hurricane storm surges generated from Lake Pontchartrain out of the Navigation Canal.

Constructed by Alberici Constructors Inc., the complex consists of a 95-foot wide sector gate, with two "leaves" weighing more than 150 tons that swing horizontally to close the navigational canal; and two 50-foot wide vertical lift gates weighing more than 200 tons. The structure, which stands 16' high, also has 1600 ft. of T-wall on the East and West side that connects to the lakefront. structures, as well as two B32 hammers and a 150-ft.long set of swinging leads for installing battered H-piles on the T-wall portion of the project.





There were a number of steps to constructing the Complex. First, a temporary rock dike was built to block the tidal flow, then steel piles were driven to build a cofferdam. After the removal of water from the cofferdam, installation of 430 thirty inch diameter steel pipe piles were driven into the canal bed to support the concrete base for the gates.

Berminghammer supplied three 130 foot long 37" vertical travel lead systems for installation of the pipe piles on the gate

A Bermingham Vertical Travel Box Lead

▲ Manitowoc 2250 Converted to High Production Piling Rig

2 BERMINGHAM

HALIFAX MCNALLY MARINE CONSTRUCTION HIRES BERMINGHAM FOR CHALLENGING MARINE ROCK SOCKET INSTALLATION

Berningham Construction was hired by McNally Marine to install piles for a new pier in the Port of Halifax during the winter and summer of 2011. The job was to install 132 steel pipe piles, 30 inches in diameter and 100 feet long on various batters and skews, as well as vertical piles. The work was carried out almost entirely on the water with the use of spuded barges, including the drilling of six meter rock sockets in each pile.

A Liebherr 895 S crane, equipped with 117 feet of L23 Leads and an HPSI 500 XL Vibratory Hammer was used to install templates over the water and then drive the piles in location through the templates. A Terex HC 275 crane, equipped with 140 feet of L27 inch vertical travel leads and a specially designed 35-foot-long, three stage spotter manufactured by Berminghammer allowed the crane to achieve the required 1 to 4 batters and 10 degree side skew on the long piles. The L27 Leads were equipped with a BHD80 Berminghammer Drill and 100 feet of drill string, along with a down the hole hammer to drill a 22 inch rock-socket. Top frames to guide the skewed and battered piles had to be installed in accordance with the daily tides since at certain times of the day the frames were under water. Placement of these frames was done by surveying using a total station set up on land and someone holding a locating reflector on the centre of the pile to be driven. This was sometimes difficult in rough seas.

The piling portion of the project lasted ten months from January to October and, although weather often impacted the working conditions, Bermingham finished on schedule.

"When difficult conditions were encountered on site, Bermingham managed to provide the engineering and expertise to implement an alternative pile installation process seamlessly with no impact to schedule."

> - Veryle Lewis, Project Manager, McNally Construction







WATERLOO BERMINGHAM TEAM MEETS THE CHALLENGE

Bermingham was sub-contracted by Graham Construction and Engineering to design and install a shoring wall and micropiles for an upgrade to the Waterloo Wastewater Treatment Plant.

"It was a challenge to install sheet piles through extremely dense glacial till soil. N Values in some cases exceeded 150 Blows/ft consisting of nested cobbles and boulders and then install micropiles below the water table into ground that was subject to artesian pressure," — Andrew Weltz, P. ENG, Bermingham Project Manager

Isherwood and Associates completed the design of a cofferdam - involving the installation of EZ and XZ sheet piles supplied by Canadian Metal Rolling Mills - to retain soil upwards of 34 ft. in the deepest cut.

Berminghammer L18 leads and a lead mounted HPSI H20 Drill was used to rotate the Atlas Copco Elemex system to install the micropiles and remove the micropile liner in one stroke. Bermingham installed 160 micropiles with this custom system.

The Bermingham foremen on this project were

"Your cooperation, professionalism and work ethic were a testament to the strong reputation Bermingham holds in our industry. The sheet piling and micro-pile installations proved to be more challenging than one could have estimated. Bermingham, acting as a true construction partner, stepped up to the plate working long hours and providing additional crews and equipment as required to help keep the project schedule."



"The Bermingham crew performed the

Charlie Archdekin (Sheet Pile Installation), Eric Rivest (Tieback Installation), Dean Shanahan (Welding), and Raymond Hill (Micropile Installation). All of them successfully completed their tasks in the allotted timeframe. – Dave Gerrard, Project Manager, Graham Construction and Engineering job with dedication and skillful attention to the fine details of the project."

> – Ean Sigfrid, Site Superintendent, Graham Construction and Engineering



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OTTAWA RIDEAU CANAL BRIDGE

BERMINGHAM'S SHORING & FOUNDATION WAS INSTRUMENTAL TO STATE-OF-THE-ART BRIDGE CONSTRUCTION PROJECT

Bermingham was instrumental in the construction of the Standherd-Armstrong Bridge in the City of Ottawa; a USL Concreate project. The Bridge features a 143 meter cable-suspended, open arch spanning some 120 meters over two land-based abutments and ten lanes. Bermingham used a custom-designed and fabricated drilling system to construct 2.0-m diameter rock-socketed caissons up to 16 meters deep in dense challenging overburden and 200-MPa Sandstone bedrock on the Rideau River.

Bermingham installed thirty rock-socketed caissons for the bridge abutments which were constructed with 25 mm thick permanent casings. These casings were driven to bedrock with an HPSI 1600 vibratory hammer. The overburden inside the casings was excavated with grab buckets to rock. The custom rock drilling system consisted of a casing mounted lead configuration, a customized BHD 80 hydraulic drill with pull-out frame, in-house designed and constructed roller-cone drill bit with a RC drill string and drill weight system.

BCL managed to secure additional work on the project consisting of two large cofferdam structures which enabled excavation and construction of the massive bridge footings. There were 112 temporary piles, in 12 pier caps to bear the weight of the bridge sections, which were launched from the East abutment until the arches and cables secured the bridge in place — with no disturbance to the environment. An Atlas Copco Symmetrix casing advancement system and Berminghammer vertical travel lead system was used to set 20 meter long, 450 mm casings for the temporary support pilings. The casings were rock socketed one meter into the sandstone bedrock.

Niels Christensen, Project Superintendent, and many talented Bermingham crew members worked through a harsh Ottawa winter with challenging subsurface conditions to complete the work for the General Contractor's stringent, spring construction schedule.







A STRONG PRESENCE AT CON EXPO

Bermingham had a strong presence at Con Expo, held March 22-26, 2011 in Las Vegas, showcasing a variety of equipment to over 120,000 industry professionals from over 150 countries.

Continuing a strong history of collaboration with crane manufacturers, Bermingham teamed with Mantis Cranes (Tadano) and displayed a Vertical Travel Lead System and B-21 Diesel hammer on a Mantis 15010 Hydraulic Boom Crawler crane. The system was displayed on a 4:1 "side-batter" which caught the attention of many people.

Bermingham shared outdoor exhibit space with Hydraulic Power Systems (HPSI) and continued a long-standing, cooperative relationship with Atlas Copco at their large indoor exhibit area. Bermingham's L-18 lead, reverse-circulation drill (BHD-40) and 3-stage RC drill-string was on exhibit, together with an Atlas Copco QL-200 DTH hammer and their new Elemex bit system for rock-socketing and casing advancement.



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