

Llano Texas / VP's Message	Page 1
Bronx / Chesapeake / Rail / Casablanca	Page 2
China / Hearst / Boston	Page 3
Bay City/ Buffalo	Page 4

ROCK SOCKETS - LOW HEADROOM BRIDGE REBUILD

LLANO RIVER, TEXAS



In August 2018, Berminghammer's Louis Fritz, P.Eng was contacted by AH Beck's Keith Anderson with a unique challenge. A bridge across the Llano river in Texas had been washed away in severe floods that plagued Texas in the summer of 2018. To prevent a washout ever happening again, the redesigned bridge was to have rock socketed 48 inch piles. Traditional wisdom suggested using a cluster drill with piles of this diameter. There was a very significant constraint on this project, the initial abutment only had 30 feet of headroom under-

neath power lines, and the remaining pier piles were unobstructed and would be drilled out from a barge on the river. This posed a unique challenge, to initially RC Drill with a low headroom constraint and then to convert to a larger stroke when performing barge work. The greatest challenge – to determine and deliver the required equipment in under two weeks.

Berminghammer was up to the task! After brainstorming some potential lead system solutions; collaboratively AH Beck and

Berminghammer decided to instead mount an RC Swivel and drill string on AH Beck's low headroom drill rig. The rig had never had an air swivel mounted on it but thanks to quick actions, Berminghammer was able to mount their rental air swivel to the rotary and deliver short 10 foot sections of drill string to accommodate the minimal stroke. Each section was capped with a quick disconnect so that the time spent adding drill string sections would be minimal. The result was truly spectacular, less than 3 weeks after

calling Berminghammer, AH Beck had completed the low headroom rock sockets. Immediately following the completion of the low headroom rock sockets, the drill rig mast was lengthened and set out on a barge to complete the pier piles. Keith Anderson COO of AH Beck had this to say:

"It has been great working with Berminghammer on this project. Top notch people with top notch equipment."



2018 has been another strong year for Berminghammer with the release of several new products. This year Berminghammer piloted the EML line of excavator mounted leads which was awarded the ORBA Transportation Infrastructure Innovation Award for 2018. Our new BRC-75 Drill, specifically designed to maximize efficiency of reverse circulation drilling has more torque and durability while saving on total suspended weight.

Last year, we responded to several customers who were on technically challenging jobs and needed custom equipment quickly mobilized to site to meet their needs. Customers like AH Beck, and Balineau are great examples, Berminghammer responded within one-week to AH Beck's complex emergency job and gave Balineau a solution to drilling the un-drillable in Casablanca. None of these success stories would be

possible without the hard work and dedication of an amazing team. From sales, engineering, manufacturing and field services, the Berminghammer team is up for the most challenging and technically difficult projects in the deep foundation industry.

*Steven England P. Eng
- VP Berminghammer*

NO HEADROOM - NY BRONX, NY

Drilling in New York can sometimes be a truly unique experience. One such experience was Kiewit's Unionport Project. Kiewit needed to install 34 drilled shafts and 27 low overhead clearance shafts for a bascule bridge replacement. Strained for space and forced to work from a barge underneath an existing live bridge, Kiewit required a hard rock drilling solution that

would be capable of drilling 48' diameter sockets with under 40 feet of headroom. Knowing of Berminghammer's experience and problem solving aptitude, Kiewit reached out to Louis Fritz whom actioned a customized crane hung flying drill system complete with BHD-80 and 20 inch high capacity drill string to power a Center Rock supplied Cluster bit.



CHESAPEAKE TUNNEL VIRGINIA BEACH, VIRGINIA

The Chesapeake Tunnel project is a 37 km long bridge and tunnel combination crossing from the mouth of Chesapeake Bay and the Hampton Roads Harbour connecting North Hampton County with Virginia Beach. Construction is underway to add a second tunnel. In preparation for this second tunnel, Berminghammer was contacted by Dragados (a member of the CTJV joint venture) for the purpose of assisting with the drilling operations. With expertise in drilling through large obstructions, Berminghammer provid-

ed the assistance and equipment required for case advancing some 36" pipe into truck sized boulders bordering the existing highway. After drilling through these obstructions, the same leads were then used to drive pipe piles through. Berminghammer suggested and ultimately supplied a crane mounted VTL system that attached to a Liebherr LR1300 crane. Berminghammer supplied 176 ft of L-27 Lead complete with BHD80 Reverse Circulation drill and 20-in drill string.

RAIL PILE DRIVING MODERNIZATION NORTH AMERICA

Several years ago, several key US Class 1 Railroads identified the need to replace or update aging Locomotive Crane Pile Driving Systems. Berminghammer (BFE) has had a very strong history supporting railroads and understood the unique demands of driving piles from rail mounted equipment and the rail industry. BFE was well positioned to work together with railway engineers and operators to focus on the aspects most important to them - safety and improvement for daily operator use. Establishing close relationships with key crane rebuild suppliers

allowed us many opportunities to ensure the newest generations of BFE Vertical Travel Leads and Hammers integrated smoothly with the full crane rebuild package that the railroads wanted. In addition to overall product improvements, BFE addressed each individual Railroad company's specific needs to tailor systems appropriately. BFE continues to work very closely with these stakeholders to continuously improve, innovate and adapt our product lines and service offerings for the railroad industry as required. Since 2012 BFE has supplied about 20 modernized systems.



DOCKWALL MOROCCO CASABLANCA, MOROCCO

The expansion of wharf 3 for the new shipyard at Port of Casablanca, required advancing approx. 70 – 1016mm casing 30m in length through a layer of armour stone and into native rock. This required the utilization of case advancing technology where Berminghammer is a world wide leader with their extensive experience and know-how. A 57m L27 Vertical Travel Lead system with RC drill and drill string were supplied and mounted on a 300t crane by BFE technicians which allowed

'One Pass' methodology to be performed with the aid of a 5m deep 'rat hole'. The reverse circulation tools allowed for the quick evacuation of the spoils and advancement of the casing in the difficult site conditions. The main challenge was at the start of drilling in very sloped armour stone with the tendency of the pile to 'move' out of position. For this reason, Berminghammer equipment and personnel were a must to ensure accuracy.



BLUEWATER POWER PLANT CHINA, MICHIGAN

In 2018, Kiewit approached Berminghammer about a piling system for a natural gas power plant project they had been awarded in China, Michigan. Kiewit needed to install hundreds of H-Piles to depths nearing 200' in the notoriously soft soils neighboring the St. Clair River. Furthermore, Kiewit wanted to invest in their future equipment needs and was looking to invest in a deep CFA rig. Keeping the future CFA system in mind Berminghammer chose to utilize their H36 Vertical Travel Lead. This lead section can go to lengths

exceeding 200 feet and has torque ratings exceeding 350,000 ft-lbs. Due to the number of piles, Kiewit also requested a second system to double production. Berminghammer recommended the re-use of an existing Berminghammer BL-37 VTL System that had just finished a project at Orlando Airport. Although initially hydraulic hammers were chosen for the project, they proved too unreliable and were ultimately substituted with Berminghammer's own B-64 clean series hammers.

EML30 - ORBA INNOVATION AWARD WINNER HEARST, ONTARIO

In the spring of 2018, Berminghammer put its newest innovation to the test. The EML30 - an excavator mounted pile driving lead for 30-ton excavators. It was ready for its first pile installation in Hearst, Ontario. BOT construction purchased the unit to complete some roadway protection shoring for several culvert replacements. The line of excavator mounted piling leads had been in the development stage for several years and consists of three models, the EML30, EML45 and EML60. BOT completed the culvert replacements in the spring utilizing the EML30. They installed typical soldier pile and lagging retaining systems as well as a more complicated combi wall system consisting of interlaced H-Piles and sheet piles. BOT saved significant amounts of money on mobilization costs

throughout by eliminating the need for a traditional crane and lead setup that is normally used for this work. They also took control of the foundation schedule by taking on the additional scope. Despite never driving piles before, with the guidance and training of the Berminghammer team, BOT was able to pick up on the nuances of pile driving very quickly. BOT & Berminghammer's work was recognized by the Ontario Road Builder's Association. Berminghammer received the prestigious "Innovation Award" for 2019. The award recognizes innovative techniques and methods, applied on actual projects or in activities or processes, performed by an ORBA member company, which improve the quality and/or reduce the cost of construction.



MASSPORT CONLEY TERMINAL - VTL IS THE SOLUTION BOSTON, MASSACHUSETTS



As part of a US \$107.5 million-dollar investment project, Massport's Conley terminal is seeing the addition of three new shipping cranes and a new dock wall. The dock wall and crane foundation requirements were substantial. The design required 28" piles 108' long to be driven on a 1:3 batter. Knowing that long piles and significant batters are a specialty of Berminghammer, contractors bidding the project reached out to Berminghammer for their expertise. Ultimately Coastal Marine and Underpinning Foundation & Skanska were awarded contracts from general contractor DW White to complete the foundation work. Both contractors enlisted Berminghammer to provide them L-27 Vertical Travel Lead (VTL) systems to pair with 300+ ton crawler cranes

and vibratory hammers. Berminghammer's BK3-1840 is a three stage spotters and was crucial in allowing for the large 3:1 fore batters required on the project (see photo). Originally planned for three VTL Systems, the pace of the piling was so quick that piles could not arrive fast enough to keep up with the production. The two VTL systems completed the work faster than the original projections of three systems.



DRIVING FULL LENGTH PILES SAVES TIME IN BAY CITY BAY CITY, TEXAS

Long time Bridge builder in Texas, Austin Bridge, was tasked with installing 36" pipe piles. Not a problem for such a seasoned bridge building company. However, the total pile length was 130'. Austin Bridge traditionally would approach this challenge by utilizing their swinging leads and simply drive the pile in two sections. This meant that their piling crane would be forced to sit idle holding the second section of pile to drive whilst welders worked to splice the two together. Each pile was estimated to take half of a day's worth of welding time. Facing the prospect of having to vertically weld 36" Pipe piles consistently for the duration of the project, the team felt that significant savings could be achieved if it were somehow possible to install the pile in full length. Austin Bridge reached out and was put into contact with Berminghammer. Berminghammer specializes in the installation of long piles, and immediately recommended a lead system and crane pairing that would allow them to be able to drive the piles at the full 130' length. This way splicing could be done on the ground horizontally where it would be much easier and the crane would not be utilized to hold up the piles while splicing operations occurred. It could continue driving! Berminghammer supplied an L27 Vertical Travel Lead System complete with BK3-1840 spotter that Austin Bridge placed on a Manitowoc 2250. Driving the piles in one piece significantly decreased the duration of the project and created substantial savings on the project.

**130' Long, 36" Diameter Piles.
Installed in one piece**



BRC75 BERMINGHAMMERS RC DRILL - COMBI WALL BUFFALO, NY



When tasked with the installation of a Combination Pipe and Sheet pile wall, (Combi wall) Ferraro Pile and Shoring knew exactly who to ask for equipment. Reaching out to their Canadian neighbours, Ferraro called Berminghammer to assist. Ferraro knew of Berminghammer's successful work at the port of Oshawa and long time expertise in reverse circulation "RC" Drilling. For this pier wall, the 36" round piles were to be rock socketed. With depths exceeding 90' Berminghammer concluded that an L-23 VTL System 120' long mounted on Ferraro's Manitowoc 888 would be an adequate length to support a 90' long drill string with down the hole hammer to drill out the rock sockets. Ferraro, utilized Berminghammers brand new design BRC-75 Rotary designed specifically as a reverse circulation drill. Ferraro's Doug Nemeck was ecstatic with the speed at which the drilling took place, shattering early estimates.

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