ABI Gruppe
ABI · BANUT · DELMAG
NEWS

Newsletter for customers and employees

April 2016 Issue


# ABI Group At The bauma 2016

Every three years the construction machinery industry meets in Munich. 2016 is another bauma year. The bauma is a trade show of superlatives, from April 11 to 17 over 3400 exhibitors present their new products and services on an area of 575,000 sq. m. In 2016, over half a million visitors are expected to come to the Bavarian capital.

ABI introduces together with the subsidiary DELMAG a selection of their product range. The ABI MOBILRAM TM 11/14 SL with extra compact rear end on the carrier SR 25T is one of the smaller machines in the ABI product portfolio. The new generation of leader masts is represented by two models, the TM 17 and the biggest machine of the current fleet the TM 22.

The DELMAG drill rigs will be represented by three machines as well: one RH 18/200, one RH 24/270 and one RH 30. The RH 30 is a follow-up model of the RH 28 on the ABI carrier T82D and equipped with a rotary head BT 300.

DELMAG Esslingen exhibits the diesel pile hammer D100-13 with an impact weight of 10 tons, in combination with a rope suspended lead MAR 100-64. In addition, the diesel pile hammer D30 of the new series SR with a universal sheet pile adaptor will be shown.

## Content

# New Sales Structure In Germany

The bauma year brings even more changes. The distribution agreement with the company ThyssenKrupp Bautechnik as an exclusive dealer in Germany was terminated on 12/31/2015. For the marketing of MOBILRAM-Systems and DELMAG drill rigs ABI now relies on direct sales in Germany.

ABI will further extend its service team to be prepared for the challenges of the market. New mechanics have already been hired, mainly for the regions of South and North Germany. In addition, investments will be made in the field of machine provision. ■

# Compact, Light And Powerful TM 11/14 SL

Compact, light and powerful machines are especially needed for redevelopment and smaller urban construction sites. Two of the smaller models of the proven ABI MOBILRAM-System meet those demands, the TM 11/14 SL and the TM 13/16 SL.

The ABI MOBILRAM TM 11/14 SL is installed on the carrier SR 25T with Scania engine of an engine output of 257 kW. The engine complies with the current emission standard EU Level IV or US EPA Tier 4final. The specified limits are met by an exhaust gas recirculation (EGR) and selective catalytic reduction (SCR) with AdBlue/DEF. A diesel particulate filter is not necessary. The transport weight of this machine is less than 40 tons and the transport height is 3.20 meters only. Due to the new compact counterweight the TM 11/14 SL also has a very small tail radius of three meters only. The extremely short tail provides for better manoeuvrability, e.g. in building pits.

With the rapid change device different attachments can be attached rapidly and safely, depending on the task.

In case a higher driving power is needed, the TM 11/14 SL can also be installed on the bigger carrier, the SR 30T with 294 kW, as an option. The new carrier is also intended for ABI's bestseller, the TM 13/16 SL. The carrier SR 30T is also equipped with a Scania diesel engine that meets the current emission standard. ■


*Photo: ABI MOBILRAM TM 11/14 SL*

# DELMAG Drill Rig RH 30

The RH 30 is the follow-up model of the RH 28. The drill rig is mounted on ABI's own carrier T82D and has a longer stroke of rotary head, a stronger Kelly winch, a larger drilling axis and a more powerful diesel engine.

The machine is equipped with a Scania engine with 368 kW and meets the exhaust emission regulations for Europe EU Level IV or US EPA Tier 4final. The prescribed emission limits are achieved by installing an exhaust aftertreatment system with a SCR catalyst (selective catalytic reduction). In this system, urea, also known as AdBlue or DEF, is injected at a relatively high combustion temperature. The limits are met without the use of a diesel particulate filter.

The DELMAG rotary head BT 300 with a torque of 300 kNm is used as attachment. The rotary head is attached using a Docking-System. This considerably facilitates the assembly and makes it significantly safer. The high torque of the rotary head is transferred to a Kelly bar with an outside diameter of 419 mm. The Kelly bar is part of the new Kelly bar series with the designation

KS and can be delivered in a different lengths and in a sound absorbing variant and as well.

In addition to the conventional Kelly drilling operation, the CFA procedure can also be executed, or the RH 30 can be used as guiding leader for a DELMAG diesel pile hammer.

The four-piece leader mast also allows to convert the machine to a short leader mast version. In this case, the upper part of the leader mast is removed and the machine height reduced by approx. 6 m. The short leader mast variant enlarges the fields of application with work at restricted head height.

The standard leader mast foot can be exchanged for a short leader mast foot to enable the drilling of larger soil auger diameters. ■


*Photo: DELMAG drill rig RH 30 in Niedernberg*

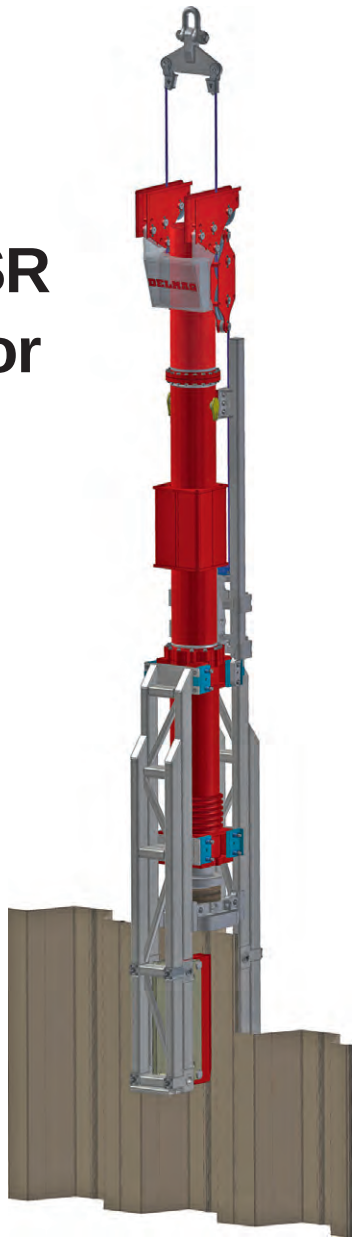
# DELMAG Diesel Pile Hammers SR With Universal Sheet Pile Adaptor

The new SR series are modified DELMAG diesel pile hammers that have been optimized for the back-driving of pre-driven sections. For the first time, these pile hammers can be used without the need of separate leader masts and pile caps.

To achieve this, on the one hand, the safe handling of the pile hammer had to be ensured, e.g. on taking up, setting down and starting. This is realized with a combined pile hammer lift and start mechanism that needs only one crane rope for the operation. This „one-rope actuation“ also lead to the designation -SR, which stands for „single rope“ here.

On the other hand, a universal sheet pile adaptor for the diesel pile hammer had to be designed that allows for a safe and efficient back-driving of the most different double steel sheet piles, beams and pipes. The solution to the problem was to install a rigid guide frame with an integrated impact plate under the pile hammer and to fit it with inserts that were to cover a wide range of pile sizes in turn. For the implementation of the solution a system could be developed where the majority of the commercial Z and U steel sheet piles can be driven with one pile insert only. There will be separate inserts for pipes that can also be adapted to different diameters.

It is planned to offer the diesel pile hammer sizes D12-42, D19-42, D25-32 and D30-32 in the SR version. ■



*Picture: DELMAG diesel pile hammer D30-32SR with universal sheet pile adaptor*

# SM 12/16 Makes A House Hover

**The contractor G+K Spezialtiefbau und Umwelttechnik GmbH executed a spectacular project on an island in the North Sea and virtually made a house hover.**

The company from the northwest of Hamburg is a supplier in the field of special civil engineering and environmental engineering. They support their customers with the calculation, planning and execution of entire projects or take on subtasks.

For an extensive redevelopment project G+K took care of the entire special civil engineering works. Additional usable floor space was to be created in a house. Due to the strict local building guidelines, the extension of the building was realized through a larger basement level.

The existing basement was removed and a completely new larger basement was built. At the beginning of the construction work, the house was gutted and an appropriate working area for the special civil engineering works was prepared around the house. A steel sheet pile wall of a length of up to 16.0 m was driven into the ground all around using the ABI MOBILRAM SM 12/16 and the vibrator MRZV 20VV.


*Photo: ABI MOBILRAM SM 12/16 with vibrator MRZV 20VV driving steel sheet piles*

*Photo: Holding structure made of steel beams, concrete piles and steel sheet piles*

In addition, drilled piles for a holding structure were installed using the same machine. The change-over from vibrator to auger drive and Kelly bar could be achieved, as required, very fast thanks to the rapid changing device.

During the construction phase the steel sheet pile wall served to shore the construction pit as well as to remove the load and later as waterproof tank for the new basement level. The pile-driving work was monitored through measurements. The VV method again proved its strengths on the low-vibration introduction of the steel sheet piles. The regulation of the VV vibrator also allowed for an adaptation to the soil conditions that varied from loose sand over medium-dense to tightly settled medium-sized sand up to boulder clay. In total, 250 t of steel sheet piles were used.


*Photo: The basement is demolished, the building hovers*

Following the pile-driving work recesses could be calked into the existing basement walls to insert the holding beams of a weight of up to 4.0 t and to frictionally join them with the building. The walls were reinforced and a holding structure for the building was finished so that the basement could be exposed and demolished. The building started to „hover“. Then the pit under the building was excavated down to the final depth. As the excavation progressed the steel sheet pile wall was back-anchored. After having attained the desired depth the steel sheet pile interlocks were welded and a joint sheet was welded on all around to execute the new bottom of the building as waterproof tank. ■

# TM 13/16 In The Middle Of A Show Stage

**The French company Merceron was awarded the contract as sub-contractor for pile-driving work at an amphitheater in the city of Bishop Auckland in the northeast of England. The ABI subsidiary ABI Equipment Limited supplied its leasing machine TM 13/16 SL for the pile-driving work.**

Merceron was founded in 1955 and over the years improved its competences in the fields of quarrying, building activities, environmental protection, civil engineering and water engineering. As the service portfolio grew the staff grew as well, today the Groupe Merceron employs app. 300 staff members.

The contract included the installation of a steel sheet pile structure for the construction of a large stage with a lake integrated in the centre. Due to the tight schedule from October to December 2015, Mercercon decided to use a MOBILRAM-System. As the vibrator on MOBILRAM-Systems is guided on the leader mast, no additional guiding device or template is required for the steel sheet piles. This increases productivity and flexibility on the construction site. The TM 13/16 SL was equipped with a vibrator MRZV 925VS to drive the 8.5 to 11 m long steel sheet piles Hoesch Larssen 603. Due to a heavy loam layer, pre-drilling was required for the 11 m long steel sheet piles. 355 steel sheet piles in total were driven for the enclosure of the lake. In addition, four steel sheet pile cases were installed for the stage equipment. For this, the TM 13/16 SL vibrated another 344 steel sheet piles into the ground.

The customer Eleven Arches, a registered charity, modeled its concept on the success story of the French entertainment company Puy du Fou. Since 37 years already they influence a hole region around Vendée

*Photo: ABI MOBILRAM TM 13/16 while pile driving in Bishop Auckland*

in France with their night open air shows and run a successful theme park. Puy du Fou is the artistic partner of Eleven Arches and it is the first time that this concept will be developed beyond their original site in France.

On the site of a former golf course and against the backdrop of Auckland Castle in County Durham a giant open air stage for live shows will be built. The visually stunning, action packed and movie-like show „Kynren – an epic tale of England" will start in July 2016 and takes the audience through 2000 years of England's history. The name Kynren echoes the Anglo-Saxon word „cynren" which means something like family, relatives, generation or nation. Within 90 minutes stories are told of old myths and religion, of kings, princes and bishops that ruled England, of Romans, Vikings and Normans that invaded the country, of the Industrial Revolution to World War II. A team of actors, musicians and pyrotechnists as well as lighting engineers will provide a night show of superlatives for the audience. ■

*Photo: ABI MOBILRAM TM 13/16 while pile driving in Bishop Auckland*

# RH 34 At The Heidingsfeld Viaduct

**The contractor Fleck Spezialtiefbau carries out the construction of foundation piles for the new Heidingsfeld viaduct which is part of the development of the motorway A3.**

The national motorway A3 is a very important road link within the Trans-European network and in Germany. Since the middle of the 1960's traffic has tripled and the part of heavy road vehicles is now app. 20%. Some sections of the motorway have already been extended to six lanes but the bottleneck between Würzburg Heidingsfeld and Würzburg Randersacker is still under construction.

The „Katzenberger tunnel route" was chosen from several proposals as being the best solution for the increasing traffic volume and the necessary noise protection. The winning project includes a lowered route with bridge and tunnel.

The traditional company Fleck Spezialtiefbau from Langenhagen carried out the extensive foundation

*Graphics: A construction phase at the Heidingsfeld Viaduct © V-KON.media GmbH*

works for the new bridge north of the existing viaduct. The 630 m long bridge rests on six piers and two abutments and leads into the Katzenberg tunnel at the eastern end. In total, Fleck installed 180 piles with diameters of 1200 and 1500 mm using the Kelly drilling procedure. The 1200 mm piles were sank to a depth of up to 57.5 m. About two third of the total drilling output of 6000 meters was made into rocks. Approximately 500 drilling meters even had to be integrated into basic dolomite with a strength of FD4 (unconfined strength from 200 to 300 N/mm$^2$). In addition, the variable horizon of the basic dolomite made it necessary to extend various piles. Due to the challenging geology, the large depths and diameters a casing oscillator had to be used as well.

According to the construction schedule the new lane in the direction to Frankfurt will be finished by 2017 so that the entire traffic runs on the new northern lane and the old viaduct can be knocked down. Then the construction work for the southern lane in the direction of Würzburg will start, which should be finished by end of 2019.

The extension to six lanes takes into account the noise protection measures required due to the extended housing areas and will make this 5.4 km long section an efficient road link. ■

*Photo: DELMAG drill rig RH 34 of the company Fleck with 60 m Kelly bar at the existing viaduct Heidingsfeld*


*Photo: Overview map of the construction section Würzburg Heidingsfeld - Randersacker © Autobahndirektion Nordbayern*

# RH 12 And RH 24 In Short Leader Mast Version

**The distribution partner Hammer & Steel delivered two DELMAG drill rigs in the short leader mast version for soil mixing applications on a construction site near the San Francisco airport in California.**

The executive company was JAFEC USA, a leading specialist in the realization of soil improvement measures. For the extension of the lanes of the regional expressway the soil mixing method was used in soft, plastic clay.

Due to the power lines, the headroom on the construction site was partially restricted to app. 8.0 to 10.5 m. First was delivered the DELMAG drill rig RH 12 short leader mast including soil mixing equipment with 1500 mm diameter and 5.6 m length, which is especially appropriate for use at restricted headroom. In order to achieve the required length of the mixed piles between 7.6 m and 9.1 m the soil mixing rods were extended with additional sections. To facilitate the installation and removal of the extension parts Hammer & Steel attached a holding device to the leader base. In addition, the soil mixing equipment was equipped with a centering device with a diameter of 1500 mm that should increase the mixing capacity in cohesive soils and enables a straight run of the borehole.

The aimed daily output of six boreholes was achieved after a short period of familiarization. Still work in two-shifts was necessary to meet the tight schedule and the due-date that was provided by Caltrans (California Department of Transportation), so that the expressway could be reopened for traffic. The RH 24 in the short leader mast version as well was transported to the construction site as a reinforcement.

The soil mixing process was monitored with a monitoring system installed in the cabin so that parameters like suspension flow rate and quantity, depth as well as speed of the rotary head were captured. The machine driver could follow the mixing progress in real time and JAFEC could provide the necessary quality proofs to Caltrans.


*Photos: DELMAG drill rig RH 12 in short leader mast version while soil mixing*

# Stirred Twice But Not Shaken

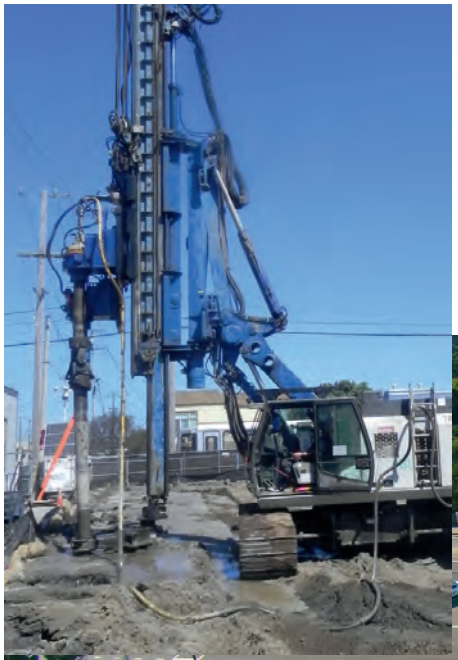
**The company American Drilling leased a ABI MOBILRAM TM 18/22 B for soil mixing work from the Californian subsidiary of the ABI distribution partner Hammer & Steel.**

The WSM soil mixing method is well appropriate for application in non-cohesive, granular soils and produces less noise and vibration emissions than classic pile foundation methods. In soil mixing the existing soil material is mixed with a suspension to make a pile. Soil mixing is often combined with classic drilling methods as well. Soil mixing is very cost effective as this method does not produce any excavated material that must be removed from the construction site and disposed. There is no need for aggregates like sand and gravel. Using a Twinmix auger drive the productivity can be increased further by mixing two secant piles at the same time. The auger drives rotate in opposite directions at high speeds and thus mix the soil thoroughly with the suspension to achieve a homogenous mixture. The MOBILRAM-System provides the necessary hydraulic flow rates for this environmentally friendly method.

American Drilling carried out the special civil engineering works for the construction of a five-story building with underground parking lot in Palo Alto, California. The ABI MOBILRAM-System was equipped with a Twinmix auger drive to make a waterproof pile wall. The deciding factor for the choice of the shoring method were the advantages mentioned above, like the low vibration and noise emissions, as residential buildings and the San Francisco Zoo are in direct vicinity to the construction site.

The soil mixing equipment had a diameter of 760 mm and the mixing took place down to a depth of app. eight meters. First, the primary piles were installed and then the secondary piles. In addition, the primary piles were reinforced with H-beams. After completion, the secant soil mix wall was exposed and the surface levelled.

The suspension was supplied through one single rod using the fully automatic mixing station MPS 510. However, after having exposed the wall no visible difference was noticed between the two piles. To ensure the quality of the piles the mixing process was monitored using a monitoring software. The machine operator could follow data like suspension flow rate and quantity, depth as well as speed of the auger drive in the cabin in real time and regulate the mixing progress as required. The daily output was 30 mixing operations which is about 480 single pile running meters. ■



*Photos: ABI MOBILRAM TM 18/22 B while installing the mixed piles*

# Pile Driving, Soil Mixing And Kelly Drilling On One Construction Site

**Three ABI Group machines at a time were used for the foundation works on the Eldetal bridge at the A14, one ABI MOBILRAM-System and two DELMAG drill rigs.**

The motorway A14 between Schwerin and Magdeburg is extended in sections. The section near Grabow at the border between Mecklenburg-Western Pomerania and Brandenburg is eleven kilometers long and quite demanding with ten bridges and two rain water retention basins. With 507 meters the longest of them, the Eldetal bridge, will be spanning three streams at a time.

The foundation piles for the bridge were installed by the company Fleck Spezialtiefbau GmbH from Langenhagen. Fleck used two DELMAG drill rigs RH 28 and RH 34 for the drilling work. As the water table in the water-bearing sand soil was just one meter below the terrain, all 84 inclined piles with a diameter of 1500 mm and a length of up to 25 meters were drilled using the Kelly drilling procedure with water load.

Due to the difficult ground, extensive pile tests were made, like the cross hole ultrasonic measurement to test the integrity of the concrete, and static test loading. For the static test loading Fleck drilled four reaction piles with a diameter of 900 mm down to a depth of 28 meters.

As the construction work progressed the pile heads were exposed to make the foundation plates for the bridge piers. Due to the high water table, retention walls had therefore to be installed around the piles. Owing to the necessary tightness, the call for tender required pressed

*Photo: ABI MOBILRAM TM 14/17 V of the company M-TEC with Twinmix auger drive while soilmixing (above and below)*

*Photo: DELMAG drill rig RH 28 and RH 34 of the company Fleck while installing foundation piles*

steel sheet pile cases. The first cases were executed as pressed steel sheet pile boxes by the company M-TEC from Schwerin. After finishing the foundation plates, the steel sheet piles were to be extracted. It was quite difficult to recover the steel sheet piles, in some cases it was even impossible. For that reason M-TEC suggested to use soil mixing as the more cost-effective variant. The proposal was reviewed and further boxes were built using the soil mixing method. As for the pile-driving work, M-TEC used a ABI MOBILRAM TM 14/17 V but with a Twinmix auger drive TMBA 2-4000. The mixed piles had a length between six and seven meters and the entire shoring was 5000 square meters.

As the soil was soft, soil improvement measures for the installation of cranes had to be taken as well. Mixed blocks as location for the building crane were installed at each pier. The soil mixing output for the crane blocks was 5000 cubic meters in total.

The eleven kilometers long motorway section is planned to go into operation at the end of 2017. ■

*Photo: Mixed secant pile wall (Photo: M-TEC)*

# GBS – A Partner From Home

**In 2015 the company GBS Grundbau Bohrtechnik Spezialtiefbau GmbH & Co. KG from Aschaffenburg celebrates its 25th anniversary.**

The company's history is closely bound to the DELMAG drill rigs as far as machine technology is concerned. The machinery park of GBS is already provided with four DELMAG drill rigs and a new RH 24 will be handed over at the bauma in Munich. With this RH 24 GBS will be well prepared for the building projects to come.

The existing machines are utilized very well and are used in the most different special civil engineering projects.

*Photo: DELMAG drill rig RH 12 and RH 16 of the company GBS while Kelly drilling at the Neckar (Photo: GBS)*

*Photo: DELMAG drill rig RH 12 while Kelly drilling at the Neckar (Photo: GBS)*

## RH 12 And RH 16 At The Neckar

At the Neckar loop between Haßmersheim and Neckarmühlbach a bicycle track will be built on a length of 1.9 km. The last construction stage of about 850 m is the most difficult and the most cost-intensive. The existing main road L588 did not leave enough space for a bicycle track as there is a slope on one side and the Neckar river on the other. During the extension the roadway will be relocated towards the slope and the new 2.5 m wide bicycle track will be built at the Neckar. As the slope is not stable without securing measures, a secant drilled pile wall with head beams that will be back-anchored with permanent micro-piles, has to be installed at its foot over a length of 550 m.

GBS used two DELMAG drill rigs for this construction measure, one RH 12 and one RH 16. For the drilling works the existing road was filled to a height of about 5.5 m. After having installed the total of 825 piles with a diameter of 750 mm, the fill was removed. The drilled pile wall will be exposed and remains visible. 2800 cubic meters of pile concrete and 190 t of reinforcing steel were required to built the secant drilled pile wall. After the removal of the work road, the road construction can be started so that the road section and the new bicycle track can be opened up to the traffic at the end of 2016.

## RH 12 Short Leader Mast In Heilbronn

The four-piece leader mast allows to convert the RH 12 to a short leader mast version. This variant was needed for the foundation work in a hall in Heilbronn.

The automotive supplier Läpple Automotive GmbH gets a new transfer press with a press force of up to 25,000 kN to press components made of steel, high-strength steel and aluminium. Extensive foundation work at a restricted headroom was required for the foundation of the press.

GBS installed a secant drilled pile wall with head beams for the construction of the foundation in the production hall. A total of 113 piles of a length of up to 11 m were drilled, 66 of which with a diameter of 750 mm and 37 piles with a diameter of 640 mm. The drilling output in the hall was 1100 m, and 500 cubic meters of pile concrete as well as 23 t of reinforcing steel were used. After the installation of the secant drilled pile wall this was back-anchored in the head area with permanent anchors and permanent micro-piles so that the building pit could be excavated to a depth of 7.7 m afterwards.

The drilling work was completed within the given schedule so that the following work could start on time as well. According to Läpple the installation is to take up service in summer 2016.

*Photo: DELMAG drill rig RH 12 in a short leader mast version while Kelly drilling in a production hall (Photo: GBS)*

## RH 32 And RH 16 On Historical Ground In Koblenz

The old municipal pool in Koblenz is history and makes room for new apartments. The investor, the pension fund of the Chamber of Lawyers from Rhineland-Palatinate, placed the special civil engineering works for the „Weißer Höfe“ project with GBS. A total of 140 apartments and an underground parking lot with three parking levels having room for app. 360 vehicles was to be built on the lot of the old municipal pool. GBS used its RH 16 and RH 32 for the drilling work in Koblenz.

To secure the 10.3 m deep building pit a double back-anchored soldier pile shoring and a double back-anchored secant drilled pile wall were constructed. 79 boreholes with a diameter of 750 mm for the introduction of the double U-sections were made for the Berlin-type shoring. The secant drilled pile wall consists of 105 piles with a length of up to 13.5 m and a diameter of 880 mm. After having installed the securing measures, the excavation could start. Due to the extensive archeological excavations, the progress was quite slow. Time buffers for the archeological excavations were already granted at the planning phase. The archeologists found rubble masonry walls, cellars, foundation, ovens, graves and skeletons from different eras.

As the excavation work progressed the foundation piles for the new building complex were installed from an intermediate level app. 2.5 m above the final building pit bottom, 28 piles with a diameter of 1500 mm, 36 piles with a diameter of 1180 mm and 93 piles with a diameter of 880 mm. The drilling lengths varied between 12 and 20 meters.

Despite the delays through the archeological excavations the project is on schedule so that the shoring and foundation work will be completed in April 2016. The building complex is intended to be ready for occupancy in the first half-year of 2017. ■

*Photo: DELMAG drill rig RH 32 while installing foundation piles in Koblenz (Photo: GBS)*

# Building For Education

**ABI Equipment Ltd. delivered its DELMAG drill rig RH 28 with rotary head and Kelly bars for the foundation works of the new building of the physics department at the University of Oxford.**

The Beecroft building will have two underground levels and five above ground. The underground levels will provide space for state-of-the-art laboratories where researches can be done in a stable environment with nearly no vibrations and at constant temperatures. Offices and lecture halls are planned above ground. The project brings together the research activities in one highly modern building complex on the university grounds. The estimated costs are around 40 million pounds (app. 51.2 million Euros).

A total of 248 piles with a diameter of 880 mm will be installed for the new building. The secant drilled pile wall consists of 224 piles with the primary piles having a length of 17 m and the secondary piles of up to 24 m. Four piles of a length of 26 meters were sank as the foundation for the crane and another 20 single piles as foundation piles for the building. The ground consisted of a first 6 m layer of sand and gravel from fluvial deposits followed by Oxford Clay which as being sedimentary rocks of maritime origin is more porous and soft. The drilling work will be followed by the excavation down to a depth of 16 m, and the secant wall will be double back-anchored.


The drilling work spanned several weeks from December 2015 to February 2016. In order to reduce interferences with the educational services to a minimum an exact schedule was established and the university informed about the progress of the construction work on its website.

*Photos: DELMAG drill rig RH 28 at the job site in Oxford*

# TM 22 Builds Expressway

**DAWSON-WAM installed steel sheet pile walls for the construction of a link road in Crewe Green, Cheshire, England.**

The biggest challenge in the project was the crossing of the railway line between Crewe and Derby. The solution was to realize an underpass and a new railway bridge. DAWSON-WAM executed the entire pile-driving work and installed over 9000 square meters of permanent steel sheet pile wall and 1500 square meters of temporary steel sheet pile wall that was extracted again later.


*Photo: ABI MOBILRAM TM 22 working during the night shift in Crewe*

Different sections were used, among others the AZ50 as double sheet pile with a length of up to 21 m. Piles were installed using the telescopic leader mast ABI MOBILRAM TM 22 with vibrator MRZV 30VV. Despite the enormous dimensions of the sections, even the longest steel sheet piles could be introduced through a 10 m thick layer of loose sand and ballast into the tenacious clay to the final depth, without using any auxiliary measures like e.g. pre-drilling.

In spite of the high efficiency of the TM 22 and the smooth course of the pile-driving work, the tight schedule of the project required additional machines on the construction site. Some steel sheet piles were also installed with a DELMAG diesel pile hammer that was mounted on an additional ABI telescopic leader mast. A very high priority was to interfere with the railway traffic as less as possible so the pile-driving work was carried out on weekends, public holidays and by night as well.

In the planning phase for the pile-driving work DAWSON-WAM also proposed to execute part of the pile-driving work as „jagged wall“ of Z-sections instead of the classic Z wall. Due to the reduced dimensions at a thick wall thickness, the jagged wall is an economic solution for impermeable walls. Here, every second Z-section is inserted in the reverse position as usual. The proposal was accepted by the client as it offered savings of 50 t of steel sheet piles. ■


*Photo: ABI MOBILRAM TM 22 with vibrator MRZV 30VV working during the night shift in Crewe*

*Picture: cross section jagged wall*


*Photo: ABI MOBILRAM TM 22 installing jagged wall in Crewe*

# Soil Improvement Measures With Efficiency Drive

The company Geopier Spezialtiefbau GmbH, part of the group Himmel u. Papesch Bauunternehmung GmbH u. Co. KG from Bebra, carried out soil improvement measures for a new logistics centre in Halle (Westphalia) using two ABI machines.

The fashion company Gerry Weber invested about 90 million Euros in a new logistics centre at the economic site Ravenna Park. Warehouse and functional areas as well as an outlet store were built on an area of 76,000 square meters.

Before starting the construction phase over ground the subsoil had to be processed accordingly. The bearing capacity of the soil was increased by making impact piers. In total 38,400 running meters of Geopier Impact® rammed aggregate piers of a length between seven and ten meters were made in two-shift operation over a period of two months. The heavy soil made pre-drilling necessary.

Among other machines, two ABI MOBILRAM TM 14/17 V with a 470 kW engine and a variable vibrator MRZV 24VV were on the construction site. One of these machines was equipped with the Efficiency Drive I so that they could be compared directly under the same conditions. The diesel consumption, the machine output as well as the accompanying measures were thoroughly documented on the construction site and evaluated later. The feedback was overwhelming. On average, the machine with Efficiency Drive needed 40% less diesel than the reference machine without Efficiency Drive. ■

*Photos: ABI MOBILRAM TM 14/17 V installing Geopier Impact® rammed aggregate piers (Photo: Geopier Spezialtiefbau GmbH)*

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